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THE SALIENT COMPONENTS OF MASSIVE OPEN
ONLINE COURSES (MOOCs) AS
REVEALED IN SCHOLARLY PUBLICATIONS

A MASTER'S THESIS

BY

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THE PROGRAM OF CURRICULUM AND INSTRUCTION
İHSAN DOĞRAMACI BILKENT UNIVERSITY
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This thesis is dedicated to my son, Tuna İkinci.

He is one of my lovely teachers in my life.

THE SALIENT COMPONENTS OF MASSIVE OPEN ONLINE
COURSES (MOOCS) AS REVEALED IN SCHOLARLY
PUBLICATIONS

The Graduate School of Education

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Arzu Sibel İkinci

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GRADUATE SCHOOL OF EDUCATION

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as Revealed in Scholarly Publications

Arzu Sibel İkinci

April 2016

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Curriculum and Instruction.

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ABSTRACT

THE SALIENT COMPONENTS OF MASSIVE OPEN ONLINE COURSES (MOOCS) AS REVEALED IN SCHOLARLY PUBLICATIONS

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M.A., Program of Curriculum and Instruction

Supervisor: Assoc. Prof. Dr. Erdat Çatalođlu

April 2016

The aim of this thesis is to determine the salient components of Massive Open Online Courses (MOOCs) as revealed in scholarly publications. Drawing the attention of leading universities around the world, MOOCs are new distance education (DE) phenomena. It is expected that the number of students applying for higher education will be increasing 62.7% by the year 2025, however, the number of institutions is not accelerating at a fast enough pace to meet the demand. Due to their constantly expanding young population, developing countries like Turkey consider DE as a potential solution to this growing demand. Some educationists and governments have confirmed that education could become more flexible if a technological infrastructure were applied to life-long learning programs and short term certificate programs. This thesis utilizes the content analysis research method and a thematic network analytic tool to identify the salient components of MOOCs as revealed in scholarly publications for the benefit of university stakeholders. According to the research questions, all the themes related to MOOCs were explored

and were examined with a wide perspective. Only peer reviewed journal articles were selected through stratified sampling and coded to collect qualitative data in Nvivo 10. Well-known procedures were followed to provide rigor in this research. Truth-value, applicability, consistency and neutrality were the four major measures utilized for the validity and reliability of this thesis. The findings of the thesis were summarized in terms of eight global themes, 22 organizing themes, and 71 basic themes. These themes constitute a unique framework for the literature and for the stakeholders of MOOCs. The themes and their descriptions can guide individuals and institutions (like universities and organizations) thinking about participating in and/or developing a MOOC course. Individuals or institutional leaders can be made aware of all the aspects of MOOCs as discussed in scholarly publications to gain a holistic view prior to embarking on their own decision process. Thus, some of the pitfalls of early MOOCs can be avoided.

Key words: Massive Open Online Course, MOOC, distance education, open education, open education sources, online education, content analysis, thematic network analytic tool, higher education, tertiary education, life-long learning.

ÖZET

KİTLESEL AÇIK ÇEVİRİMİÇİ DERSLERİN (KAÇD) BİLİMSEL YAYINLARDA AÇIKLANAN BİLEŞENLERİ

Arzu Sibel İkinci

Yüksek Lisans, Eğitim Programları ve Öğretim

Doç. Dr. Erdat Çataloğlu

Nisan 2016

Bu tezin amacı, Kitlesele Açık Çevrimiçi Derslerin (KAÇD) akademik yayınlardaki dikkat çekici bileşenlerini tanımlamaktır. Dünyanın önde gelen üniversitelerin ilgisini çeken KAÇD'ler yeni bir uzaktan eğitim olgusudur. 2025 yılına kadar yüksek öğretime katılacak öğrencilerin sayısının %67,5'e çıkması beklenmesine rağmen, yüksek öğretim kurumlarının sayısının bu talebi karşılamaya yetecek hızla artmayacağı görülmektedir. Türkiye gibi genç nüfusu sürekli artış gösteren, gelişmekte olan ülkeler, artan talebe çözüm olarak uzaktan eğitimi dikkate almaktadırlar. Bazı eğitimciler ve hükümetler, teknolojik altyapının yaşam boyu eğitim ve kısa dönem sertifika programlarına uygulanmasıyla eğitimin daha esnek bir hale geleceğini onaylamaktadırlar. Bu tez içerik analizi araştırma yöntemini ve tematik ağ analitik aracını kullanarak, üniversite paydaşlarının faydasına sunmak üzere, KAÇD'lerin akademik makalelerde yer alan dikkat çekici bileşenlerini belirlemektedir. Araştırma sorularına göre KAÇD'in tüm temaları geniş bir perspektifle incelenerek ortaya çıkarılmıştır. Tabakalı örneklem metodu kullanılmış

ve uzmanlar tarafından deęerlendirilen makalelerden toplanan nitel veriler Nvivo10 ile kodlanmıřtır. Bu arařtırmada, bilinen yöntemler titizlikle izlenmiřtir. Tezin geerlilik ve gvenilirlięi iin doęruluk-deęeri, uygulanabilirlik, tutarlılık ve tarafsızlık olmak zere drt temel lm kriteri kullanılmıřtır. Tezin bulguları sekiz genel tema, 22 dzenleyici tema ve 71 esas tema ile zetlenmiřtir. Bu temalar, literatr ve KAD paydařları iin zgn bir erevede oluřturulmuřtur. Temalar ve tanımları, KAD programlarına dahil olmak veya bu programları geliřtirmek isteyen kiři ve kurumlara (niversiteler, rgtler, vb.) rehberlik edebilir. Bireyler veya kurumsal liderler, kendi karar srelerinden nce, akademik yayınlarda tartıřılan KAD'ın tm ynlerinin farkında olacak ve btlcl bir bakıř aısı kazanacaklardır. Bylece, nceki KAD'lardaki olumsuzlukların nne geebilirler.

Anahtar Kelimeler: Kitlemel Aık evrimii Dersler, KAD, uzaktan eęitim, aık eęitim, aık eęitim kaynakları, evrimii eęitim, ierik analizi, tematik aę analitik aracı, yksek ęretim, yařam boyu ęrenme.

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CHAPTER 1: INTRODUCTION

Introduction

Following the vertiginous developments in the information and communication technologies (ICT) within the past 10 years, professionals working in various industries are aware of some changes in their fields. As an instructor working at Bilkent University for over 20 years, and as a specialist in education having worked in ICT for almost 10 years, I have observed that neither students nor the business world can be isolated.

As distance education systems, Massive Open Online Courses (MOOCs) are the result of the marriage of this rapidly developing computer technology and ICT. Therefore, this thesis is an exploratory research using the content analysis research method and a thematic network analytic tool with the aim of unearthing the salient components of MOOCs as revealed in scholarly publications for the benefit of university stakeholders.

Background

MOOCs constitute one of the new distance education (DE) phenomena in higher education that are drawing the attention of leading universities around the world. The following numbers lend support to this view. According to UNESCO Institute of Statistics figures related to ISCED (International Standard Classification of Education) levels 5 and 6, about 29.3% of the world population is under 15 years of age. There were 165 million people in higher education back in 2009. Based on British Council and IDP Australia projections, this number will reach 263 million by

the year 2025. To put these numbers into some perspective, four new universities with a 30,000 student capacity must be added every week until 2025 to sustain the current university/student ratio (Balasubramanian, et al., 2009). At UNESCO's World Conference on Higher Education, all stakeholders were urged to demonstrate a concerted effort to respond to this new "massification" challenge. In order to meet this challenge, various institutions using different forms of ICT, including DE, have opened their doors for millions of students worldwide (UNESCO, 2009).

Beside the formal education, increasing demand for informal education was also highlighted in a recently published article describing the growth of DE. As was indicated by Wardrop (2013), the largest MOOC platform provider companies (Coursera, Udacity and EdX) were offering 328 courses via 62 universities in 17 countries. Between February 2012 and March 2013, some 2.9 million people from 220 countries registered for these courses according to Figure 1. As can be seen clearly in the figure, like the number of courses, the number of participants was increasing. As a striking example, 300,000 students from more than 100 countries registered for the "Introduction to Linux" courses offered jointly by Linux Foundation and edX.

In March 2013, besides the 328 MOOC courses in non-EU countries, there were 81 courses offered by EU countries.

Figure 2 compares the number of courses offered worldwide according to the data provided by Europa Open Education (2014). As of September 2014, there were 770 courses in EU countries and 2,476 courses in non-EU countries. Between March 2013 and September 2014 (a period of 18 months), EU MOOC courses increased

almost 10 fold and non-EU MOOC courses almost 8 fold. The total number of MOOCs worldwide increased from 409 to 3,246 in only eighteen months.

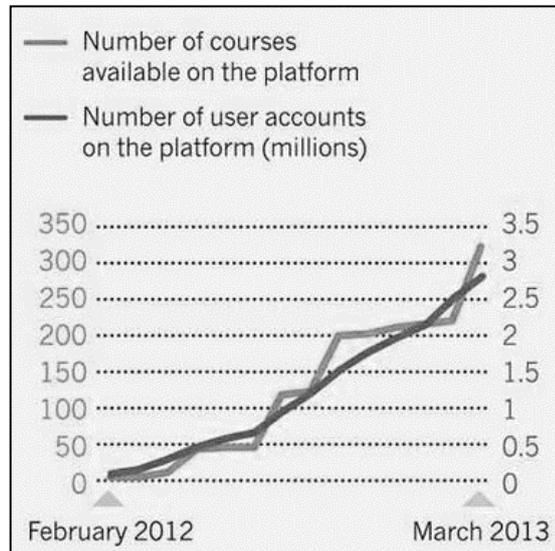


Figure 1. An illustration of the increase in both supply and demand for MOOCs in non-EU countries (courtesy of Nature Magazine).

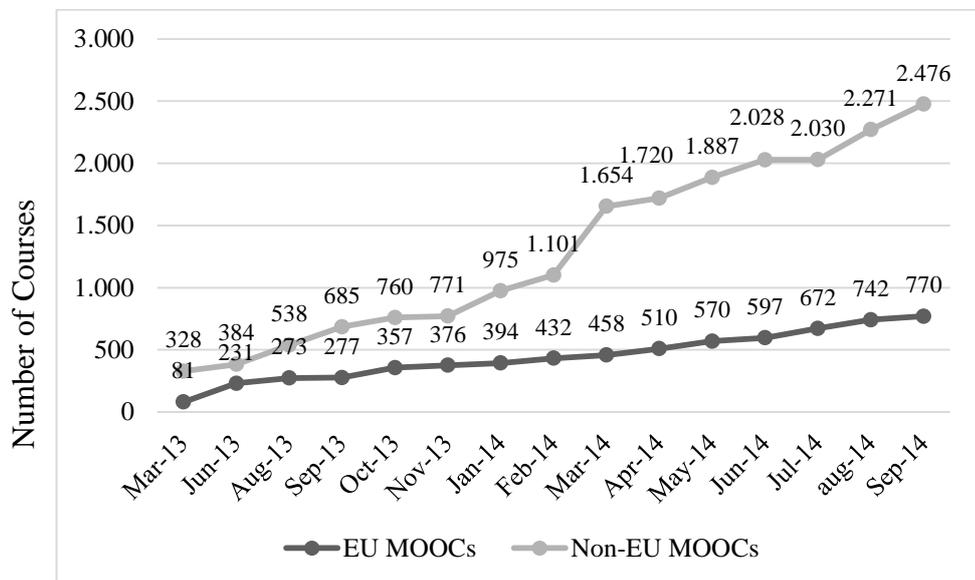


Figure 2. A comparison of the number of MOOCs offered by EU and non-EU countries.

The business world uses MOOCs for job opportunities. In 2013, the Dice web site, which provides tech job searches, reported that the annual salary of senior Linux administrators was \$90,853 and the demand for Linux jobs as well as salaries were higher than ever. Ninety three per cent of managers were looking for Linux Certified

System Admins and Engineers. However, certification exams were very difficult, and even some top Linux professionals failed. Linux Foundation looked for a solution and a new “Essentials of System Administration” course was announced based on the experience of the first “Introduction to Linux” course. While other traditional Linux courses cost around \$1000-\$2500, these MOOC courses are free unless certified. Anyone who wants to get a verified certificate pays \$99 for the exam (Vaughan-Nichols, 2015).

Parallel to the growing ease and accessibility of ICTs, an equally growing need for trained labor power in the knowledge economy, changing workplace demands and the resultant pressure for life-long learning all contributed to the rise of MOOCs as a solution (see Figure 1 and Figure 2). Fundamentally, two over-riding factors – the rapid developments in ICTs and the readiness level of students’ basic computer literacy – made it possible to introduce these new educational forms (Georgiev, Georgieva, & Smrikarov, 2004) to meet the evolving market needs.

Problem

The demand for higher education far exceeds the present number of available places, and the demand is still growing. At the same time, due to recent economic crises and tightened budgets, the costs of higher education exceed the readily available sources of financing. According to Ambient Insight’s 2011-2016 forecasts (Adkins, 2013), the demand for DE is growing around the world. As shown in Figure 3, while the Asian market is in the first rank with the highest growth rate (17.3%), others such as Eastern Europe (16.9%), Africa (15.2%) and Latin America (14.6%) are now achieving impressive growth rates. The demand for DE is high in the developed countries. Now, with recent improvements, it is rising in the developing countries as

well. In fact, the developing countries' growth rates have exceeded those of the developed countries.

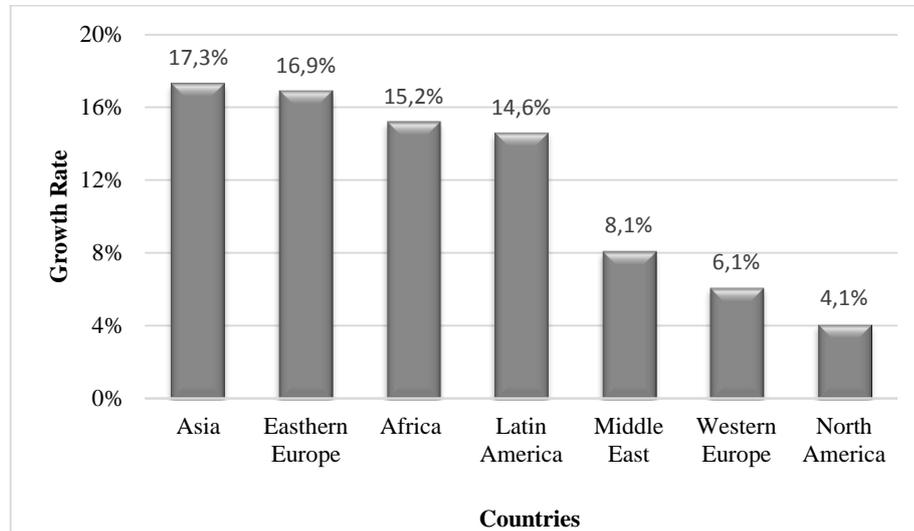


Figure 3. Five-year (2011-2016) worldwide DE growth rates by region

In the same forecast report, the top ten countries were Vietnam, Malaysia, Romania, Azerbaijan, Thailand, Slovakia, the Philippines, Senegal, China, and Zambia (see Figure 4). All of these countries are in the list of developing countries except Slovakia.

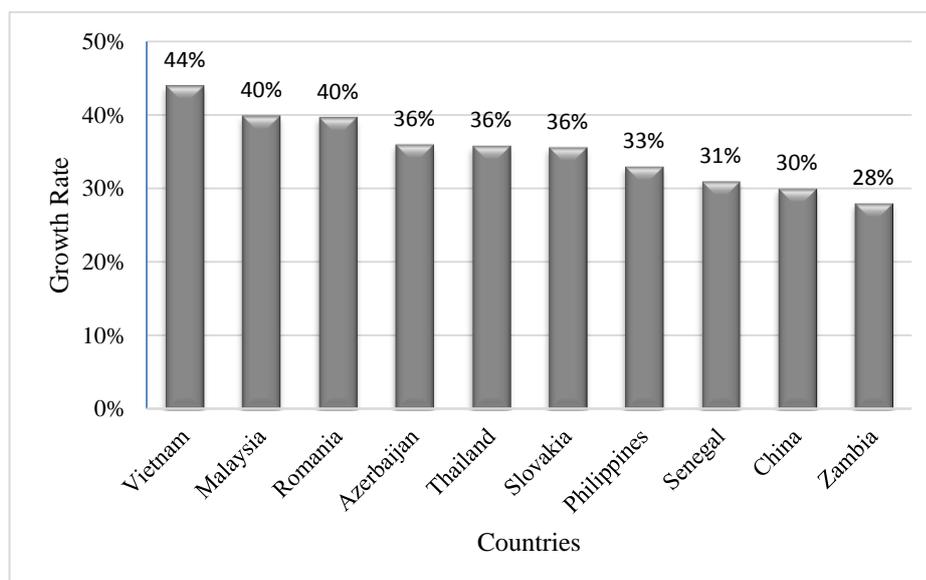


Figure 4. Five-year (2011-2016) projected DE growth rates for the top ten countries

As an interesting example in the report, in Nigeria, which is a developing country in Africa, the population is twice that of Turkey, and only one fourth of university applicants are accepted for higher education. According to the same report, although 1.6 million Nigerian students apply for higher education every year, only 400,000 can be accepted by the universities. The government of the country is trying to solve this problem by doubling the number of students using DE systems. MOOCs are seen as an opportunity to respond to the students' demands for higher education. As can be seen in different worldwide and governmental reports, many countries are trying to adopt DE systems to meet the increasing demand for higher education.

In brief, Nigeria and other developing countries are looking to DE as a potential solution to the growing demand for higher education. Similarly, another developing country, Turkey, is faced with a low capacity in the higher education institutions, so it is having difficulty meeting the increasing demand for higher education. With its ever increasing young population, Turkey faces a growing incapacity risk. The below figures indicate how Turkey's young population and the inadequate capacity of higher education are affecting the students' education expectancy. Thus, Turkey, like other developing countries, is faced with the dilemma of meeting students' expectations with limited resources.

In Turkey, 46% (983,090) of the applicants (2,126,684) for higher education were registered for various programs (ÖSYM, 2015). Of these students, only forty-two per cent were eligible for 4-year undergraduate programs. Thirty-eight per cent were eligible to register for associate degree (two-year) schools. Twenty per cent preferred to register for open education (see Figure 5).

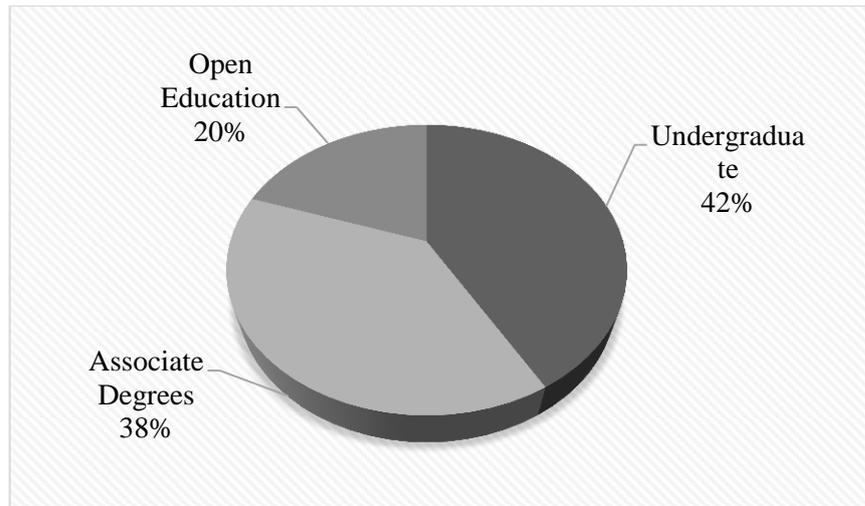


Figure 5. Higher education placement in Turkey in 2015

As was pointed out in the world fact-book updated on September 2015, 25.45% of Turkey's population is under 15 years of age and 16.25% of the population is in the range of 15-24 years of age. The median age in Turkey is 30.1 (Turkey, 2015). In addition to these figures, the Turkish Statistics Institute (TUIK, 2014) indicated that Turkey has a young population and the demand for higher education has been increasing accordingly over the last 5 years. As shown in Table 1, during the 2007-2015 period, between 40% and 65% of the higher education applicants did not register for any program.

Most significantly, in the most recent nine years, an average of 53% of all applicants did not register to any program. The Turkish Government is planning to increase higher education capacity by 50 per cent. Even if this number is achieved, the all of the applicants will still be ineligible to register in any higher education program.

Table 1
University applicants and placement

Years	Applicants	Undergraduate	Associate Degrees	Open Education	Registered to programs	Not registered for any program total and %
2007	1,776,427	193,553	199,143	233,729	626,425	1,150,002 65
2008	1,645,416	265,240	239,844	328,396	833,480	811,936 49
2009	1,450,582	305,984	280,253	282,844	869,081	581,501 40
2010	1,587,866	349,579	284,036	240,691	874,306	713,560 45
2011	1,759,403	350,911	253,511	184,690	789,112	970,291 55
2012	1,895,478	357,479	284,367	223,784	865,630	1,029,848 54
2013	1,924,450	385,795	286,622	205,367	877,784	1,046,666 54
2014	2,086,115	397,216	336,467	188,652	922,276	1,163,840 56
2015	2,126,684	417,714	387,225	198,140	983,090	1,143,594 54

The figures in Table 1 illustrate the increasing demand for higher education in Turkey, while the number of registered students is quite below these demands (Figure 6). The total number of universities in Turkey has increased from 98 to 193 in the last seven years and university quotas have also increased significantly (YÖK, 2016). These developments provided a higher total number of undergraduate and associate degree placements, as noted in Figure 7. A comparison of the intake to Open Education in Figure 7 shows that it responds partly in tandem with the increased demand for university places, and partly in an inverse relationship to the growing supply of places in undergraduate and associate degree programs.

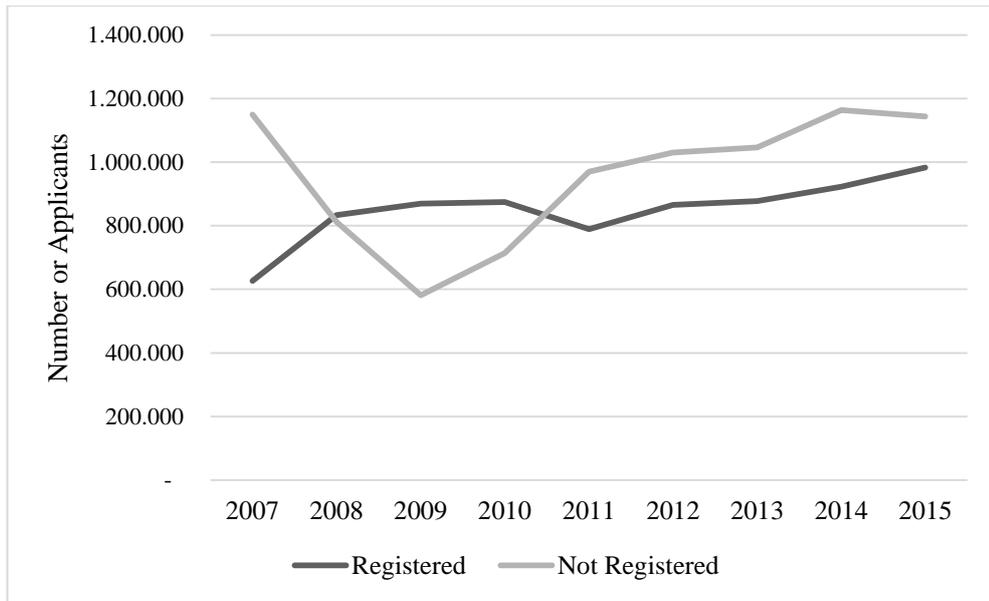


Figure 6. The number of students registered and not registered for higher education in Turkey (2007-2015)

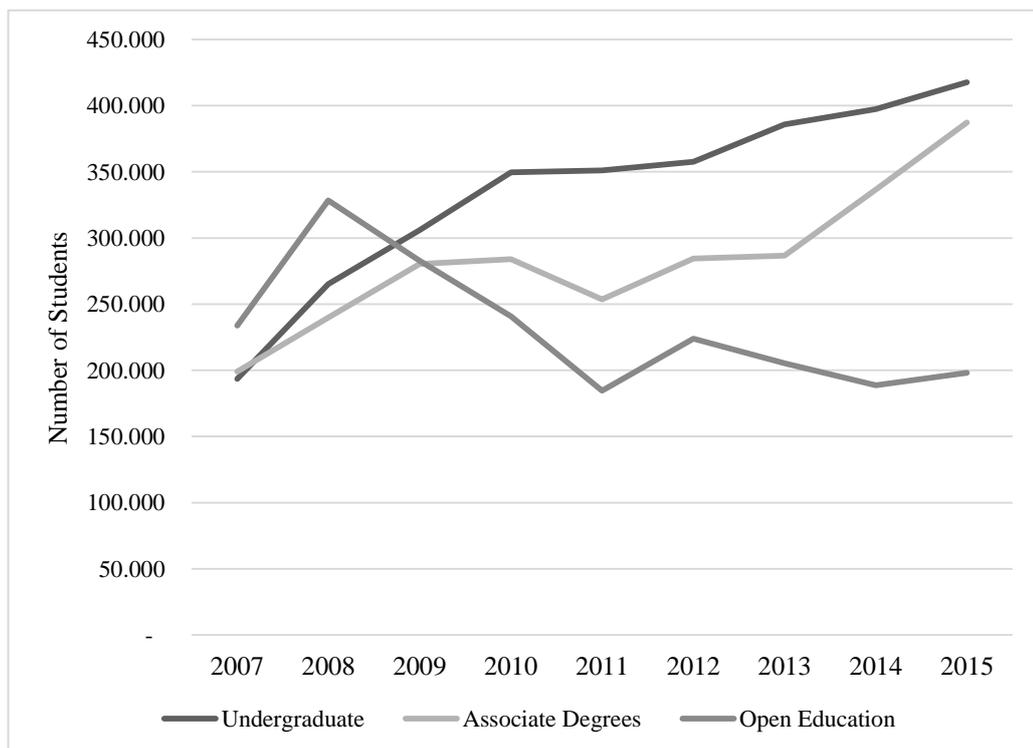


Figure 7. Registration numbers at the higher education institutions in Turkey (2007-2015)

The Tenth Development Plan of Turkey (2014-2018) emphasizes the need for new technological developments to enable access to knowledge from everywhere and at any time and to transform the settled models and approaches of educational activities. It is stated that, in the future, ICT and global cultural interaction will

increase the multi-dimensional influences in educational activities. It also indicates that the education system did not take into consideration the labor market's needs to increase employment. Unemployment was decreased only minimally (TR. Ministry of Development, 2013).

In the Vision 2023 report, the Scientific and Technological Research Council of Turkey (TUBITAK) points out that developments in information and communication technologies (ICT) will make it possible to move learning outside the traditional classroom walls. Knowledge is accessible from everywhere and traditional schools can utilize this as a method of teaching as well. The development of a technological infrastructure for DE, promotion of life-long learning and short term certificate programs are the major requirements for complying with a more flexible education structure in the global world (TUBITAK, 2005).

To return to the issue in the world, tightened higher education budgets and recent economic crises had caused financial difficulties. As a result, many developing countries were shifting their education costs to the tuition fees of universities. In many of these countries, DE was seen as a potential opportunity to overcome the capacity problems of higher education institutions.

As another dimension of the increasing distance education demands, lifelong learning must be considered. According to Field (2006), in the 1990s lifelong learning became a worldwide trend with developments in ICTs, which supported learning activities. ICT adoption in industry and services became a new agenda for lifelong learning. In the Information Society Forum (1996, 2) of the European Commission, the developments mentioned above are emphasised and it is stated that

“The pace of change is becoming so fast that people can only adapt if the information society becomes the lifelong learning society”. The European Year of Lifelong Learning was launched by the European Commission in 1996. In the published White Paper, “building up the learning society of Europe as quickly as possible” was an objective and it was emphasized that “All too often education and training systems map out career paths on a once-and-for-all basis. There is too much inflexibility, too much compartmentalisation of education and training systems and not enough bridges, or enough possibilities to let in new patterns of lifelong learning.” Educationists as well as governments have confirmed MOOCs as an important new DE phenomenon which can provide solutions for these problems. MOOCs have also been the subject of discussions and were referred to as ‘disruptive innovation, campus tsunami, MOOCmania and MOOCstars’.

The increasing interest of developed and developing countries in DE and Turkey’s national goals to use ICT in education to provide flexible education triggered the subject of this thesis. This study aims to be a guide for universities which are eager to adapt to the newest DE phenomenon, MOOCs. Although DE is a worldwide trend, there is limited literature on the infrastructure of MOOCs since most MOOC literature is focused on pedagogical issues. Thus, there is an immediate need for a complete guide towards understanding the components of MOOCs.

This thesis determines the salient components of the new DE phenomenon, MOOCs, as they have been revealed in scholarly publications. Since no existing research extracts all the components of MOOCs appearing in scholarly publications, this thesis will be a distinctive resource for understanding this new phenomenon while reflecting other scholars’ research.

Purpose

Considering the challenges of a continually growing worldwide demand for higher education and life-long learning and their related financial issues, the demand for DE as a solution, and particularly the MOOCs offered by prestigious universities, has increased. The main purpose of this study is to determine the salient components of MOOCs as revealed in scholarly publications. Therefore, this thesis could be effective as a guide for faculty, administrators and universities that want to employ MOOCs.

Research questions

This exploratory research will involve a content analysis of scholarly publications to unearth the salient components of MOOCs. With a wide perspective, all the components of MOOCs will be examined and summarized. This study will address the following questions:

Main question:

What are the salient components of MOOCs revealed in scholarly publications?

Sub-questions: What is/are

- the number of published journal articles on a yearly basis?
- the number of published journal articles per database provider?
- the number of published articles per journal?
- the number of published journal articles per author?
- the impact factors of the journals?

Significance

This study examines and summarizes the themes for the salient components of MOOCs as revealed in scholarly publications with a holistic view and brings a new conceptual framework through the findings. The study will be beneficial to the stakeholders of MOOCs. These stakeholders are determined by examining the scholarly publications during this study and described by referencing the publications. Academics (including the researchers, administrators and administrative personnel, learners) are the individual stakeholders of the MOOCs. In addition, institutions such as universities, private companies, platform providers, organizations, governments, publishers, libraries, innovation supporters and advertising channels are also the stakeholders of MOOCs. All these individuals and institutions have different duties and responsibilities regarding MOOCs. They can focus on their own contexts to gain their own MOOC experiences and collect further information. The stakeholders who want to benefit from this study are guided in the *implications for practices* section of this study in Chapter 5.

CHAPTER 2: REVIEW OF RELATED LITERATURE

Introduction

Education is seen as the uppermost component of social development. Throughout the history of humanity, developments in education have progressed at different paces. The demand for education, coinciding with social development, has increased over time. DE provides an opportunity to meet this demand. In this section, the developments in the DE area will be examined.

Definitions of Distance Education

During the historical development of DE, various definitions have been created by numerous sources, each trying to enhance the definition to embrace the evolving and expanding nature of DE. In Peters' *First Theoretical Analysis of Distance Education*, it was defined as an opportunity to educate a great number of students at the same time and as a form of industrial era teaching and learning. Peters emphasized the distinction between class-based education and DE in his definition (Peters & Keegan, 1994).

Most of the definitions of DE focused on how teachers and students communicate with each other. DE can be defined as a formal way to learn when teachers and students are physically apart from each other (Verduin & Clark, 1994). Some definitions have gained wide acceptance. Today perhaps the best definitions of DE are the following.

DE 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, 2005, p.2).

Institution-based formal education is where the learning group is separated and interactive telecommunications systems are used to connect learners, resources, and instructors. (Schlosser & Simonson 2009, p.1).

Şahin and Tekdal (2005) state that DE is not independent from the communication technologies used in a certain period. Therefore, DE could be an umbrella term for the following sub types; corresponding education, radio and television broadcast education and education through the internet.

Historical Development of Distance Education

Although correspondence education is identified as its first form, DE's origins can be dated back to the invention of the printing press (Dean, 1994). İşman also defines the period as commencing before correspondence education. He examines the historical development of DE in 5 periods: before correspondence education, correspondence intensive education, one-way and two-way TV and radio broadcasts and modern technologies using satellites (2011). This thesis will use the same groupings for a better understanding of the historical developments and will add open educational resources period and Massive Open Online Courses periods.

Before correspondence education period

One of the oldest examples of DE can be seen in the early Christian church. St. Paul had a dispersed community and time and distance made it difficult for his speeches to access the whole community. He would write a letter to individual church groups, each copy being hand-written. Then, local church elders read the letter to their community. Since, many people were not literate in that time, they were unable to

read the letters at home by themselves. Therefore, this method was an example of a new approach in education (Daniel, 1995).

Another old practice was seen in an advertisement published in the Boston Gazette in 1728 for Caleb Philips' shorthand course, possibly based on correspondence teaching (Holmberg, 1982). This was 288 years ago. Simonson, et al. (2014), in their book Foundations of Distance Education, stated that DE is at least 160 years old.

However, most of the research about DE history starts with the example of an advertisement given in a Swedish newspaper (Lunds Weckeblad) in 1833. It was for "composition through the medium of post" (Simonson, et al., 2014) 180 years ago.

Another important DE practice was seen in England at London University in 1836 when an external exam was added to provide extra credit for the students' education (İşman, 2011).

Correspondence education period

In 1840, the Englishman Isaac Pitman started to deliver DE courses via correspondence using a new postal system called the Penny Post (Simonson et al., 2014). Pitman sent his instructions by postcards. Following these successful practices, the Phonographic Correspondence Society was established to deliver courses on a more formal basis (Moore & Kearsley 2005). In 1856, Germany's pioneers, Charles Toussaint and Gustav Langenscheidt, delivered language courses via correspondence. The first DE degree was offered by the University of London (later known as University College London), which established an external program in 1858 (Bergmann, 2001).

The first women-to-women teaching network by mail was established by Anna Eliot Ticknor in 1873. This was a society to provide study at home in Boston. More than 10,000 students followed a curriculum mailed on a monthly basis for 24 years (Bergmann, 2001).

Many of the better known DE providing colleges were also started between 1880 and 1890, such as Illinois University at Wesleyan (1877), Skerry's College in Edinburgh (1878) and Correspondence College in London (1887) (Simonson, et al., 2014).

In the United States (US), from 1883 to 1891, academic degrees were first granted to DE students and these were approved officially by the state of New York through the Chautauqua College of Liberal Arts. The largest correspondence DE system in the US was established by the University of Chicago at the end of the 1800s. Each year, 125 instructors delivered 350 courses to 3,000 students. Then, William Rainey Harper established an alternative correspondence DE system at Columbia University, with the result that many education systems underwent restructuring (McIsaac & Gunawardena, 1996).

The first private DE school in Sweden was established by H. S. Hermod in 1890 to teach English and commerce. A demand explosion for compulsory education occurred between 1940 and 1950 in Malmö. Public schools were not able to satisfy this demand. Hermod's DE school gained importance by providing equal access to education (Dahllöf, 1988). In 1898, Hermod's private DE school was the world's largest and most influential DE organization for teaching English by correspondence.

In 1891 in the US, a daily newspaper called the Mining Herald (published in eastern Pennsylvania) offered a correspondence course in mining and the prevention of accidents as taught by Thomas J. Foster, editor of the newspaper. His course was later transformed into a commercial school (International Correspondence Schools). The number of students was 225,000 in 1900 and exceeded 2 million over 20 years (Simonson, et al., 2014).

The largest for-profit school was founded in 1888 for immigrant coal miners in Scranton, Pennsylvania. At first 2,500 students were enrolled in 1894, and then 72,000 new students were enrolled in 1895. In 1906, the total number of enrollments was 900,000 (Clark, 1906).

Religious education also benefited from correspondence education quite significantly. The Moody Bible Institute, founded by D.L. Moody in 1886, established a correspondence department in 1901. This institute continues to have one million enrolments worldwide. In the 1920s, DE began to be used to aid high school education. Some vocational courses were offered by Bento Harbor and Michigan. Then, in 1923 the University of Nebraska offered correspondence courses for high school students. In France, Centre National d'Eseignement par Correspondences was established by the Ministry of Education as a correspondence college prior to the Second World War (Schlosser & Simonson, 2009).

One-way and two-way radio and television period

In the United States, the DE medium was constantly evolving as result of technological developments. At least 176 radio stations were established as educational institutions in the 1920s but most of them had disappeared within 10

years. In the 1930s, experimental television programs were prepared at the University of Iowa, Purdue University and Kansas State College to offer course credits via broadcast television. Western Reserve University was the first to offer continuous courses as early as 1951. A well-known serial Sunrise Semester was offered by New York University on CBS from 1957 to 1982 (Simonson, et al., 2014).

The examples mentioned above were one-way applications. During this period, instead of printed material, courses were delivered via audio and video broadcasting. Then the two-way period started. Transmitters and receivers made it possible to interact between teachers and students even though they were often at great distances from each other. Television and radio broadcast applications are still being used worldwide today (Demiray & Adıyaman, 2002).

Modern technologies period

Satellite technology was developed in the 1960s but did not become a cost-effective technology until the 1980s (Simonson, et al., 2014). It created a new medium for transmitting information. A satellite is a space-based radio receiver and transmitter designed to carry information using electromagnetic waves without fiber optic wires. The integration of computers and telecommunication technologies accelerated the communication between teachers and students for teaching and learning. Today's satellite technology is a flexible and cost-effective solution for networks. Global and multipoint communications are possible with satellites for wide area network communication, internet trunking and television broadcasting. Satellites also play an important role in DE (Intelsat, 2013).

DE opportunities grew rapidly due to developments in satellite and computer technologies and in the Internet. Since the mid-1980s, courses have been offered through computer networks. Consequently, traditional DE approaches have changed. They started to involve computer conferencing, which provided opportunities for interaction and collaboration in education. In this respect, The British Open University, Fern Universität of Germany and the University of Twente in The Netherlands were the frontiers in Europe. The American Open University, Nova Southeastern University and the University of Phoenix were early leaders of DE in the United States and they still offer many online courses. (Simonson, et al., 2014).

In the 1980s, computer based DE systems started in US and Japan as well. For instance, the students in Hawaii and Massachusetts organized a computer conference and a guest speaker came to the classes virtually (Moore, 1989). In addition, the Technical Education Research Center in Massachusetts organized DE courses in 1989 and 1990 in cooperation with the National Geographic Society. In Canada and US, 600 schools took these courses. In all these programs, classrooms were linked to a remote campus to provide closed-circuit video access for students in many universities. (McConagy, 1991).

Open educational resources period

Computer based DE has spread throughout the world. In many institutions which offer distance education courses, course management systems were developed specifically for use in such courses. Some examples are CyberProf, Mallard, Virtual Classroom Interface, QuestWriter, WebCT and Blackboard (Simonson, et al., 2014).

With the help of the World Wide Web launched in 1992, many information resources became readily available. In 2002, the Education Program of the Hewlett Foundation introduced a strategic plan, *Using Information Technology to Increase Access to High-Quality Educational Content*. The aim of this program was to provide global access to quality academic content. This approach is known as the Open Content Initiative or the Open Educational Resources (OER) initiative. The Hewlett Foundation invested about \$68 million on this project between 2002 and 2007. According to the estimates, \$43 million was spent for the creation and dissemination of open content. Another \$25 million was spent for reducing barriers, promoting understanding and/or stimulating use. In total, \$12 million was spent by non-U.S. institutions in Europe, Africa, and China for capacity building, translation and/or the simulation of established institutions such as the Open University in the United Kingdom and Netherlands (Atkins, Brown, & Hammond, 2007).

The Open Learning Initiative fronted by the MIT OpenCourseWare Project helped to develop introductory courses aiming to replace large lecture format courses in economics, statistics, causal reasoning and logic. This project gained success by integrating high-quality open educational resources. In addition, the website of the Utah State Open Learning Support served as a place where individuals could connect to share, ask, answer, collaborate, teach and learn. These developments inspired some developing countries to adopt an open course in applied water management and irrigation which had been initiated by Utah State. Carnegie Mellon's Open Learning Initiative focused on instructional design grounded in cognitive theory, formative assessment and constant course improvement (Atkins, Brown, & Hammond, 2007).

Other examples include the spontaneous project developments at Khan Academy. When Salman Khan was working as a fund manager in 2004, he started to produce videos to teach mathematics to his cousin and uploaded them to YouTube. These videos became very popular and even today Khan Academy is a non-profit organization aiming to provide free world wide education. Collaborating with Khan Academy, the Ministry of National Education and the STFA group in Turkey translated more than 7,000 course videos and offered them in Turkish to the Turkish community at the <http://khanacademy.org.tr> website address.

Massive open online course period

Around the turn of the millennium, new developments were occurring in computer and communications technology. A few of these were faster processors, higher hard disk and memory capacities, rapidly declining component costs, the spread of borderless Internet and increasing accessibility by means of personal and portable communication devices. These developments, together with the accelerating growth in computer literacy, led to MOOCs as a new DE solutions using the web (Moore & Kearsley, 2005).

The OER movements mentioned above inspired the first MOOC. Dave Cormier (University of Prince Edward Island) first used the term MOOC in 2008 for the course called *Connectivism and Connective Knowledge* (Course code: CCK08). After a few weeks, Senior Research Fellow Bryan Alexander (National Institute for Technology in Liberal Education) used the same term, in his blog for the same course. In fact, George Siemens (Athabasca University) and Stephen Downes (National Research Council) are given credit for delivering the first MOOC, CCK08. In this course, there were only 25 tuition-paying students under

the Extended Education program at the University of Manitoba. At the same time, over 2,200 students followed this course online without paying tuition. Course content for online students was available via RSS feeds and included students' participation in the course through blog posts, Moodle discussions and second life meetings (Fini, 2009; García-Peñalvo & Seoane-Pardo, 2014; Mackness, et al., 2010; "Massive Open Online Course", 2014).

Over time, the popularity and usage of MOOCs has increased. Today many institutions in the higher education sector are offering MOOCs. These courses have two distinctive features: (1) they are designed to be offered to a large number of students, and (2) they have open access. With these features, MOOCs not only help students but also promote lifelong learning in society (Little, 2013).

Since MOOCs have become very popular, the very first of the three major platforms has been studied by a number of researchers to evaluate these courses. They observed that in these platforms, connectivist approaches were embraced in education by Udacity and Coursera, which are profit platforms. In contrast, the EdX company developed by MIT and Harvard University offered these courses as non-profit platforms. Stanford University professors Andrew Ng and Daphne Koller started EdX and Coursera and inspired others (Severance, 2012).

As stated by Rodriguez (2012), among the most important examples of MOOCs, the program started in 2011 at Stanford University must be mentioned. Two eminent computer scientists, Sebastian Thrun and Peter Norvig, offered an Artificial Intelligence course. Of the 160,000 students from 190 countries registered for this program, 20,000 successfully completed it. The instructors of this course established

a profit making Udacity. They delivered similar courses, including Python Programming and Building a Search Engine, which had 90,000 registered students. Similarly, two other MOOCs, called Machine Learning and Introduction to Database, had 104,000 and 92,000 registered students respectively and 13,000 and 7,000 of them completed the courses. These completion numbers are quite low, possibly due to the free registration without any obligation to continue.

To sum up, since 2000, MOOCs have been available at many prominent universities. As mentioned above, MIT was the pioneer university in MOOCs with its Open Courseware materials. With the help of this free OER movement, sharing specific information spread on the world wide web through Connections (cnx.org) and Khan Academy. These movements gained appreciation from students, foundations and society all around the world. Students shared electronic documents apart from the course book. Similarly, book publishers started to share their online book versions. Although there were some free learning platforms on the web like MIT's open courseware and closed learning management systems (LMS) like Moodle and Blackboard, MOOC integrated all these platforms to promote learner collaboration among users all around the world (See Figure 8) (E. Çataloğlu, personal communication, 2013).

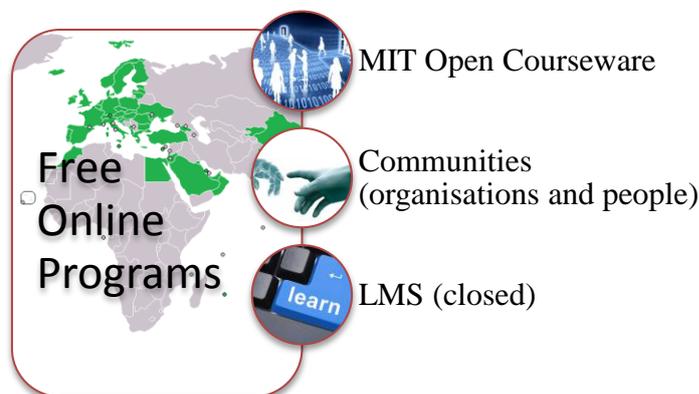


Figure 8. Other Free Learning Platforms before the MOOCs.

Development of distance education in Turkey

Mustafa Kemal Atatürk invited John Dewey to Turkey in 1924. Dewey was an American educationist and an eminent defender of pragmatism. He propounded the view of “learning by doing” and believed that schools should teach real life information. Dewey reviewed schools in the young Turkish Republic and prepared two reports for the future of the Turkish education system. One of the suggestions he made was that DE would be an alternative for teaching the teachers (Cevizci, 2010).

The results of Dewey’s suggestions on DE were first seen in 1933. The first distance teaching courses were offered in rural areas by mail in 1933 and 1934. In 1949, the fourth National Council of Education supported the view that public education must be democratic. Accordingly, the Ministry of Education set up a unit for non-formal education. In 1952, educational radio broadcasts about Agriculture and Livestock started in İstanbul (İşman, 2011). In addition to these, the Research Institute of Banking and Commercial Law of Ankara University offered a correspondence-banking course with the cooperation of İş Bank between 1958 and 1959 (Duman & Williamson, 1996).

In 1960, the Ministry of Education Department of Statistics and Publications founded the Correspondence Course Center to teach technical aspects in vocational education (Özdil, 1986). Before 1966, this Center, as the head office, organized successful courses for formal and non-formal education. The courses offered by the center concerned hotel management, nutrition, typewriting, technical drawing, economic cooperatives, electrical training, exam preparation, primary school teaching and high school literature (Alkan, 1987).

In the 1970s, a pioneering distance education institute, the Eskişehir Economics and Commercial Sciences Academy offered closed circuit television courses (Demiray, İnceelli & Candemir, 2008). As early as the 1970s, the demand for higher education was increasing and formal higher education institutions were not able to meet this demand, so the Ministry of National Education set up the Correspondence Course Center for the organisation of correspondence courses for higher education. The Center was also responsible for increasing the number of teachers between 1974 and 1975. To that end, two, three and four-year teacher training programs were started by the Institute of Education, Commerce and Tourism Teachers College, Higher Technical Teachers College and Girls' Technical Teachers College. The students of these schools were to be accepted by the Ministry of National Education through the national examination. At the time, becoming a teacher was a last resort for high school graduates, since it was not as popular as other occupations. As a result, these programs did not find qualified students. In addition, political volatilities affected these programs in a negative way. All these caused the teachers' distance educational programs to be suspended. Consequently, the successful students in these programs were transferred to equivalent formal education institutions (Ozdil, 1986; Esme, 2001).

According to Ozdil (1986), in March 1974, the Educational Technology Strategies and Methods Committee was formed to develop a DE program to train teachers for secondary schools. However, the implementation of the program was abandoned by the Ministry of Education in September 1975. Due to an overwhelming number of educational problems, the DE programs were abandoned for political reasons. However, they were started again by other politicians under a different organisational structure, called the Common Council of Higher Education

(YAYKUR) in September 1975. During the 1975-1976 academic year, 85,000 students were registered to various programs but in the 1978-1979 academic year, many of these programs were closed and no new students were registered for the courses.

In the 1970s, YAYKUR applications and correspondence education in Turkey were considered alternatives to formal education. However, the desired level of success could not be achieved due to lack of infrastructural support, ambiguous government policies and political pressures (Demiray, İnceelli & Candemir, 2008). These unfavorable circumstances prevented the DE programs from solving educational problems and resulted in distrust among citizens in Turkey (Özer, 1989).

In November 1981, Anadolu University, already having a suitable infrastructure, was commissioned to implement DE based courses by Higher Education Law no 2547 and legislative decree no 41 (Demiray, 1997; Demiray, İnceelli & Candemir, 2008). As of 2013, Anadolu University, with 1,974,343 enrolled students, is among the mega-universities of the world. In fact, it ranks as the second largest after the Indra Gandhi National Open University in India with 3,500,000 enrollments (“List of largest universities by enrolment”, 2014).

In the 1982-1983 academic year, 29,479 students registered for the Economy and Business Administration programs of the Anadolu University Open Education Faculty. The programs consisted of printed materials, television courses and face-to-face academic advice involving educational tools to reach students, including media, video lecturing, computer assisted education, CDs, radio and newspapers (“List of largest universities by enrolment”, 2014).

In 1993, Open High School programs were started through the Ministry's National Education Film, Radio and Television Education Presidency (FRTEB) with 45,000 students. Between 2002-2003, 760,000 students were enrolled in these programs (Demiray & Adıyaman, 2002).

Following the Anadolu University initiative, Sakarya University, Firat University and Bilgi University started to provide DE. In addition to these universities, Middle East Technical University founded some centers to provide DE. One of these, the Continuing Education Centre (METU CEC) was founded in March 1991 to offer courses via internet ("Hakkımızda", 2016). In 1995, Open University started to offer computer assisted DE in various cities. In 1996, Bilkent University, in cooperation with New York University, established a video conference system. At the time, the National Academic Network (ULAK-NET) was formed to establish a network between universities. METU Internet Based Education-Asynchrone (IDE-A, İnternete Dayalı Eğitim-Asenkron) was founded in May 1998 to offer courses taught by the instructors of the Department of Computer Engineering. These courses are seen as a education project for dissemination of preemptive and beneficial knowledge. In these centers, exams and some parts of the programs were given face to face ("Bilgi Teknolojileri Sertifika Programı", 2016; "Nasıl İşler", 2016). In METU, the Informatics Institute offered an online graduate program ("Programs", 2016). In 2000, Bilgi University started to offer e-MBA programs. Some other universities (including Bilkent University, Boğaziçi University and Mersin University) made investments to establish DE programs (İşman 2011).

Currently in higher education, 23 four-year DE programs at nine universities and 130 two-year programs in 64 vocational schools at 36 universities accept students

according to the university entrance exam results. The four year programs were summarized using a ÖSYM leaflet and are listed in Table 2, and the two year programs are listed in Appendix A (ÖSYM, 2014).

The number of DE programs is on the rise in Turkey. Developments in ICT have induced most universities to offer DE courses for formal education. Universities have to apply to the Higher Education Council (YÖK) to open distance education centers, distance education programs and open education faculties. However, there are no evaluation or accreditation procedures for the applicants, who are approved by the Distance Education Committee set up by YÖK (Özarslan & Ozan, 2014).

Table 2
Four year distance education programs in Turkey
 Name of the University and Department

Hoca Ahmet Yesevi University
Computer Engineering
Industrial Engineering
Istanbul University
Labour Economics and Industrial Relations
Journalism
Public Relations and Advertising
Economics
Public Administration
Finance
Radio, TV and Cinema
Sakarya University
Human Resources Management
Economics
Political Science and Public Administration
International Relations
Finance
Inönü University (Malatya)
Public Relations and Advertising
Political Science and Public Administration

Table 2 (cont'd)
Four year distance education programs in Turkey

Name of the University and Department
Maltepe University (Istanbul)
Management
Public Relations and Advertising
Namık Kemal University (Tekirdag)
Economics
Management
Celal Bayar University (Manisa)
Management
Beykent University
Management
Dicle University (Diyarbakır)
Management

Al and Madran (2004), referring to the information published on the YÖK web site, listed the private institutions in Turkey providing web-based distance education programs Table 3. The same source stated that only five universities out of 79 comply with the standards of web-based distance education. These universities and their programs are listed in Table 4.

Table 3
Private institutions in Turkey with web-based distance education programs

Institution	Program	URL
IDEA e-Learning Solutions	Microsoft Education	http://www.ideaegitim.com
Instructors' web site	Technology Education	http://www.ogretmenlersitesi.com
Enocta	Vocaitonal Training	http://www.meslekegitimleri.com/
Netron	E-LearnCampus	http://www.netron.com.tr

Table 4
Universities in Turkey with web-based distance education programs

University	Program	URL
Ahmet Yesevi University	Turtep	http://www.yesevi.net
Anadolu University	E-MBA	https://www.anadolu.edu.tr/en
Anadolu University	Information Management Associate Degree Program	http://ue.anadolu.edu.tr/
Anadolu University	Open Education Faculty	https://www.anadolu.edu.tr
Istanbul Technique University	UZEM	http://auzef.istanbul.edu.tr/
Middle East Technical University (METU)	Asynchronous Internet Education	http://idea.metu.edu.tr
METU	METU-Online	http://www.metu.edu.tr/online-education-programs
METU	Informatics Online – Master of Science Program	http://ii.metu.edu.tr/informatics-online-ms-program
Istanbul Bilgi University	E-MBA	http://www.bilgiemba.net

In 2012, the Anadolu University Open Education Faculty DE programs for teachers were closed following the decision of the Higher Education Council. Afterwards, these programs could not accept new students to the Pre-School Teacher, English Teacher and DE Teachers programs (“05.04.2012 Tarihli Yükseköğretim Genel Kurul Toplantısında Alınan Kararlar”, 2012).

Summary

As was pointed out in Chapter one, rapid growth of the young population is a major educational problem in developing countries. In order to satisfy the rising demand for educational programs, DE opportunities are considered to be an alternative method.

According to the literature regarding the history of DE, educational developments have followed technological developments throughout history. Particularly in the 1990s, developments in ICT provided very flexible teaching and learning opportunities. However, compared to the US and Europe, DE developments in Turkey were experienced 200 years later due to infrastructure and political issues.

To summarize, higher level managers of the Ministry of Education and some higher education institutions did not believe in correspondence education and did not support it. In addition, inadequate infrastructure, together with the unstable political system, prevented the development of DE in Turkey (Özdil, 1986).

Even though Turkey has the second largest open university in the world, the perception of citizens regarding this open university is not favorable. The demand for this open university is decreasing in Turkey, even though more than 50 per cent of the prospective students are not being placed in any higher education institution. Indeed, Turkey's open education system needs to be revised to attract the new generation and give them the necessary qualifications to gain employment with today's companies.

At the present time, teaching and learning through open educational resources has become a world wide trend known as the Open Courseware Movement. In Turkey, the Open Courseware Movement was led by the Turkish Academy of Sciences of (TÜBA, <http://www.acikders.org.tr/>), and supported by Middle East Technical University (ODTÜ) and Ankara University in an Open Education Consortium.

As mentioned above, due to technological developments, DE has benefited from an important phenomenon called MOOC, which has gained considerable attention in the education and business worlds since 2008. Recently the discussions on MOOC have polarized into two groups. While advocates of MOOC believe that it is an important alternative educational opportunity, others argue that it will disrupt the current higher educational system.

In light of these arguments, the purpose of this study is to review and understand the scientific literature concerning the MOOC approaches of academicians as published in scholarly journals so that the salient components of MOOC can be determined.

CHAPTER 3: METHOD

Introduction

This research is based on a qualitative paradigm. In this chapter, the research method used to conduct the study will be explained. The first section introduces the reader to the research design used. This section includes information regarding the research method used and a detailed explanation of content analysis and the thematic network analysis tool utilized in this research. In the second section, the rationale for the research design is explained. The third section concerns the sampling for the journal articles included in this research. The fourth section provides the theoretical framework for the data. The fifth section covers information on how the data were formatted for the analysis. The chapter ends with concluding remarks.

Research design

The aim of this research was to unearth the salient components of MOOCs as revealed in scholarly publications for the purpose of informing university stakeholders. As described in chapters one and two, there are many different approaches and applications of MOOCs in particular and distance learning on a large scale. Identifying the components of such a diverse concept like MOOC is not a straightforward process. In order to determine the salient components of MOOCs, first of all the content analysis research method was utilized.

Content analysis research method

As the name implies, content analysis is a systematic attempt at concept classification. Therefore, a qualitative research that aims to discover features of any communication

in the social sciences for studying the content of the phenomenon can make use of this research method. The content analysis research method has broad applications in the scientific community. Data sources for content analysis research are mainly written documents like articles published in research journals, books, reports, diaries and newspapers. However, other data sources could also be involved including videos, music, movies, radio broadcasts, photographs, formal or informal interviews and field notes. In short, all types of written and recorded documents can comprise the data sources for content analysis (Fraenkel & Wallen, 2009).

The content analysis research method can be used with qualitative or quantitative data in an inductive or deductive way. If the concepts are derived from the data, it is considered to be an inductive content analysis. If any researcher retests the existing data in a new context, it is called deductive content analysis (Fraenkel & Wallen, 2009).

Procedures of the content analysis research method

For the implementation of qualitative content analysis research, several approaches are available, but they are slightly different. In this research, Fraenkel and Wallen's (2009) approach was used. They define the procedure of the content analysis research method as the following nine steps (See Figure 9)

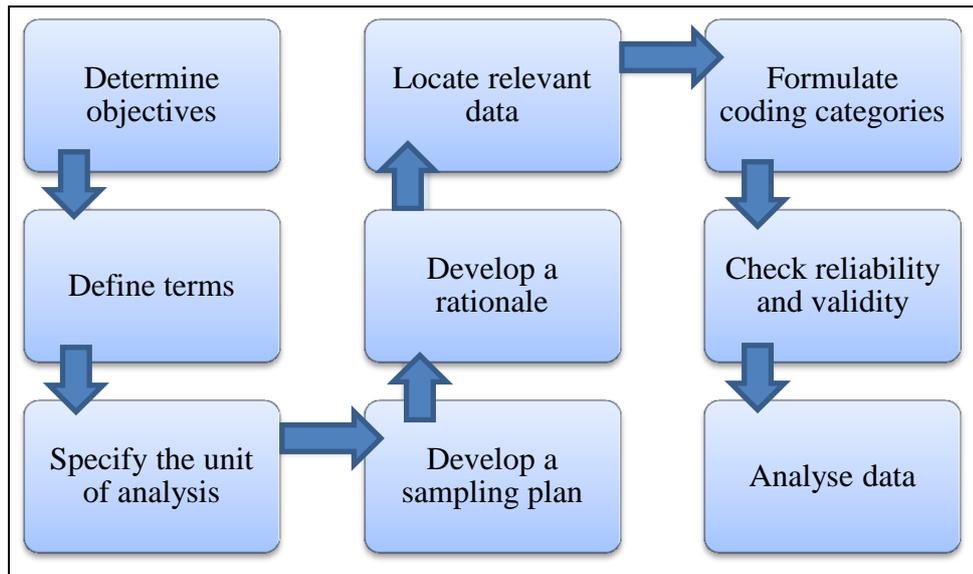


Figure 9. Process of content analysis research based on Fraenkel & Wallen (2009; p.474-479).

The following is an explanation for each step involved in Fraenkel & Wallen’s content analysis research method. The first step of this method is *Determining Objectives*. In their book (2009), Fraenkel and Wallen gave several reasons for using content analysis, two of which are “to obtain descriptive information about a topic” and “to formulate themes (i.e., major ideas) that help to organize and make sense out of large amounts of descriptive information” (p.474). The nature of these objectives complies with the frame of this research. In line with these objectives, this research aims to unearth the salient components of MOOCs as revealed in scholarly publications for the benefit of university stakeholders. The components will be defined as themes and the descriptions of these themes will be made according to the descriptive information found in the publications. More specifically, formulating the themes to find the salient components and then providing descriptive information about these components are the main objectives of this study.

The second step of content analysis entails *Defining Terms*. As this research method aims to indirectly examine human activities via an analysis of their communications data, important terms need to be consistently discovered and redefined throughout the research. In this research, terms are derived from the scholarly publications, which is an inductive approach. As this study is an exploration of the salient components of MOOCs, related themes are defined as the documents are being examined. This classification of the concepts is described in detail in Chapter 5: *Discussion*.

The third step of the content analysis is *Specifying the Unit of Analysis*. For this study, the unit of analysis is words and phrases concerning MOOC which have been derived from sentences in scholarly publications. The fourth step is *Locating Relevant Data*. In this study, peer reviewed journal articles in scholarly publications are the main data sources.

The fifth step is *Developing a Rationale*. In this stage, the researchers are required to explain the conceptual link between the data and the objectives of the research (Fraenkel & Wallen, 2009). Since this step is extremely important for the trustworthiness of the study, the rationale for this particular study is explained in detail in the section entitled *Rationale*.

The sixth step of the content analysis research method concerns *Developing a Sampling Plan*. This involves the establishment of a systematic procedure for the selection of the sample. The detailed sampling procedure for this study is explained in the *Sampling* section.

The seventh step involves the *Formulation of Coding Categories*. Mayring (2000), underlining the importance of categories, states that “Categories is in the center of analysis. The aspects of text interpretation, following the research questions, are put into categories, which were carefully formed and revised within the process of analysis (feedback loops)” (p.2). The detailed procedure for the coding categories for the study is explained in Chapter 4: *Results*.

The eighth step of the content analysis involves *Checking Reliability and Validity*. As Morse et al. (2008) state, validity and reliability have been vitally important qualities for qualitative research since the 1980s. The validity and reliability for this study are explained in the section entitled *Trustworthiness: Validity and reliability*. The final step of the process is *Analysing Data*. The data for this study is analyzed in detail in Chapter 4: *Results*.

Thematic network analytic tool

The content analysis research method is a rather subjective approach. In order to constitute the categories and themes of this study during the data analysis, a thematic network analytic tool was utilized. Thematic network analysis was suggested by Attride-Stirling (2001) as a research and presentation tool to identify the themes for the “analyzing data” procedure. As they stated, “Thematic analyses seek to unearth the themes salient in a text at different levels, and thematic networks aim to facilitate the structuring and depiction of these themes” (p.387). According to Attride-Stirling, three themes are used to analyze thematic networks (Table 5).

Table 5
The themes of a thematic network as described in Attride-Stirling (2001)

Type of Theme	Description
Global Themes:	The principle metaphore containing the whole text within the context.
Organizing Themes:	Groups of distinctive terms to summarize more abstract categories
Basic Themes:	Distinctive terms

When these themes are sorted from the lowest to the highest level, the *basic theme* is located at the lowest level. Basic themes define distinctive terms. The theme in the middle is referred to as the *organizing theme*, which groups distinctive themes to summarize more abstract categories. At the highest level, the global themes are those which comprise the largest scale to encircle the main concepts in the text. This theme in particular contains the principle metaphor encompassing the whole text within the context (Attride-Stirling, 2001). All these themes are shown in a web-like drawing to illustrate their relationships in Figure 10.

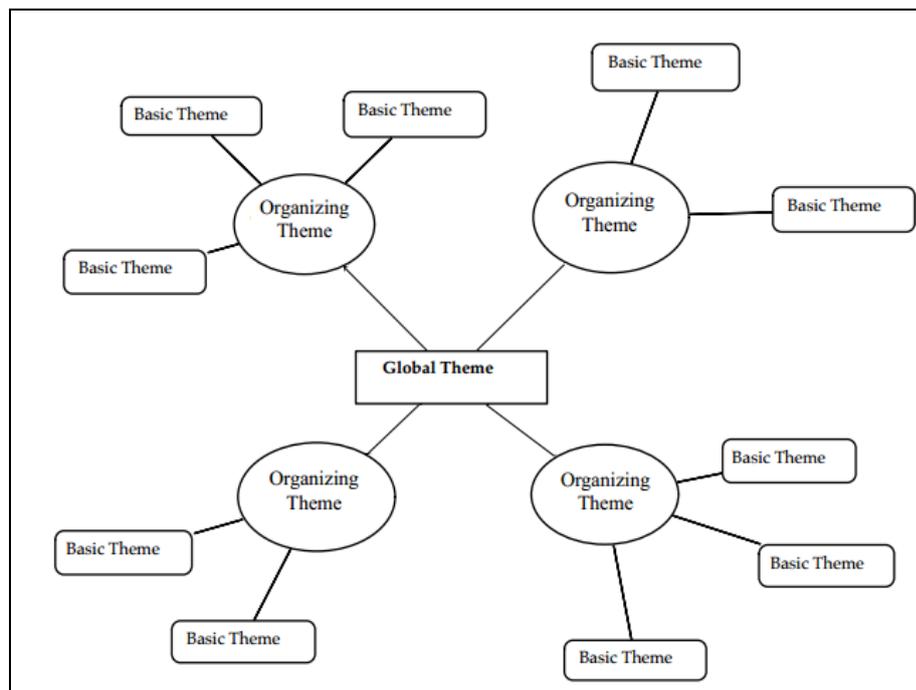


Figure 10. Structure of a thematic network (Attride-Stirling, 2001, p.391).

In the data analysis of this study, at the first level, each distinctive word or phrase identified in the context of the journal articles in the scholarly publications examined for this research was identified as one of the *basic themes*. At the second level, a group of distinctive terms which constitute more abstract categories were identified as *organizing themes*. At the third and final level, the principle metaphors within the context were determined as the *global themes*.

In order to identify thematic networks, Attride-Stirling (2001, p.391) suggest three analysis stages referred to as reduction or *breakdown of text*, *exploration of text* and *integration of exploration*. In Table 6, the detailed steps of such an analysis are provided.

Table 6
Steps in analyses employing thematic networks (Attride-Stirling, 2001, p.391)

ANALYSIS STAGES

ANALYSIS STAGE A: REDUCTION OR BREAKDOWN OF TEXT

Step 1. Code Material

- (a) Devise a coding framework
- (b) Dissect texts into segments using the coding framework

Step 2. Identify Themes

- (a) Abstract themes from coded text segments
- (b) Refine themes

Step 3. Construct Thematic Networks

- (a) Arrange themes
- (b) Select Basic Themes
- (c) Rearrange into Organizing Themes
- (d) Deduce Global Theme(s)
- (e) Illustrate as thematic network(s)
- (f) Verify and refine the network(s)

ANALYSIS STAGE B: EXPLORATION OF TEXT

Step 4. Describe and Explore Thematic Networks

- (a) Describe the network

Table 6 (cont'd)

Steps in analyses employing thematic networks (Attride-Stirling, 2001, p.391)

ANALYSIS STAGES

(b) Explore the network

Step 5. Summarize Thematic Networks

ANALYSIS STAGE C: INTEGRATION OF EXPLORATION

Step 6. Interpret Patterns

As an example, during the analysis of the documents, the discovered themes were listed (Figure 11) and then these themes organised into the basic, organizing and the global themes as shown in Table 7.

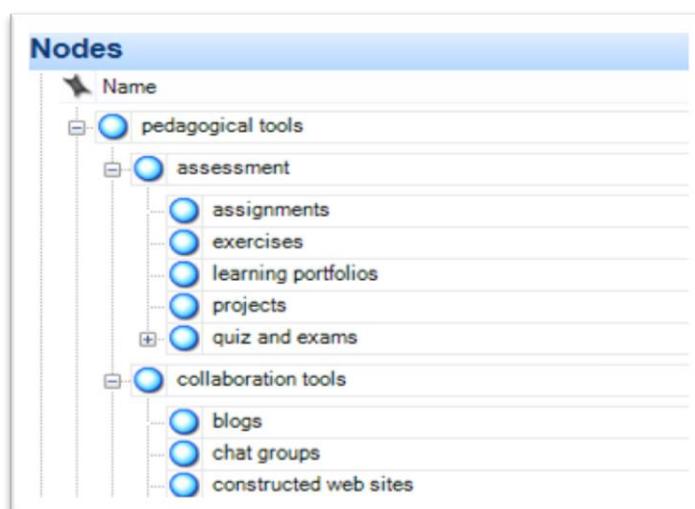


Figure 11. From codes to themes

Table 7

From basic to organizing to global themes

Global Theme	Organizing Themes	Basic Themes
COLLABORATION STRUCTURE	Technical Tools	Hardware
		Software
	Practices	Assessment
		Design

Rationale

This study is intended to investigate the salient components of MOOCs as revealed in scholarly publications in the hope that the findings will help university stakeholders' design of their own MOOC programs. In order to achieve the objectives of this research, the content analysis research method was considered appropriate since it can be used to systematically describe various meanings appearing in these publications.

In order to benefit university stakeholders, scientific journal articles were selected. Only peer reviewed scholarly publications were analyzed as the main data sources for exploring the salient components of MOOCs. Although there are many written documents and recorded visual resources related to MOOCs, they would not qualify because they do not meet the scientific requirements.

Since content analysis research is a rather subjective approach, the thematic network tool was used in order to organize the data in this study as had been suggested by Attride-Stirling (2001). Therefore, the thematic network analysis tool accompanies the content analysis research method in this study.

Sampling

In this research, *stratified sampling* was used. To constitute the sampling, scholarly publications were accessed via the online databases of networked libraries. After some trial searches, the appropriate criteria was decided on. These trial searches and the final online database search criteria are detailed in the *Data: procedures* section.

After writing the search criteria for the online databases, the total number of hits retrieved were considered as the population. This result was requested in MS Excel file format from the Bilkent Library so that various aspects of the retrieved data could be examined. In this file, all the attributes of each record constituting the results were expected to be found in one row. However, each of the records provided by the library had been distributed in many rows with their various attributes. The arrangement of this file was not suitable for examination directly. For that reason, the file was reorganized so that each of the records showing all the attributes of an article could be seen in one row. To do this, each attribute for an article was moved to different columns of the same row. After finishing this process for each of the articles, it became possible to examine them using the attributes distributed in the columns. Finally redundant articles were eliminated from the results as explained in the *Data: Theoretical Framework* section. In total, 303 academic journal articles constituted the population of this study. Before deciding how these journals would be used to make up the sampling, various aspects of the articles were examined using MS Excel 2013 as will be explained in Chapter 4: *Results*.

In order to constitute the sampling for the study, it was first necessary to read the abstracts of all the journal articles in order to select the most suitable ones. As already explained above, the population consisted of 303 academic journal articles. After reading the abstracts of the first 30 academic journals articles, the contents of the selected articles were skimmed to determine whether the topic was relevant to the study. It was seen that selecting the articles based on a quick reading of their abstracts would result in the loss of some subjects. Although it was not pointed out in the abstract, some parts of the content could still be related to MOOC components. Accordingly, the whole population was lined up using impact factors for grouping.

Then, each group was used for the sampling as explained in the Data: *Framing the Data Nature* section.

Determining the sample size and method

In qualitative research, choosing the samples from ‘peer reviewed’ academic journal articles is the traditional way to determine the quality and impact of the articles. Even though there has been some discussion regarding this, many researchers use the impact factors as well to ensure the quality and impact of their research. (Cheek, Garnham, & Quan, 2006). However, the European Association of Science Editors (EASE) suggests using the impact factor to compare the entire journal not just a single article or researcher because impact factor indicates the importance of journals relative to each other (2016).

The impact factors of academic journals were used because they provided a way to stratify the peer reviewed journal articles of this study. Considering the time to be allocated and the feasibility of the total number of articles to be examined, it was decided to evaluate at least 25 per cent of the 303 articles using a stratified sampling method.

Following the decision to stratify the sampling, four different indexes were inspected and compared to find the most comprehensive one. First, the publication score list initiated by *TUBITAK ULAKBIM* (Turkey’s Academic Network and Information Center) was used (2014). This score list was developed by TUBITAK in 1993 for the promotion of scientific publications and uses the ISI impact factor and cited half-life of the publication. A sample page of the TUBITAK publication score list is given in Appendix D. TUBITAK journal scores matched 23% of the population of this study.

This result was not considered a satisfactory way to categorize the journals and was deemed a threat to the trustworthiness of the study.

The second index was bioxbio retrieved from <http://www.bioxbio.com/if>. Thirty per cent of the population was recognized by this index. The third index, citeFactor, found only eight per cent of the population. The fourth and last was Scopus, which was the most comprehensive index. Forty eight per cent of the journals were found in the Scopus index. The indexes used to constitute the stratified sampling can be seen and compared in Appendix E.

The most comprehensive index, Scopus, was used to arrange the academic journals. Then, using a sequential number for each journal in the list, the following chart was drawn up (Figure 12). In this chart, the impact factors are presented on the horizontal axis and the number of articles on the vertical axis. According to this, approximately 40 articles are listed in the 0 to 0.5 range. Around 30-35 articles are between 0.5 and 1.0. Around 30-35 articles have been listed for impact factor one and around 30 articles for the 1.0-3.5 range.

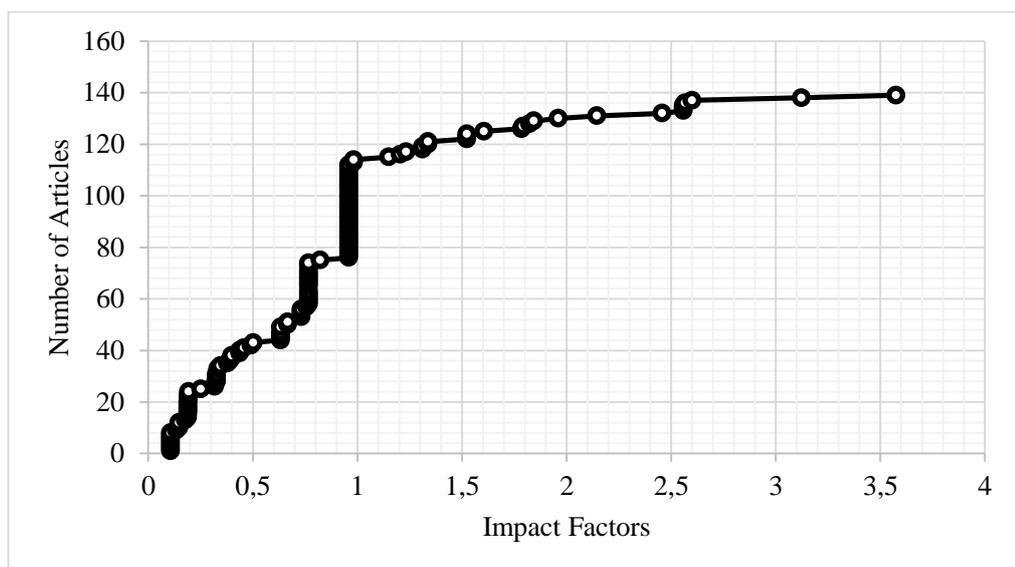


Figure 12. Impact factor distributions of the population to determine stratified sampling

According to the distribution of the impact factors and the number of articles displayed in the above chart, the population of this study was inspected in five groups. As can be seen in Table 8, there were 27 articles in group one (impact factors of 3.575 - 0.982). These were the articles with the highest impact factor and 81% of this group was included in the sampling (22 articles) of this study. In group two (an impact factor of 0.959), there were twenty nine articles and 52% of them were added to the sampling (15 articles). For group three (with impact factors between 0.822 and 0.502), out of 31 articles, 11 articles were included in the sampling. This was 35% of the population. In group four, there were forty two articles (having impact factors of 0.491 - 0.107), 26% of which were added to the sampling (11). In the last group of 174 articles, for which the impact factor was not applicable, none of the journals were matched with the Scopus index. Even though these journals were not recognized by Scopus, 14% of these articles were suitable for the sampling (24 articles).

Table 8
Determined sample size in each group

Groups and Impact Factors	All articles	Samples	Sample share in the whole group (%)
Group 1 3.575 - 0.982	27	22	81%
Group 2 0.959	29	15	52%
Group 3 0.822 - 0.502	31	11	35%
Group 4 0.491 - 0.107	42	11	26%
Group 5 #N/A	174	24	14%
Total number of articles	303	83	27%

Consequently, a total of 83 articles were selected out of 303 articles using the stratified sampling method. Twenty seven per cent of the population were included in the sample. Due to the nature of qualitative research, this should be sufficient to provide enough information for the replicability and trustworthiness of this study.

After the *trustworthiness: validity and reliability* section, the details of the decisions and the reasons are explained in next two sections; *Data: Procedures* and *Data: Application –framing the data nature*.

Trustworthiness: validity and reliability

As in quantitative research, validity and reliability are both crucially important in qualitative research, although the terminology, justification and reporting can take many distinct forms (E. Çataloğlu, personal communication, 2015). In order to justify validity and reliability in this study, well-known procedures were followed. *Truth-value, applicability, consistency* and *neutrality* were the four major measures utilized to provide rigor in this research. *Truth value* – internal validity or credibility involves testing the data with members of the relevant human data source groups, which may be referred to as “member checks”. In this process, the researcher aims to test the credibility of his or her findings and interpretations with the various sources (audiences or groups) from which the data were drawn. *Applicability* – external validity, generalizability or transferability refer to the degree of similarity between two contexts. Generalizations should be formed in such a way that they may be transferred from one context to another. *Consistency* – reliability or dependability means that the results obtained are both credible and appropriate. In order to ensure consistency, research instruments must produce stable results. *Neutrality* – objectivity or conformability is guaranteed by the methodology. If the methods are replicable and removed from the subjective judgments of researchers, neutrality is ensured. Since in social sciences cultural and personal biases can influence research results, neutrality must be ensured by screening out any possible biases of the researchers.

The measures listed above were suggested by Guba (1981) as a way to provide trustworthiness in qualitative research. In order to ensure trustworthiness, all these measures were taken into consideration in this study. Table 9 shows how these four measures were employed in order to ensure trustworthiness in this study.

Table 9
Trustworthiness in this study

Trustworthiness	Thesis
<i>1. Truth value</i>	<ul style="list-style-type: none"> • The data sources included scientific journal articles derived from the online databases of libraries in the network around the world. • The scientific journal articles included only peer reviewed academic journal articles. • In the selection of the journal articles, stratified sampling was utilized. • In the selection of the journal articles, the impact factors of the journals were taken into consideration for the stratified sampling procedure. • Impact factors were gathered from TUBITAK Journal Scores, CiteFactor, bioxbio.com and Scopus. • Since Scopus provided the most comprehensive index, it was utilized the most for this research. While 48% of the journals were found from Scopus, 30% of them were from bioxbio.com, 23.3% from TUBITAK and only 0.8% came from CiteFactor. • Triangulation was used regarding the data sources in this study. The scientific journals in the sample came from a number of different disciplines of education including law, business, medicine, pharmacology, library, business and higher education.

Table 9 (cont'd)
Trustworthiness in this study

Trustworthiness	Thesis
2. <i>Applicability</i>	<ul style="list-style-type: none"> • In order to ensure applicability, the sample size (number of journal articles) was made as large as possible. Therefore, 27% (83 of 333) of all the journal articles found through the various online databases were used. This represented more than one fourth of the population. • In order to facilitate replication of this study, all the journal articles in the population (See Appendix B) and the sample (See Appendix C) are provided in the appendices of this report. • The applicability of the research was ensured by following two processes to prepare the data for analysis. These will be explained in detail in the sections entitled <i>Data: Procedures</i> and <i>Data: Application – “the framing the data nature”</i>.
3. <i>Consistency</i>	<ul style="list-style-type: none"> • In order to ensure consistency, a group of researchers investigated the final themes identified when the content analysis was completed. Four different researchers came up with the same judgments in most of the cases. • After a discussion on the disagreements, the themes were finalized with one hundred per cent agreement. • To ensure consistency, NVIVO 10 was used since it allows the procedures to be repeated as many times as necessary to ensure that the researcher has confidence in the consistency of the findings. When required, encoded articles were recategorized at the end of this procedure. The soft copy of the data file prepared in NVIVO 10 is provided in a CD.

Table 9 (cont'd)
Trustworthiness in this study

Trustworthiness	Thesis
<i>4. Neutrality</i>	<ul style="list-style-type: none"> • The samples in this research were drawn from peer reviewed scientific journal articles. • A stratified sampling method was used and the journal articles were selected randomly. • Neutrality in this study was also ensured by the involvement of a group of researchers to prevent bias.

Research timeline

The following research timeline (Figure 13) summarizes this study in terms of 14 different tasks, which are listed in the first column. The other columns were used to display the months when each task was carried out. The columns were named using only one character to present the whole timeline in a page. The numbers from one to nine were used to represent the nine months from January to September. The letters following the numbers were used to represent the rest of the months; O for October, N for November and D for December. Each year consisting of 12 months is presented in the first row.

The time allocated for each task is marked with a thick black line throughout the period in the task row. The studies for the thesis started with the submission of a research interest letter. Then my thesis advisor was announced and we had our first meeting. Submission of the research interest and the meeting were marked in the timeline with the two bullets to represent the few hours over two days that indicate the official start of the study. The first column of the figure was used to list the tasks of the study. Non-adjacent lines in the same row were used to present revisions or

improvements in the task. For example, the research proposal for this study was started in October and finished in December 2013. A "Review of research proposal as thesis chapters" was held twice, in January 2014 and in January 2015, to update the thesis proposal.

After explaining how to read the timeline, it is necessary here to reiterate my reason for studying in the Graduate School of Education. As was mentioned at the beginning of the thesis, vertiginous developments in the information and communication technologies (ICT) are causing various changes in the field of education as in other fields. In recent years, there has been an increasing tendency among students towards socialization during lectures with the use of cell phones and computers while worldwide free courses and open sources facilitate teaching and learning. Therefore, starting from the first semester (between September and December 2012) my studies were based on students' and teachers' technology perceptions in order to conceptualize the thesis subject. At the end of the second semester, after the appointment of my thesis advisor (May, 2013), MOOCs as a new type of distance education gained my attention. As of September 2013, research questions and the research method had been identified. Then, the chosen qualitative research method, content analysis, was investigated and presented.

The last quarter of 2013 was spent preparing the research proposal consisting of three chapters: introduction, literature review and method. Then, the summary of these chapters was presented through a research proposal poster. The research proposal was revised in January 2014 and again in January 2015. Starting from the preliminary search, the other stages taking place in the research timeline are explained in detail in chapters three and four. After July 2015, the first draft of

chapter five was written. Following the finalization of chapter five, the whole thesis and the findings were discussed and further improvements were made between August 2015 and April 2016.

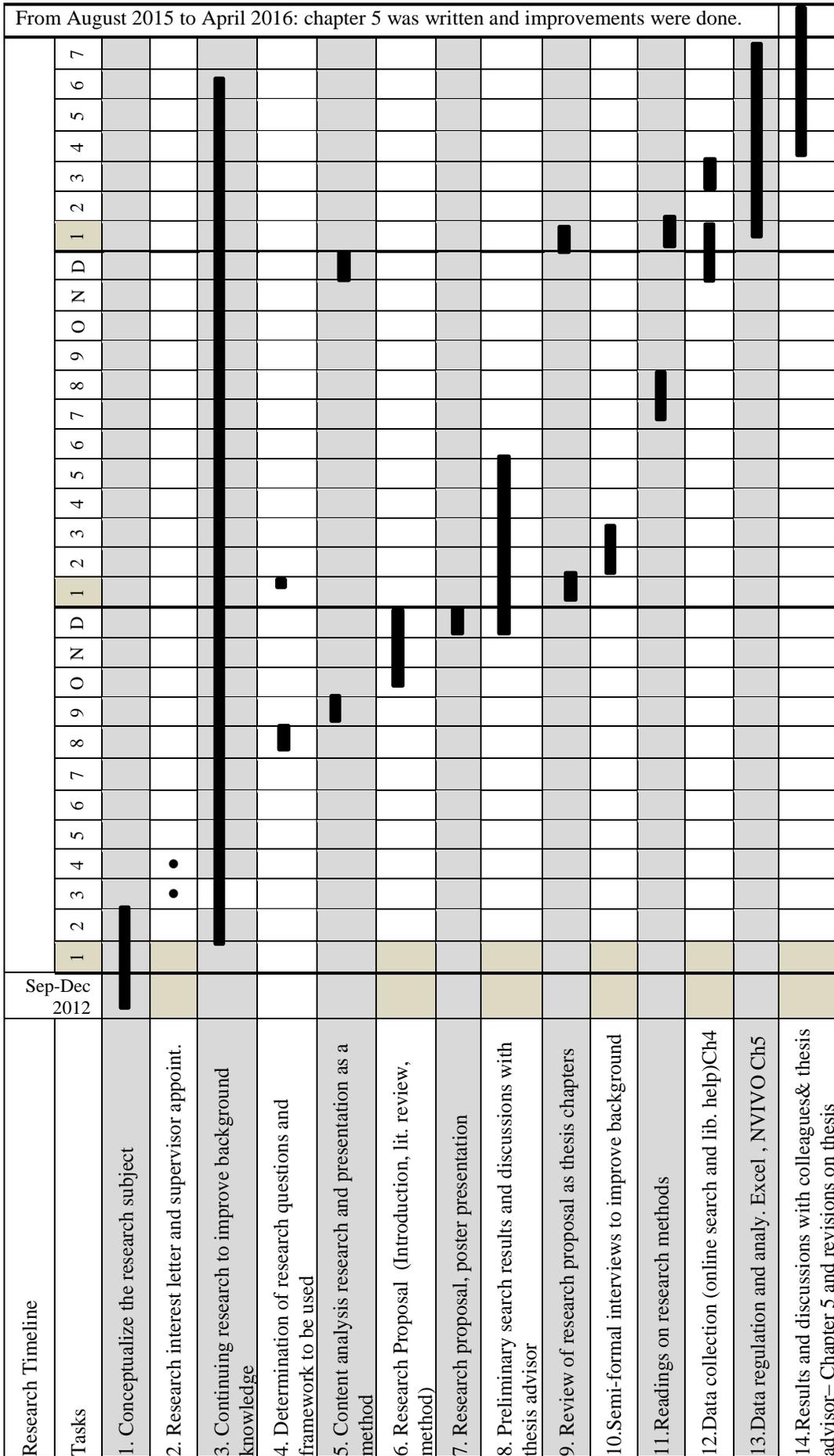


Figure 13. Research timeline

Data: Procedures

In this study, data were collected from scientific journal articles. As was explained in the above section, online databases were searched to unearth the salient components of MOOCs that appear in scholarly publications. Before starting the data collection for the study, academic journal articles were examined to constitute background knowledge of the area. In a qualitative research, familiarity with the subject supports researcher efficiency in a positive way while collecting the data. The data collection process started with trials, during which it was seen that dealing with too much data would be a struggle. The following section explains how the trial searches were conducted.

Preliminary online search

This study is an analysis of scientific journal articles. These articles were found via a computer search using online databases. As stated by Fraenkel and Wallen (1993), since online databases are linked in a computer retrieval system, a computer search enables access to almost all university and public libraries.

The preliminary online database search was made using a library's online database via Internet. Search results were achieved using some keywords and delimiters to optimize restrictions. In this study, before deciding on the final search keywords and delimiters, various results were taken through some trial searches. These trials and the results are summarized in Appendix F and Appendix G.

Various keywords provided by online databases can restrict the search results as needed. The *title* keyword limits the search for the terms to just the titles of the sources. *Subject terms* are considered just for the subject entries of the sources. *All*

text subject is used to find the searched terms in all parts of the sources. *Abstract* is used to find the searched terms in the sources' abstracts. Trial searches were also restricted to selecting *peer reviewed* sources to ensure that sources were all evaluated by peers to guarantee the quality of the search results. Without specifying any content provider, all the online database results were considered.

Finally using *MOOC and massive open online course* terms restricted the results considerably, especially with the *title* keyword. At the end of the trial online searches, it was decided that *MOOC* and *massive open online course* would be searched in the *title* and *abstracts* of the sources using *OR* between the these two terms instead of the much more restricting operator *AND*.

Selected search delimiters and descriptors

While performing a search on online databases, the delimiters and descriptors were used to determine the search results. In an online search, words are used to describe what is going to be searched and the words determine the number of references to be listed. If more than one word/phrase is to be searched, they are combined using the Boolean search operators 'or'/'and' (Fraenkel & Wallen, 1998).

As '*word descriptors*', "MOOC" or "Massive Open Online Course" were searched in the titles of the literature. Then, using 'or', the same words were searched in the abstracts of the literature (see Figure 14)

Figure 14. Online search and search operators.

Before using word descriptors, a ‘discipline’ delimiter was set to find ‘education’ related literature. To find more qualified literature ‘peer reviewed’ journals were searched. In addition to these, since the MOOC experience and name were first mentioned in 2008, the literature published between 2008 and 2015 was searched. Since no literature in 2008 included the MOOC keyword, the search dates actually ranged from 2009 to 2015. Furthermore, ‘fulltext’ and ‘all languages’ were used as other delimiters to download the existing literature published in languages other than English (see Figure 15).

When only “MOOC” was searched, more than 9554 articles were listed but limiting the descriptors to only the title or abstract resulted in 789 articles. These search results included some duplications. When exact duplicates were removed automatically from the results by the library software, the online search resulted in 333 journal articles. To be sure all sources were found in the search results, an e-mail was sent to the library through an e-mail to confirm the number of articles after the duplicates were removed. The number ‘333’ was confirmed as the exact number of search results after duplicates were removed (See Appendix H) for the confirmation e-mail). Nevertheless, due to the differences in data entries among the libraries, there were still some duplicates. The next section explains the organization of the data

before it could be analyzed. After all this, the population was reduced to 303 journal articles.

The image shows a search filter interface with the following sections and options:

- Boolean/Phrase:** TI (MOOC or Massive Open Online Course) OR AB MOOC OR AB Massiv...
- Expanders:** Apply related words
- Limiters:** Peer Reviewed ; Full Text ; Date Published: 20090101-20151231
- Disciplines:** Education
- Clear All
- Limit To** (dropdown menu)
- Available in Library Collection
- Catalog Only
- Peer Reviewed
- 2009 Publication Date 2015 (with scroll arrows)
- Show More Options set

Figure 15. Selected delimiters for the online database search.

Data: Application – “framing the data nature”

As was explained in the research method section of this chapter, the online search results were requested as a spreadsheet file. Then the results provided were immediately put in Microsoft Excel 2013 file format. The data analysis started at this stage. It was first necessary to analyse the sample data in various ways in Excel format to observe the distribution of the articles according to the journal, publication year, provider and author(s).

Duplicates and triplicates of data

After listing the sample data in the spreadsheet program as explained above, it was seen that even if the list was cleared of duplicate records, there were still many duplicates and even a few triplicates. Due to data input discrepancies, the databases had the same data in a slightly different way. For example, the two articles given below were rendered as different due to the quotation marks:

- Changing "Course": Reconceptualizing Educational Variables for Massive Open Online Courses
- Changing "Course": Reconceptualizing Educational Variables for Massive Open Online Courses

Here is an example of case sensitivity. In the second article name, “are” was entered as “Are” and thus rendered as a different title by the library program.

- When Will College Truly Leave the Building: If MOOCs are the Answer, What Is the Question?
- When Will College Truly Leave the Building: If MOOCs Are the Answer, What Is the Question?

The other examples of cleared duplicate records are explained in Appendix I.

Consequently, even if the online database search results were cleared of the duplicates automatically by online database program, as seen in the examples some duplicates and a few triplicates remained. Duplicate records were marked in the

online database search results (Figure 16) using the conditional formatting function of the spreadsheet program.

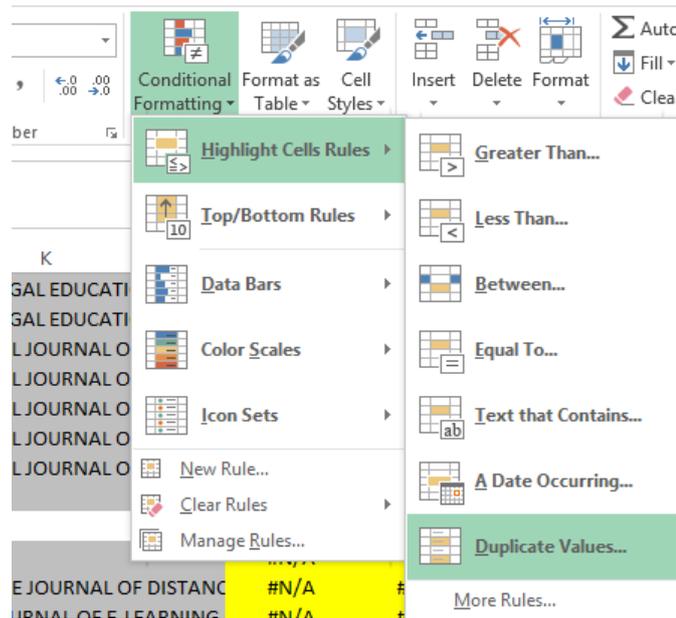


Figure 16. Finding duplicates using the spreadsheet's conditional formatting feature

After applying the conditional format, duplicate and triplicate records were painted a different color. Then it was easier to see the whole list without duplication. In total, 57 of the academic journal articles had been listed more than once. Only three of the academic journal articles were listed three times and a total of 24 academic journal articles were listed twice. Therefore, 24 articles from the duplicates and six articles from the triplicates were marked as extra and ignored during the analysis.

After removing these redundancies, the number of academic journal articles or population was reduced from 333 to 303. All of the academic journal articles are listed in Appendix J where the duplicates and triplicates are also marked. After clearing these from the list, the method and framework of the data analysis were explained in a detailed manner.

Summary

The goals of this chapter were to describe the research method of the study, explain the sample selection, determine the process used for data collection and provide explanations of the procedures used to analyze the data.

The research method in this study was designated as content analysis. The thematic network analytic tool was employed to define the themes. Since the aim of this study was to *unearth the salient components of MOOCs as revealed in scholarly publications*, the research sample was scientific journal articles. The validity and the reliability of the study were established according to Guba's (1981) four stages on the trustworthiness of a qualitative study.

In the next chapter, the results emerging from the data analysis are reported and various aspects are examined in order to unearth the salient components of MOOCs.

CHAPTER 4: RESULTS

Introduction

The purpose of this chapter is to inspect various aspects of the data in order to unearth and analyze the salient components of MOOCs emerging from the collected data. This chapter is organized into two sections. The first section (*The Results of Groupings Analysis*) was prepared to classify and summarize the analyzed data according to the five factors listed below:

- Number of published journal articles on a yearly basis
- Number of published journal articles per database provider
- Number of published articles per journal
- Number of published journal articles per author
- Impact factors of the journals

The second section explains *the implementations and the results obtained using the content analysis research method and the thematic network analytic tool* for the sample data in the following three main steps.

- Implementation of the content analysis research method
 - Latent content
 - Conceptual Confusion
 - Need for a qualitative research tool (NVIVO 10)
 - Results in NVIVO 10
 - Themes from the content analysis

- Implementation of thematic network analytic tool
 - Preparations prior to the thematic network analytic tool
 - Thematic network analytic tool
- Summary of the results of content analysis and thematic network analytic tool

Results of groupings analysis

As was explained in the introduction of the chapter, this section will classify and explain the analyzed data according to five factors. These are given in greater detail below.

Number of published journal articles on a yearly basis

The online database search results were gathered on December 6th 2014 and grouped to examine the number of scientific articles published annually. MOOC was a new term in 2009, and even in 2010. Among 303 articles, there was only one article for each year. The total number of articles was four in 2011 and 31 in 2012. It increased tremendously in 2013 and 2014 to 132 and 133 respectively. Figure 17 shows the trend of published articles by year.

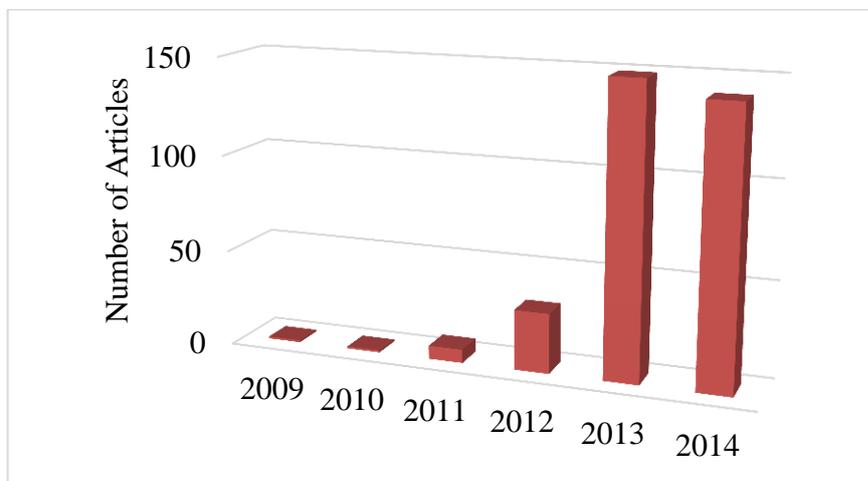


Figure 17. The number of published journal articles on a yearly basis

The number of articles increased by nearly 775 % between the years 2011 and 2012. With the promulgation of the "Year of MOOC" in the New York Times, the number of articles increased 426% between 2012 and 2013. The rate of increase was almost the same between 2013 and 2014.

Number of published journal articles per database provider

Database providers are the companies providing online databases such as ERIC, Scopus, Science Director and PsycINFO. To determine the number of articles about MOOCs shown by each provider, all of the academic journal articles were considered. If an article was given by two providers, both of them were listed. Consequently, to see the number of articles per provider, all 333 articles were inspected. The article entitled "A pedagogy of abundance or a pedagogy to support human beings? Participant support on massive open online courses" was provided by both Scopus[®] and the Directory of Open Access Journals. The status of most of the other articles was similar to this example, appearing in more than one database with the same (second article) or slightly different (first article; use of caps) titles. Afterwards, if any article appeared twice in the same provider, the redundant one was removed from the list. The two examples are listed in Table 10 below. Two of the triplicate articles (Education Research Complete) and one of the duplicate articles (Academic OneFile) were excluded from those providers' article counts.

Table 10
Duplicate and triplicate articles from same database marked in dotted frames

Providers	Articles
Scopus®	A pedagogy of abundance or a pedagogy to support human beings? Participant support on massive open online courses
Directory of Open Access Journals	A Pedagogy of Abundance or a Pedagogy to Support Human Beings? Participant Support on Massive Open Online Courses
General OneFile	American Council on Education Recommends 5 MOOCs for Credit
Academic OneFile	American Council on Education Recommends 5 MOOCs for Credit
Social Sciences Citation Index	Changing "Course": Reconceptualizing Educational Variables for Massive Open Online Courses
ERIC	Changing "Course": Reconceptualizing Educational Variables for Massive Open Online Courses
Education Research Complete	Editorial Overview.
Education Research Complete	Editorial Overview.
Education Research Complete	Editorial Overview.
Education Research Complete	Editorial: Spring 2013 issue.
Publisher Provided Full Text Searching File	Editorial: Spring 2013 issue.
Scopus®	Instructional quality of Massive Open Online Courses (MOOCs)
Education Research Complete	Instructional quality of Massive Open Online Courses (MOOCs).
ERIC	Learning in a Small, Task-Oriented, Connectivist MOOC: Pedagogical Issues and Implications for Higher Education
Directory of Open Access Journals	Learning in a Small, Task-Oriented, Connectivist MOOC: Pedagogical Issues and Implications for Higher Education
Social Sciences Citation Index	Learning online: massive open online courses (MOOCs), connectivism, and cultural psychology

Table 10 (cont'd)

Duplicate and triplicate articles from same database marked in dotted frames

Providers	Articles
Education Research Complete	Learning online: massive open online courses (MOOCs), connectivism, and cultural psychology.
ERIC	Mobile Knowledge, Karma Points and Digital Peers: The Tacit Epistemology and Linguistic Representation of MOOCs
Education Research Complete	Mobile Knowledge, Karma Points and Digital Peers: The Tacit Epistemology and Linguistic Representation of MOOCs.
Education Research Complete	MOCKING THE MOOCS.
Supplemental Index	MOCKING THE MOOCS.
MLA International Bibliography	MOOC Response about 'Listening to World Music'
Arts & Humanities Citation Index	MOOC Response about "Listening to World Music"
ERIC	MOOCs: A Systematic Study of the Published Literature 2008-2012
Directory of Open Access Journals	MOOCs: A Systematic Study of the Published Literature 2008-2012
Social Sciences Citation Index	MOOCs: An Opportunity for Innovation and Research
Project MUSE	MOOCs: An Opportunity for Innovation and Research
Scopus®	On the horizon: The year of the MOOCs
General OneFile	On the horizon: the year of the MOOCs
Scopus®	Peer assessment for massive open online courses (MOOCs)
Education Research Complete	Peer Assessment for Massive Open Online Courses (MOOCs).
ScienceDirect	Review: Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges

Table 10 (cont'd)

Duplicate and triplicate articles from same database marked in dotted frames

Providers	Articles
Academic OneFile	Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges
Education Research Complete	Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges.
ERIC	Roles and Student Identities in Online Large Course Forums: Implications for Practice
Education Research Complete	Roles and Student Identities in Online Large Course Forums: Implications for Practice.
Arts & Humanities Citation Index	Symposium on Massive Open Online Courses
ERIC	Symposium on Massive Open Online Courses
Education Research Complete	Symposium on Massive Open Online Courses.
Academic OneFile	Table of Contents
Academic OneFile	Table of Contents
Scopus®	The challenges to connectivist learning on open online networks: Learning experiences during a massive open online course
Directory of Open Access Journals	The Challenges to Connectivist Learning on Open Online Networks: Learning Experiences during a Massive Open Online Course
Social Sciences Citation Index	The Videoarticle: New Reporting Format in Scientific Journals and its Integration in MOOCs
Education Research Complete	The Videoarticle: New Reporting Format in Scientific Journals and its Integration in MOOCs.
ScienceDirect	Understanding the MOOCs continuance: The role of openness and reputation
Scopus®	Understanding the MOOCs continuance: The role of openness and reputation
Scopus®	Unpacking MOOC scholarly discourse: A review of nascent MOOC scholarship

Table 10 (cont'd)

Duplicate and triplicate articles from same database marked in dotted frames

Providers	Articles
Education Research Complete	Unpacking MOOC scholarly discourse: a review of nascent MOOC scholarship.
ERIC	Using mLearning and MOOCs to Understand Chaos, Emergence, and Complexity in Education
Directory of Open Access Journals	Using mLearning and MOOCs to Understand Chaos, Emergence, and Complexity in Education
Scopus®	Virtually unlimited classrooms: Pedagogical practices in massive open online courses
ScienceDirect	Virtually unlimited classrooms: Pedagogical practices in massive open online courses
Scopus®	Watching MOOCs together: investigating co-located MOOC study groups
Education Research Complete	Watching MOOCs together: investigating co-located MOOC study groups.
Education Research Complete	When Will College Truly Leave the Building: If MOOCs are the Answer, What Is the Question?
ERIC	When Will College Truly Leave the Building: If MOOCs Are the Answer, What Is the Question?

These were arranged in this way to ascertain the number of articles given by each database provider. Then, the articles were counted using the MS Excel count function and the following list was prepared (Table 11).

The Table 11 shows the number of articles according to the database providers.

Education Research Complete had 50% of the articles on MOOCs. It was followed by *General OneFile* and *ERIC*, with 10% and 9.4% respectively. *Scopus®*'s had 6.7% and *Academic OneFile*'s had 6.4%. The other database providers followed with 2%, 1% and 0.3%.

Table 11
Online search results of database providers

Database Provider	Number of articles	%
Education Research Complete	167	0.506
General OneFile	34	0.103
ERIC	31	0.094
Scopus®	22	0.067
Academic OneFile	21	0.064
Publisher Provided Full Text Searching File	8	0.024
Library, Information Science & Technology Abstracts	8	0.024
Directory of Open Access Journals	6	0.018
ScienceDirect	6	0.018
Social Sciences Citation Index	6	0.018
Supplemental Index	5	0.015
Academic Search Complete	4	0.012
Business Source Complete	3	0.009
Arts & Humanities Citation Index	3	0.009
Digital Access to Scholarship at Harvard (DASH)	1	0.003
Project MUSE	1	0.003
Science Citation Index	1	0.003
Hospitality & Tourism Complete	1	0.003
MLA International Bibliography	1	0.003
PsycINFO	1	0.003
(3 redundant articles excluded (333-3=330) TOTAL	330	1.000

Number of published articles per journal

As can be understood from Table 10, different online database providers were serving the same articles of the journals in their own databases. Therefore, after clearing the duplicates and triplicates from the database providers, the articles served by more than one provider were cleared to eliminate the 30 redundant articles. After clearing all the redundancies, 303 articles remained on the list. The academic journals were grouped to see the distribution of the remaining 303 articles. When the search results were grouped according to academic journals (Table 12), “*The Chronicle of Higher Education*” appeared in the first rank with 38 articles (12.5%) and was followed by “*International Review of Research in Open and Distance Learning*” with 30 articles (9.9%). The third rank was shared by two journals, with

16 articles each: “*Distance Education*” and “*Journal of Online Learning and Teaching*” (5.3% each).

Table 12
Number of published articles per journal

Journals	Number of articles	%
The Chronicle of Higher Education	38	0.125
International Review of Research in Open and Distance Learning	30	0.099
Distance Education	16	0.053
Journal of Online Learning & Teaching	16	0.053
Academic Questions	8	0.026
Journal of Interactive Media in Education	7	0.023
Against the Grain	6	0.020
Journal of Applied Learning Technology	6	0.020
Open Learning	6	0.020
American Journal of Distance Education	5	0.017
International Journal of Emerging Technologies in Learning	5	0.017
Distance Learning	4	0.013
EDUCAUSE Review	4	0.013
European Journal of Open, Distance and E-Learning	4	0.013
Journal of Educational Technology Systems	4	0.013
Turkish Online Journal of Distance Education (TOJDE)	4	0.013
British Journal of Educational Technology	3	0.010
College Composition and Communication	3	0.010
Computers and Education	3	0.010
Education Journal	3	0.010
Electronic Journal of e-Learning	3	0.010
Liberal Education	3	0.010
Nursing Education Perspectives	3	0.010
Revista de la Educación a Distancia	3	0.010
RUSC: Revista de Universidad y Sociedad del Conocimiento	3	0.010
Thought & Action	3	0.010
Canadian Journal of University Continuing Education	2	0.007
Christian Education Journal	2	0.007
Community College Enterprise	2	0.007
Comunicar	2	0.007
Higher Education	2	0.007
History Teacher	2	0.007
IEEE Transactions on Learning Technologies	2	0.007
Innovative Higher Education	2	0.007
International Journal of Advanced Corporate Learning	2	0.007
Issues in Science & Technology	2	0.007
Journal of College Admission	2	0.007

Table 12 (cont'd)
 Number of published articles per journal

Journals	Number of articles	%
Journal of Effective Teaching	2	0.007
Journal of Legal Education	2	0.007
Library Issues	2	0.007
Modern English Teacher	2	0.007
Online Learning	2	0.007
Portal: Libraries and the Academy	2	0.007
STICEF	2	0.007
Widening Participation & Lifelong Learning	2	0.007
Academy of Management Learning & Education	1	0.003
Advances in Health Sciences Education	1	0.003
AISHE-J: The All Ireland Journal of Teaching & Learning in Higher Education	1	0.003
American Journal of Pharmaceutical Education	1	0.003
Association of College and Research Libraries	1	0.003
Australian Academic & Research Libraries	1	0.003
Australian Universities' Review	1	0.003
Cahiers Pédagogiques	1	0.003
Canadian Journal of Learning and Technology	1	0.003
Change: The Magazine of Higher Learning	1	0.003
Clinical Teacher	1	0.003
Communications of the ACM	1	0.003
Composition Studies	1	0.003
Computers in Human Behavior	1	0.003
Continuing Higher Education Review	1	0.003
Dean and Provost	1	0.003
Diverse Issues in Higher Education	1	0.003
Education and Training	1	0.003
Education Digest	1	0.003
Education Next	1	0.003
Educational Leadership	1	0.003
Educational Research Review	1	0.003
Educational Resercher	1	0.003
Educational Technology Research & Development	1	0.003
Educational Theory	1	0.003
European Journal of Open, Distance and E-Learning	1	0.003
Foreign Language Annals	1	0.003
Honors in Practice	1	0.003
Human Resource Development International	1	0.003
IEEE Transactions on Education	1	0.003
Interdisciplinary Humanities	1	0.003
International Journal of Lifelong Education	1	0.003
International Journal of Technology in Teaching & Learning	1	0.003

Table 12 (cont'd)
 Number of published articles per journal

Journals	Number of articles	%
International Schools Journal	1	0.003
Internet and Higher Education	1	0.003
Journal for Critical Education Policy Studies (JCEPS)	1	0.003
Journal of Asynchronous Learning Networks	1	0.003
Journal of Chemical Education	1	0.003
Journal of College Science Teaching	1	0.003
Journal of Computer Assisted Learning	1	0.003
Journal of Developmental Education	1	0.003
Journal of Hospitality & Tourism Education	1	0.003
Journal of Interactive Online Learning	1	0.003
Journal of Management Development	1	0.003
Journal of Management Education	1	0.003
Journal of Research in Innovative Teaching	1	0.003
Journal of the Academy of Nutrition & Dietetics	1	0.003
Journal Plus Education / Educatia Plus	1	0.003
Journalism & Mass Communication Educator	1	0.003
Language Learning and Technology	1	0.003
Learning, Media & Technology	1	0.003
Legal Education Review	1	0.003
Medical Education	1	0.003
Mentor: An Academic Advising Journal	1	0.003
MERLOT Journal of Distance Education	1	0.003
MPAEA Journal of Adult Education	1	0.003
Multicultural Education	1	0.003
Necatibey Faculty of Education Electronic Journal of Science & Mathematics Education	1	0.003
New Review of Academic Librarianship	1	0.003
On the Horizon	1	0.003
Online Journal of Distance Learning Administration	1	0.003
Our Schools / Our Selves	1	0.003
Phi Delta Kappan	1	0.003
Physics Teacher	1	0.003
Radical Teacher	1	0.003
Reading Research Quarterly	1	0.003
REDU : Revista de Docencia Universitaria	1	0.003
Seminar.Net: Media, Technology & Life-Long Learning	1	0.003
Serials Librarian	1	0.003
TESL-EJ	1	0.003
The Internet and Higher Education	1	0.003
Turkish Journal of Educational Technology	1	0.003
Total number of journals: 117	Total articles:	303
		1.000

As can be seen in Table 12, the first four journals published 100 of the 303 articles. In other words, 33% of the articles were published in these four journals. The other 203 articles were published in 113 journals. The number of articles per journal is shown in Figure 18. In total, 72 journals published only one article each. Nineteen of the journals published two articles each and ten journals published 3 articles each, while the first and second ranked journals published 38 and 30 articles respectively (Figure 18).

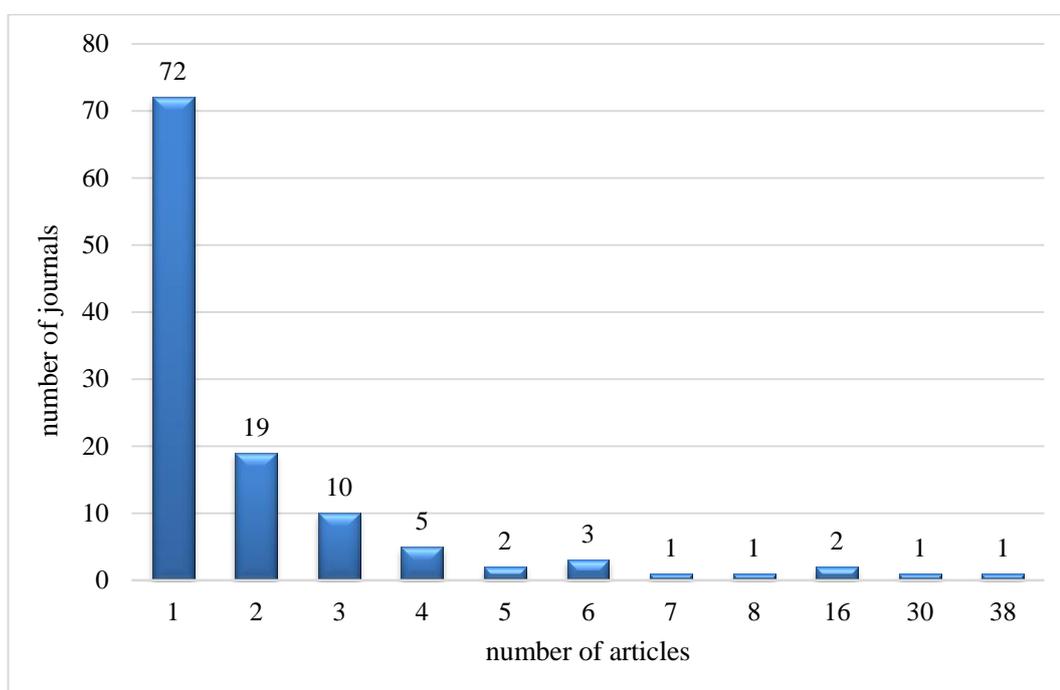


Figure 18. Distribution of articles per journal

Number of published journal articles per author

When the online search results were analysed for authors, it was seen that the author data entry was not appropriate for grouping them. The online search results included various entries for an author. However, since the data was collected from different online databases, the name entries of authors were not consistent. In some of the databases, the first name of the author was given and then the surname, while in

others the surname came first followed by the first name. In some of the databases, only the first initial was given before the last name of the author, whereas in others the first name and second initial appeared before the surname of the author.

For the articles written by three or four authors, the results were even more varied and inconsistent. All of the authors of an article were written in the same MS Excel cell. Moreover, there were no common punctuation rules for when to use period (.) or comma (,) while writing the initials or first and middle names or surnames of the authors. Even if periods and commas were used between the names, initials and surnames, they were not consistent. For these reasons, it was not possible to use the parse feature of MS Excel.

To achieve consistency for the authors of publications, the following procedure was employed. First of all, each of the author's names was written in a different cell manually. For each journal article, a new row was used so that all the authors of the article were in different cells. After completing the distribution of each author in a different cell, conditional formatting was applied to these cells to mark those authors who had published more than one article. Due to the different entry styles for authors, a few authors were marked after this procedure.

The second step was to use the "*find*" command of MS Excel to search for every possible entry of an author's name and then provide consistency between the found names. Just organizing the author names to make some analysis via this process took almost a whole day. As seen in Figure 19, 64% of the academic journal articles were written by one author. Fifteen per cent of the academic journal articles had two authors, and 10% had three authors.

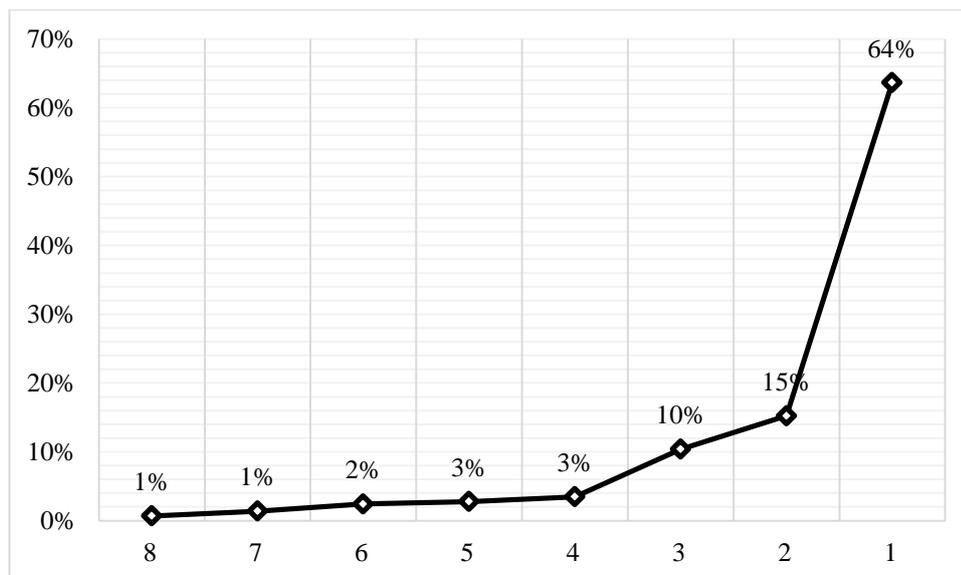


Figure 19. Percentages of articles written by one or more authors.

As can be seen in Figure 18, the highest number of articles contributed to by a single author was eight. If this result is compared to Table 13, it can be seen that this author, Steve Kolowich, wrote seven of these articles alone. This is followed by another author, Jeffrey R. Young, who contributed to six articles, five of which he wrote alone. The four authors who wrote three articles alone are Jon Baggaley, Harry E. Pence, Osvaldo C. Rodriguez, and Diane J. Skiba as seen in Table 13.

Table 13

List of authors who contributed more than one article

Authors	Number of Articles	Authors	Number of Articles
Kolowich Steve	8	Herman Russell L	2
Young Jeffrey R	6	Hollands Fiona M	2
Rodriguez Osvaldo C	5	Jones Ann	2
Abajian Sean C	3	Irvine Valerie	2
Abramson Gertrude (Trudy)	3	Jackson Robert L	2
Baggaley Jon	3	Jones Ann	2
Gallagher Michael Sean	3	Jordan K	2
Hogue Rebecca Joanne	3	Kelder Jo-Anne	2
Inge deWaard	3	King Carolyn	2
Keskin Nilgün Özdamar	3	Knox Jeremy	2
Khe Foon Hew	3	Krause Steven D	2

Table 13 (cont'd)

List of authors who contributed more than one article

Authors	Number of Articles	Authors	Number of Articles
Kop Rita	3	Lewis Timothy	2
Koutropoulos Apostolos	3	Li Nan	2
Mackness Jenny	3	Littlejohn Allison	2
Naidu Som	3	Lovegrove Elizabeth	2
Pence Harry E	3	Lozano Jennifer Berdan	2
		Margaryan Anoush	
Rice Jeff	3	Bianco	2
Siemens George	3	Marshall Stephen J	2
Skiba Diane J	3	McInerney Fran	2
Weller Martin	3	Milligan Colin	2
Wing Sum Cheung	3	Milman Natalie B -	2
Adams Catherine	2	Murphy Jamie	2
Alario-Hoyos Carlos	2	Najafi Hedieh	2
Anderson Terry	2	Parry Marc	2
Anna Hauck Mirjam	2	Pérez-Sanagustín Mar	2
Barberà E	2	Pricer Wayne	2
Beaven Tita	2	Pritchard Sarah M	2
Blom Jan	2	Reilly Erin Dawna	2
Canelas Dorian A	2	Rhoads Robert A	2
Clarà M -	2	Roberts George	2
Code Jillianne	2	Robinson Andrew	2
Colbran Stephen	2	Selingo Jeffrey	2
Comas-Quinn Anna	2	Skevi Afroditi	2
Daniel John	2	Stewart Bonnie	2
de los Arcos Beatriz	2	Tirthali Devayani	2
Delgado Kloos Carlos	2	Toven-Lindsey Brit	2
Doherty Kathleen	2	Verma Himanshu	2
Giannakos Michail N	2	Waite Marion	2
Gilding Anthony	2	Walls Justin	2
Hélène Fournier	2	Zufferey Guillaume	2

Table 14 shows the number of articles written by only one author who published more than one article. Reading authors who have written numerous articles on the same subject could result in a narrower point of view. Therefore, the numbers given in the following table were considered important for the thrustworthiness of the study.

Table 14

Number of articles written by only one author who published more than one article

Articles with one Author	Number of Articles
Kolowich Steve	7
Young Jeffrey R	5
Abramson Gertrude	3
Baggaley Jon	3
Pence Harry E	3
Rodriguez Osvaldo C	3
Skiba Diane J	3
Daniel John	2
Herman Russell L	2
Jackson Robert L	2
Jordan K	2
Milman Natalie B	2
Naidu Som	2
Parry Marc	2
Pricer Wayne	2
Pritchard Sarah M	2
Rice Jeff	2
Selingo Jeffrey	2
Stewart Bonnie	2

Impact factors of journals

The reasons why impact factors were used in the analysis of the collected data were explained in the *Trustworthiness: validity and reliability* and *Sampling* sections of Chapter 3. The sampling of the study revealed the findings explained below.

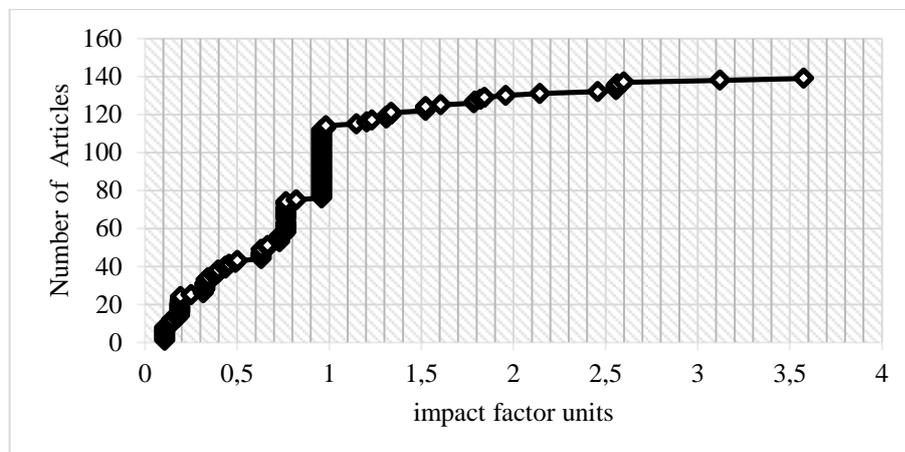


Figure 20. Impact factors used to determine stratified sampling.

Looking at the above chart (Figure 20), which presents the impact factors and number of articles used to determine the stratified sampling, it can be concluded that there are approximately 40 articles within the zero to 0.5 ranges. Around 30-35 articles are between 0.5 and one. For impact factor one, around 30-35 have been listed, while around 30 articles had impact factors between one and 3.5.

Table 15 shows a total of 27 academic journal articles with impact factors between 0.982 and 3.575. The result is very near what was estimated using the chart in Figure 20. This group of articles will be the first set of the stratified sampling (Group1).

The journal article names listed in the tables below (Table 15 –Table 18).were retrieved from the records of the database providers. Some of characters of the article names were recorded incorrectly. For example, some of the words were not written in capital letters or did not start with a capital letter after a colon. These should not be considered as typing errors.

Table 15
The academic journal articles with impact factors of 0.982 -3.575

Number	Journal Article Title	Academic Journal	Scopus Impact Factor
1	Changing "Course": Reconceptualizing Educational Variables for Massive Open Online Courses	Educational Researcher	3.575
2	Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges	Educational Research Review	3.122
3	Ideology and Interaction: Debating Determinisms in Literacy Studies.	Reading Research Quarterly	2.600
4	Virtually unlimited classrooms: Pedagogical practices in massive open online courses	Internet And Higher Education	2.565

Table 15 (cont'd)

The academic journal articles with impact factors of 0.982 -3.575

Number	Journal Article Title	Academic Journal	Scopus Impact Factor
5	Instructional quality of Massive Open Online Courses (MOOCs)	Computers And Education	2.558
6	Practical guidelines for designing and evaluating educationally oriented recommendations	Computers And Education	2.558
7	Understanding the MOOCs continuance: The role of openness and reputation	Computers And Education	2.558
8	What is the role of e-learning? Looking past the hype.	Medical Education	2.457
9	Three problems with the connectivist conception of learning.	Journal of Computer Assisted Learning	2.144
10	Harnessing the Power of a Massive Open Online Course (MOOC): Inspiring Leadership Through Emotional Intelligence.	Academy of Management Learning And Education	1.959
11	The decline and fall of the art of teaching?	Advances In Health Sciences Education	1.843
12	In the Year of Disruptive Education.	Communications of The ACM	1.822
13	Precise Effectiveness Strategy for analyzing the effectiveness of students with educational resources and activities in MOOCs	Computers In Human Behavior	1.791
14	Remarks on MOOCs and Mini-MOOCs.	Educational Technology Research And Development	1.785
15	Massive Open online Courses: How Registered Dietitians Use MOOCs for Nutrition Education.	Journal of The Academy of Nutrition And Dietetics	1.605
16	Organisational learning as an emerging process: The generative role of digital tools in informal learning practices.	British Journal of Educational Technology	1.523
17	Higher education in the digital age.	British Journal of Educational Technology	1.523
18	Exploring the video-based learning research: A review of the literature.	British Journal of Educational Technology	1.523
19	Innovative Research in Academic Libraries: Do Editorials, Agendas, or Think Tanks Make a Difference?	Portal: Libraries And The Academy	1.336
20	MOOCs: An Opportunity for Innovation and Research	Portal: Libraries And The Academy	1.336

Table 15 (cont'd)

The academic journal articles with impact factors of 0.982 -3.575

Number	Journal Article Title	Academic Journal	Scopus Impact Factor
21	MOOCs, institutional policy and change dynamics in higher education.	Higher Education	1.310
22	Teaching large classes in an increasingly internationalising higher education environment: pedagogical, quality and equity issues.	Higher Education	1.310
23	Characteristics of Massive Open online Courses (MOOCs): A Research Review, 2009-2012.	Journal of Interactive online Learning	1.232
24	UNED OER Experience: From OCW to Open UNED.	IEEE Transactions on Education	1.205
25	Massive Open online Courses (MOOCs) and Their Impact on Academic Library Services: Exploring the Issues and Challenges	New Review of Academic Librarianship	1.149
6	Delving into participants' profiles and use of social tools in MOOCs	IEEE Transactions on Learning Technologies	0.982
27	Editorial: A Message from the Editorial Team and an Introduction to the January-March 2013 Issue.	IEEE Transactions on Learning Technologies	0.982

In the second group of articles (Group2), there were 29 academic journal articles (Table 16). All of these articles appeared in the academic journal called “International Review of Research in Open and Distance Learning” with an impact factor of 0.959. It was estimated in Figure 20 that the number of articles having a 0.959 impact factor would be around 30.

Table 16

Journal: International review of research in open and distance learning (0.959 impact factor)

Number	Journal Article Title
1	Peer assessment for massive open online courses (MOOCs)
2	A Social Network Perspective on Peer Supported Learning in MOOCs for Educators.
3	Initial trends in enrolment and completion of massive open online courses
4	Supporting Professional Learning in a Massive Open Online Course.
5	Evaluating the Validity and Applicability of Automated Essay Scoring in Two Massive Open Online Courses.
6	The technological dimension of a massive open online course: The case of the CCK08 course tools
7	Where is Research on Massive Open Online Courses Headed? A Data Analysis of the MOOC Research Initiative.
8	Influence of Incentives on Performance in a Pre-College Biology MOOC.
9	The Employer Potential of MOOCs: A Mixed-Methods Study of Human Resource Professionals' Thinking on MOOCs.
10	A Comparison of Learner Intent and Behaviour in Live and Archived MOOCs.
11	Democratizing Higher Education: Exploring MOOC Use Among Those Who Cannot Afford a Formal Education.
12	Making 'MOOCs': The Construction of a New Digital Higher Education within News Media Discourse.
13	Towards an Integration of Text and Graph Clustering Methods as a Lens for Studying Social Interaction in MOOCs.
14	Writing to Learn and Learning to Write across the Disciplines: Peer-to-Peer Writing in Introductory-Level MOOCs.
15	Investigating MOOCs Through Blog Mining.
16	Mediating Knowledge through Peer-to-Peer Interaction in a Multicultural Online Learning Environment: A Case Study of International Students in the US.
17	Roles and Student Identities in Online Large Course Forums: Implications for Practice
18	Massive Online Obsessive Compulsion: What are They Saying Out There about the Latest Phenomenon in Higher Education?
19	Learning in an introductory physics MOOC: All cohorts learn equally, including an on-campus class
20	Rethinking OER and Their Use: Open Education as Bildung
21	Special Issue: Research into Massive Open Online Courses.

Table 16 (cont'd)

Journal: International review of research in open and distance learning (0.959 impact factor)

Number	Journal Article Title
22	Resource Requirements and Costs of Developing and Delivering MOOCs.
23	MOOC Integration into Secondary School Courses.
24	Connectivism and Dimensions of Individual Experience.
25	Connectivism: Its Place in Theory-Informed Research and Innovation in Technology-Enabled Learning.
26	The Challenges to Connectivist Learning on Open Online Networks: Learning Experiences during a Massive Open Online Course
27	A Pedagogy of Abundance or a Pedagogy to Support Human Beings? Participant Support on Massive Open Online Courses
28	Learning in a Small, Task-Oriented, Connectivist MOOC: Pedagogical Issues and Implications for Higher Education
29	Using mLearning and MOOCs to Understand Chaos, Emergence, and Complexity in Education

In the third group (Group3), there were 31 academic journal articles (Table 17).

Their impact factors were between 0.822 and 0.502. The articles were mostly from Distance Education and Open Learning journals.

Table 17

Academic journal articles with impact factors between 0.822 and 0.502

Number	Journal Article Titles	Journal Article	Impact Factor
1	New Spaces New Realities: Expanding Learning Any Time, Any Place.	Foreign Language Annals	0.822
2	Learning online: massive open online courses (MOOCs), connectivism, and cultural psychology	Distance Education	0.766
3	MOOC postscript.	Distance Education	0.766
4	Beyond hype and underestimation: identifying research challenges for the future of MOOCs.	Distance Education	0.766

Table 17 (cont'd)

Academic journal articles with impact factors between 0.822 and 0.502

Number	Journal Article Titles	Journal Article	Impact Factor
5	Digital culture clash: "massive" education in the E-learning and Digital Cultures MOOC.	Distance Education	0.766
6	MOOCs: digesting the facts.	Distance Education	0.766
7	MOOCs: getting to know you better.	Distance Education	0.766
8	Exploring the ethical implications of MOOCs.	Distance Education	0.766
9	MOOCs: emerging research.	Distance Education	0.766
10	MOOC rampant.	Distance Education	0.766
11	Case study: using MOOCs for conventional college coursework.	Distance Education	0.766
12	Participatory pedagogy in an open educational course: challenges and opportunities.	Distance Education	0.766
13	A phenomenology of learning large: the tutorial sphere of xMOOC video lectures.	Distance Education	0.766
14	Watching MOOCs together: investigating co-located MOOC study groups	Distance Education	0.766
15	Transforming MOOCs and MOORFAPs into MOOLOs.	Distance Education	0.766
16	Online learning: A New Testament.	Distance Education	0.766
17	In search of "what works" in online and distance education.	Distance Education	0.766
18	An Examination of Coursera as an Information Environment: Does Coursera Fulfill its Mission to Provide Open Education to All?	Serials Librarian	0.757
19	Disruption in higher education: Massively open online courses (MOOCs)	Nursing Education Perspectives	0.731
20	MOOC's and the Future of Nursing.	Nursing Education Perspectives	0.731
21	On the horizon: the year of the MOOCs	Nursing Education Perspectives	0.731
22	Symposium on Massive Open Online Courses	College Composition And Communication	0.666

Table 17 (cont'd)

Academic journal articles with impact factors between 0.822 and 0.502

Number	Journal Article Titles	Journal Article	Impact Factor
23	What I Learned in MOOC	College Composition And Communication	0.666
24	MOOC Response about 'Listening to World Music'	College Composition And Communication	0.666
25	Massive Open Online Courses: Disruptive Innovations or Disturbing Inventions?	Open Learning	0.632
26	MOOC attack: closing the gap between pre-university and university mathematics.	Open Learning	0.632
27	A race to the bottom: MOOCs and higher education business models.	Open Learning	0.632
28	Challenges to producing high-quality distance learning.	Open Learning	0.632
29	Virtual learning environments, social media and MOOCs: key elements in the conceptualisation of new scenarios in higher education: EADTU conference 2013.	Open Learning	0.632
30	Integrating technologies in higher education: the issue of recommended educational features still making headline news.	Open Learning	0.632
31	MOOCs: Fad or Revolution?	Journal of Management Education	0.502

The impact factors of the fourth group (Group4) were between 0.491 and 0.107 (See Table 18). There were 42 articles in this group.

Table 18

Academic journal articles with impact factors between 0.491 and 0.107

Number	Journal Article title	Academic Journal	Impact factor
1	The Open Courseware Movement in Higher Education: Unmasking Power and Raising Questions about the Movement's Democratic Potential.	Educational Theory	0.491

Table 18 (cont'd)

Academic journal articles with impact factors between 0.491 and 0.107

Number	Journal Article title	Academic Journal	Impact factor
2	Researching what works in online learning.	Clinical Teacher	0.457
3	Exploring Business Models for MOOCs in Higher Education	Innovative Higher Education	0.437
4	MOOCs, Emerging Technologies, and Quality.	Innovative Higher Education	0.437
5	Grab a MOOC by the Horns	Educational Leadership	0.398
6	Liberal arts in a new era.	On The Horizon	0.398
7	The Advance of the MOOCs (Massive Open Online Courses): The Impending Globalisation of Business Education?	Education And Training	0.390
8	The MOOC phenomenon: toward lifelong education for all?	International Journal of Lifelong Education	0.378
9	The Relentless Pursuit of Excellence in Pharmacy Education.	American Journal of Pharmaceutical Education	0.344
10	Massive Open Online Courses in Chemistry: A Comparative Overview of Platforms and Features	Journal of Chemical Education	0.332
11	Speaking Personally--With Marcio Mugnol	American Journal of Distance Education	0.326
12	Understanding MOOCs as an Emerging Online Learning Tool: Perspectives From the Students.	American Journal of Distance Education	0.326
13	Experiences in MOOCs: The Perspective of Students.	American Journal of Distance Education	0.326
14	MOOCs: Opportunities, Impacts, and Challenges. Massive Open Online Courses in Colleges and Universities by Michael Nanfito.	American Journal of Distance Education	0.326
15	Independent Learning, MOOCs, and the Open Badges Infrastructure.	American Journal of Distance Education	0.326
16	Future scenarios for management education.	Journal of Management Development	0.318
17	MOOCs for High School.	Education Next	0.317
18	Education glossary	Phi Delta Kappan	0.251
19	The Online Challenge to Higher Education.	Issues In Science And Technology	0.193
20	MOOCs plus.	Issues In Science And Technology	0.193
21	Blended Learning: A Flipped Classroom Experiment.	Journal of Legal Education	0.191
22	MOOCs and the Rise of Online Legal Education	Journal of Legal Education	0.191

Table 18 (cont'd)

Academic journal articles with impact factors between 0.491 and 0.107

Number	Journal Article title	Academic Journal	Impact factor
23	Exploring co-studied massive open online course subjects via social network analysis	International Journal of Emerging Technologies In Learning	0.190
24	Open Educational Resources as a Tool to Improve Language Education Effectiveness in the Russian Higher Education Institutions.	International Journal of Emerging Technologies In Learning	0.190
25	Educational paradigm shift: Are we ready to adopt MOOC?	International Journal of Emerging Technologies In Learning	0.190
26	What tweets tell us about MOOC participation	International Journal Of Emerging Technologies In Learning	0.190
27	Looking at MOOCs Rapid Growth Through the Lens of Video-Based Learning Research.	International Journal Of Emerging Technologies In Learning	0.190
28	The Videoarticle: New Reporting Format in Scientific Journals and its Integration in MOOCs	Comunicar	0.188
29	The MOOC Revolution: A new form of education from the technological paradigm?	Comunicar	0.188
30	Two Distinct Course Formats in the Delivery of Connectivist MOOCs	Turkish Online Journal Of Distance Education	0.177
31	Designing for Quality: The Understanding Dementia MOOC.	Electronic Journal Of E-Learning	0.146
32	A Cross-Modal Analysis of Learning Experience from a Learner's Perspective.	Electronic Journal Of E-Learning	0.146
33	Research ethics in emerging forms of online learning: issues arising from a hypothetical study on a MOOC.	Electronic Journal Of E-Learning	0.146
34	Hybrid identities & MOOCS: the implications of massive open online courses for multicultural civic education	Multicultural Education	0.134
35	MOOC Fizzles.	Academic Questions	0.107
36	MOOCs on the March.	Academic Questions	0.107
37	Massive Possibilities? A Forum on MOOCs	Academic Questions	0.107
38	A Middle Path.	Academic Questions	0.107
39	Books, Articles, and Items of Academic Interest.	Academic Questions	0.107
40	The Issue at a Glance.	Academic Questions	0.107
41	Bracing Civilization.	Academic Questions	0.107
42	The rise of MOOCs	Academic Questions	0.107

Based on these results, the gradually decreasing percentages of the articles ranked by impact factors were used in the stratified sampling. The articles not found in the Scopus index were marked as not applicable (#N/A). These articles were taken as the last group (Group5) and only a few of them were examined. The percentages determined for each group were listed in *Chapter 3* in Table 8 to show how a certain number of articles were selected from each of these groups.

Implementation of the content analysis Research Method

There are two different ways of coding in the content analysis research method. The first one involves determining categories based on the researchers' existing knowledge (their own experiences). The second one involves determining categories after an examination of the collected information. For this thesis, the second way was preferred, so the categories were extracted from the collected information.

In order to determine categories for the content analysis, the thematic network analytic tool (Attride-Stirling, 2001) was used. The thematic network analytic tool enables the researcher to define categories for the organization of descriptive information, as was explained in the Chapter 3. Therefore, following the content analysis, the hierarchical categories were named using the thematic network analytic tool. However, the content analysis research method was applied in an iterative manner to provide solutions to the following concerns regarding the trustworthiness of the study:

- Latent content coding
- Conceptual confusion
- Need for a qualitative research tool to collect and classify the analysis results

Latent content coding

The latent content of the academic journal articles was mostly hidden under the descriptive adjectives and pronouns. The word ‘latent’ refers to ‘underlying meaning’. However, some of the metaphors used to refer to MOOCs and their possible components were clear enough. Some examples are flipped classroom, blended learning, virtual classroom, digital immigrants, digital natives and digital divide. All of these noun phrases have specific descriptions in the education field. Therefore, they were easy to code during the analysis. However, even though they were seen rarely, as in Meisenhelder’s (2013) article, there were some esoteric descriptions. For example: “...Clay Christensen, the father of the ‘disruptive innovation’ idea...” (p.7), “MOOC Mania” (p.7), or “MOOC mania is like a tsunami, rolling over critiques and questions, even in the face of dismal records on student success” (p.9). The underlying meaning may not be discernible without some knowledge of the area. However, metaphors such as tsunami and mania will be clear after some background research on MOOCs. As a last example, the word or phrase is sometimes introduced in a sentence (or paragraph) along with its meaning “A critical friend whose role is to interact and facilitate participants may be created to support discussion forums” (p.423). It is not necessary to explain such usages any further.

Conceptual confusion

Coding the terms that have conceptual confusion was another dimension of the trustworthiness of the study (Uzun & Şentürk, 2010). For example, blended learning, hybrid learning and virtual learning are terms that are used interchangeably to refer to both traditional and online components of the courses. Therefore, for each of the terms mentioned above, a new code was created. Since the frequency count is one aspect of the content analysis research method, it was possible to indicate the

proclivity of the terms. Another example is face-to-face education, traditional education or brick-and-mortar, which were used interchangeably to refer to in-class education. During the coding process, each of them was coded separately to examine their frequency. In various articles, distance education, online education, e-learning and MOOC were used interchangeably as well. This situation was a little more problematic. As was explained in detail in the second chapter of this study, distance education was a more inclusive term in comparison with the other terms. Distance education is like an umbrella term, which includes e-learning, online education and MOOC. E-learning and online education were also used interchangeably. MOOC was used for an emerging online education in the latest catalyst developments. For each of these terms mentioned in the journal articles, a new code was created during the analysis. If two terms appeared in the same sentence, like MOOC and online education, both were coded since the word frequency is an opportunity to measure the proclivity. Finally, some words like social, cultural and socio-cultural were used interchangeably in some sentences. If the word in the sentence was social or cultural, it was coded only once as social or cultural. In the case of the word 'socio-cultural', it was coded as both social and cultural.

During the content analysis, each sentence in a paragraph was examined word by word to find any category/theme, word/phrase, latent content or confusing concepts referring to MOOCs either directly or indirectly. The words are the lowest research units of this study. Content analysis was used along with the thematic network analytic tool. These words are referred to using the terms defined as basic themes by Attride-Stirling (2001). Each of these basic themes was coded during the study after which they were collected in NVIVO 10. According to the terminology used by NVIVO, these codes are called nodes. The basic themes (codes, nodes) are in the

first level of coding. In the second level, similar codes are grouped into an organizing theme. The third level, called a global theme, is an umbrella term consisting of the organizing themes.

Necessity/rationale for a qualitative research tool

Coding so much content manually could be a weak point especially for a researcher working on a thesis with such scope. Some codes or details could have been missed during the coding process or might not be seen while updating, merging and analyzing the terms found. The coding process of this study started in MS-Excel. After coding only three articles, there were several columns filled by titles (like category, sub category) for codes but a total of 130 rows consisting of codes under the defined titles were recorded. The overwhelming amount of material made it impossible to avoid repetition, so an alternative way to digitize and manage the qualitative material was needed. After some investigation, I decided on a one-month trial version of NVIVO 10. After one month, the trial version was upgraded to a one-year student license. This software helped to provide a flexible and secure environment for coding. As was mentioned earlier in this chapter, coding for content analysis is an iterative process, so using such software helped to save time. The researcher can avoid having to create space for a new code or move the codes between the cells of a spreadsheet program repeatedly.

According to the stratified sampling, selected academic research articles were downloaded from library online databases. Then, these articles were uploaded to the qualitative research program called NVIVO 10. The uploaded files were in pdf file format. Some of the articles taken in the sampling of this study were available only in the hard copies of journals, but Bilkent University Library personal scanned and

sent them via e-mails. These articles were also uploaded to the NVIVO 10. The examination of the pdf copies and the scanned copies of the articles was done in different ways. During the coding, reference to a pdf document could be done sentence-by-sentence. In the scanned articles, reference to a specific sentence was possible only by selecting some coordinates. If the articles were image files, the references were indicated by drawing a square or a rectangular box.

Results in Nvivo 10

Figure 21 shows the folder structure of the research articles according to the ranks determined by the Scopus impact factors as shown in Table 8 of the “method of sampling” (Chapter 3). The number of articles was between 27 and 42 in each of the four different groups. Additionally, the articles lacking a Scopus impact factor formed the last (the fifth) group. The folder named “Group1” was used to save the first group, consisting of 22 articles whose impact factors were between 3.575 and 0.982 (Figure 22).

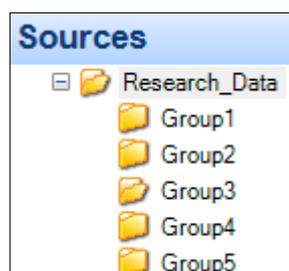


Figure 21. Category folders of the stratified sampling

In NVIVO, *Node* is a term used to refer to a basic unit of the analysis. *Reference* shows the number of strings (sentence or paragraph) for a certain node. *Size* refers to the physical capacity of the article file saved on the disk (see Figure 23Figure 23). The lists and descriptions of all the groups are found in Appendix L. A complete list

of sample articles with the number of nodes, references and their sizes is found in Appendix M.

Group1				
Name	Nodes	References	Size (KB)	
Massive Open Online Courses (MOOCs) and Their Impact on Acade	86	521	357	
Students and instructors use of massive open online courses (MOOC	71	343	331	
ideology and interaction_Debating Determinism in Literacy Studies	60	622	196	
Delving into participants profiles and use of social tools in MOOCs	43	259	945	
Virtually unlimited classrooms_Pedagogical practices in massive open	39	92	324	
UNED OER Experience_From OCW to Open UNED	37	197	866	
Characteristics of Massive Open Online Courses (MOOCs)_A Resear	35	104	1038	
Remarks on MOOCs and Mini-MOOCs	34	149	275	
In the Year of Disruptive Education	33	106	1964	
Understanding the MOOCs continuance_The role of openness and re	27	72	548	
What is the role of e-learning_ Looking past the hype	23	112	126	
Instructional quality of Massive Open Online Courses	22	95	231	
MOOCs_ An Opportunity for Innovation and Research	19	58	378	
Precise Effectiveness Strategy for analyzing the effectiveness of stud	19	60	1277	
Practical guidelines for designing and evaluating educationally oriente	13	22	1436	
Higher education in the digital age	12	47	47	
Editorial_A Message from the Editorial Team and an Introduction to th	12	35	48	
Exploring the video-based learning research_ A review of the literatur	9	49	197	
MOOCs, institutional policy and change dynamics in higher education	9	19	164	
The decline and fall of the art of teaching	8	57	105	
Organisational learning as an emerging process_The generative role	5	20	220	
Innovative Research in Academic Libraries_Do Editorials, Agendas, o	1	23	467	

Figure 22. First group of articles according to Scopus (IF between 3.575 and 0.982)

Nodes		
Name	Sources	References
MOOC	89	1664
a MOOC model	10	17
big data	8	28
business model	11	115
cost (community investment)	9	173
defined terms	0	0
distruptive innovation	25	92
ecosystem roles	5	8
How are MOOCs used	3	25
How could be MOOCs used	5	41
How to set up a MOOC	1	2
influences	2	13
key players	8	14
pedagogical tools	23	146
prominent features	5	6
research gap	24	127
roadblocks	15	28
successful implementation	17	59
taxonomies	9	30

Figure 23. Some sample codes derived during the content analysis

Implementation of the thematic network analytic tool

The detailed explanation of the thematic network analytic tool can be found in Chapter 3. This section explains the implementation of the thematic network. The words and phrases recorded from the scholarly publications were coded in NVIVO 10 and then examined in an iterative manner during the whole analysis. When the codes were considered settled enough to discuss with other people, an academic team was organized consisting of four experts. Then, all the codes were examined with these experts in three different sessions. This section explains how this process was carried out in six steps as recommended by Attride-Stirling (2001).

Step 1. coding the material

The process started with the dissection of the journal articles into sentences and paragraphs and an examination of the meanings of relevant words and phrases in the text. The words and phrases found during the content analysis were examined to find appropriate codes for each of them. In this step, the words and phrases found were modified iteratively in order to better organize the data and describe the words and phrases more clearly.

Step 2. identifying the themes

In the second step, abstract themes were refined. For example, there was some conceptual confusion regarding the terms used to refer to distance education. As seen in the scholarly publications, the dichotomy of education was referred to as *Traditional Higher Education* and *Online Education*. The term *Higher education*, after the developments in ICTs, was characterized as *Traditional* or *face-to-face* to distinguish it from *distance education*. The phrase *sage on stage* is another term found in scholarly publications that was used to refer to *traditional higher education*.

As another example, in the scholarly publications the term *distance education* was used for all types of *distant learning* or to refer to any kind of online course such as *hybrid courses*, *blended courses* or *MOOCs*. For that reason, while coding the *distance education* phrase, the sentence including this phrase was important for deciding on the placement of the phrase. If a paragraph contained a generic concept like distance education, it was coded as *distance education*. However, if there was a specific concept such as *MOOCs* or *blended courses*, the word was coded as MOOC or blended.

Distinguishing correspondence and online courses was not difficult. The term correspondence course was used to refer to old-style distance education. Online courses were also clearly distinctive since this term was used to refer to computer assisted courses.

OER stands for Open Educational Resources to designate high quality resources with free access. OER is the result of the “*openness*” movement and supports the idea that “Knowledge must be shared and distributed freely through the internet for the benefit of the society” (Yuan et al., 2008, p.1.). OCW stands for OpenCourseWare and is used to refer to university level, free and open digital publications. MIT is the frontier university for OCW (Yuan et al., 2008). OER and OCW were coded according to how they were used. Hybrid, blended, and flipped were used interchangeably to describe courses in some scholarly publications. They were coded according to how they were used.

Figure 24 describes how various terms were used in the thesis. The focus point of this thesis was separated from the whole picture with a dashed line in this figure.

Only the salient components of MOOCs comprised the focus point although some other words and phrases were presented here to determine the placement of the MOOCs in the complete picture.

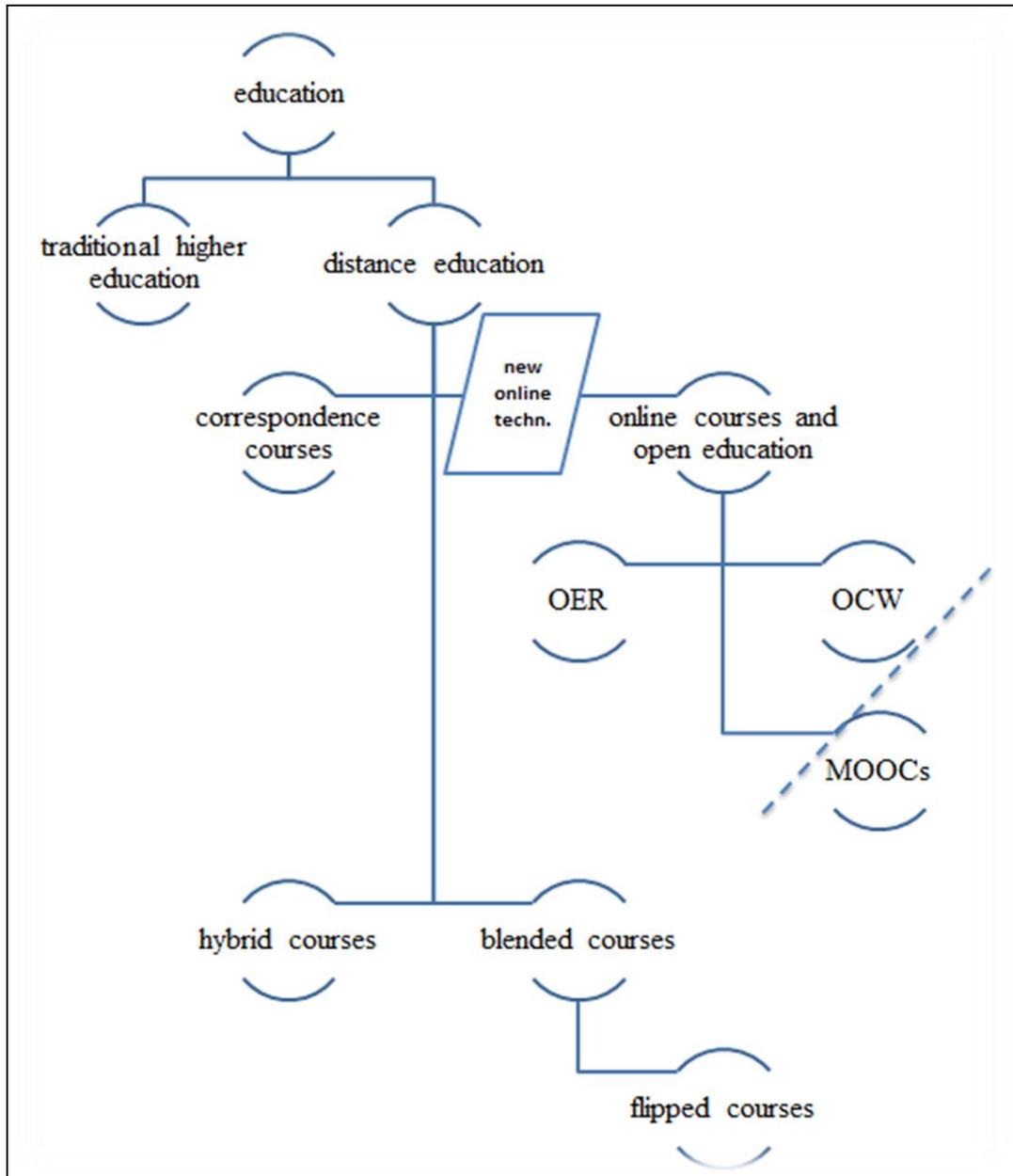


Figure 24. Frequently used concepts in distance education as encountered in scholarly publications

Refining the themes involved finding better and more logical descriptions for the coded words and phrases. For example, “roadblocks” was a word used in scholarly

publications to replace “*issues*” when describing the problems faced in MOOCs. This iterative process is crucial to having good codes.

Step 3. constructing the thematic network

This process involved arranging the themes as stated by Attride-Stirling. Basic themes were found and rearranged into organizing themes. Global themes were found and these findings were illustrated as thematic network(s). Then, verification and refinement were started (2001).

In order to begin this process, the codes (nodes) in NVIVO were first imported to MS Excel. This started with the six levels of hierarchy provided during the iterative processes of the content analysis. Then, each level was separated with the help of colors to show its position within the hierarchy. Figure 25 gives an idea about these different levels and the colors used for their placement. It was possible to show settling of the codes relative to each other with the help of colors. The researcher can repeat the process whenever necessary by starting with existing placement. In the first column, all of the code levels of the words and the phrases were kept in different colors. Then in the next six columns, each level of colored codes in the first column was used to represent and determine the levels of the codes. The data in the first column were distributed to the other colored columns (between the second and sixth columns). Thus, the theme exploration and identification process could be repeated without losing the placement of the words or phrases in the original file listed from NVIVO. This code list was a prototype to start and finalize the thematic network and is provided in Appendix O.

Secondly, following the steps of the thematic network analytic tool, the first level themes forming the basic themes were explored and identified. Then, the basic themes were grouped together to reveal the organizing themes. Based on these organizing themes, the global themes, as encapsulating themes, were determined.

Figure 25. The list of codes before constructing the thematic network

Going back to the *basic themes*, as described by Attride-Stirling (2001), they were formed from the most fundamental words of the data obtained from the content analysis. They may not seem meaningful alone, but when grouped together they represent an *organizing theme*.

In order to determine the themes explained above, the colored columns were copied to a new MS-Excel worksheet. Then words and phrases were distributed into groups with contextually similar concepts. Figure 26 provides a sample taken at the beginning of this process.

Marketing opportunities	Individual or institutional opportunities	policies	issues/individual
advertising channels	opportunities	assumptions	suggestions to students
marketing potential	customer value proposition	Potential credentials and awards	skill & background knowledge
media outlets	consumer satisfaction	open licensing	experience
reputation building	perceived usefulness	no standard	future of the professoriate
	filling gap	recognitions	knowledge assumption
	removal of constraints	course policies	lack of familiarity
	access	copyrights and licensing	lack of feedback
		credits_degree	lack of incentive
regulation/issues	assessment	disability regulations	lack of interactivity
roadblocks	assessment	accreditation issues	lack of time
standards of citation	introductory guide	digital divide	language
cheating and fraudulent	assignments	disruptive innovation	no one for help
technical difficulties	assessment	feedback	not to see
ambiguous assignments	formative assessment	processes	time zone
ambiguous expectations	summative assessment		collaboration anxiety
sage on stage	exercises	collaboration opportunities	self-organized
ad hoc	learning portfolios	folkways	customize workload
	projects	cultural	
characteristics	quiz and exams	social	
influences		potential to international links	research
revolutionizing	Pedagogical issues	diverse community	research gap
phenomenon	teaching approaches	collaboration	few empirical studies
	connectivist approach to learning	flexible thinking structures	grants
economical Issues	constructivist theory	heterogeneity	limited research
economic	constructivist-group approaches	cross-cultural	gap bw literature demands & liter
business model	objectivist-individual approach	interaction with professionals	
investment	design principles	networking and profile building	
finance	demonstration of skills	participatory	
cost reduction		peer to peer interaction	
		collaboration	
		collective knowledge	

Figure 26. Sample themes - the exploration and identification processes

In order to explain with an example, themes such as skill & background knowledge, *experience*, *knowledge assumption*, *lack of familiarity*, *lack of feedback*, etc. are *basic themes*. When they were grouped together, they evoked *issues of learners*. Therefore, the *organizational theme* for the listed *basic themes* was defined as *personal*. Figure 27, these words and phrases were listed on the left. Then, analogously, other groups of words and phrases evoked *issues* were referred to as *social*, *pedagogical* and *technical*. Thus, these were categorized as *organizational themes* and they all belong to the global theme called *issues*.

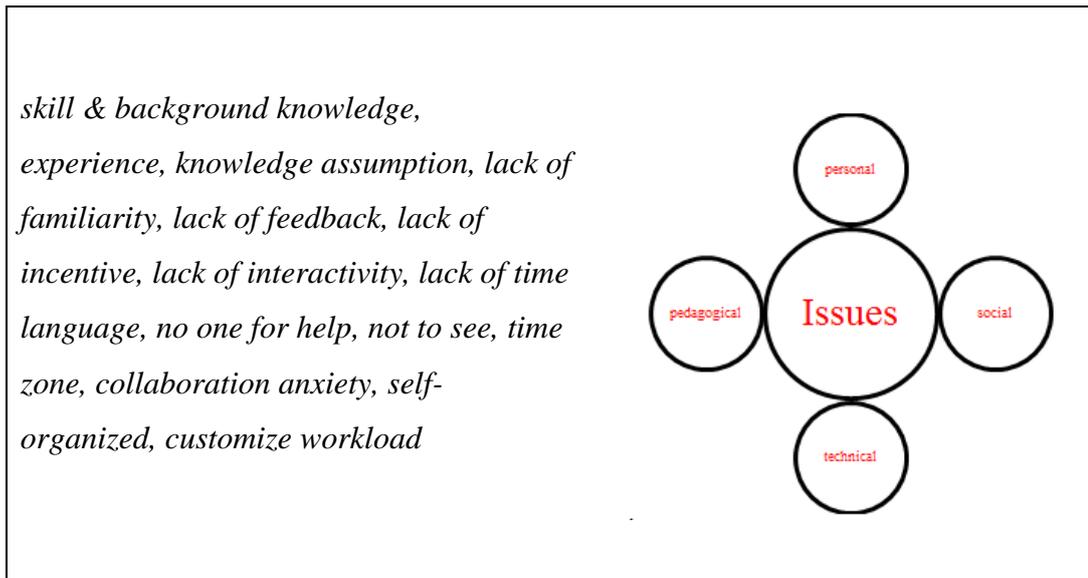


Figure 27. A sample for organizing and global themes

As was explained above, when all the themes were completed, it was seen that there were some overlaps. This situation can be explained with an example: if **Economy** were a *global theme*, the *business model* phrase would be an *organizing theme*. If **Issues** were a *global theme*, *business model* would be an *economic issue*. Therefore, *business model* would be a *basic theme* under the **economic organizing theme**. The exploration and identification processes of the themes were continued iteratively. A draft version of this work is given in Figure 28 just to give an idea.



Figure 29. Verification and refinement processes for the thematic network

In total, five sessions were held with the experts. Three meetings were held to discuss the four posters given in Figure 29. We had numerous discussions, exchanged ideas and then changed the groups of some basic themes. It took five hours to reach a consensus on how the themes should be placed in these posters. During this step, we needed to turn to the references of the codes in the original documents. This was easy since the software used made it possible to see the

references through the linked codes. Sometimes basic, organizing and global themes were renamed to make the descriptive words and phrases more appropriate according to the references.

Then, the themes occurring in these four posters were summarized to produce a more organized version of the individual and group work. In the fourth and fifth sessions of these expert meetings, the themes on the posters were discussed with Antony Burnett Evans, a native speaker of English, for about four hours. During these meetings, some minor changes were made. It was decided that, after the describing the themes, we would return to this stage to formulate more descriptive and consistent names for the words and phrases referring to the themes.

Step 4. describing and exploring the thematic networks

In this stage, the original text was reviewed through the codes found via the Thematic Network Analytic Tool (Attride-Stirling, 2001). Using NVIVO, the original text having a code was marked and linked to the code as a reference. The codes extracted from the text were interpreted for the themes they have. The references were read again and compared with the codes. The global, organizing and basic themes coded with the references complied with the themes from the articles. At the end of this step, the words and phrases were organized and the findings were drawn as shown in Figure 30.

Step 5: summarizing the thematic network

After exploring the Thematic Network, a summary was presented to list the principal themes to be used as descriptions. Based on the scholarly publications, eight global themes were considered to be salient components of MOOCs. These global themes

emerged from the 22 organizing themes, which had emerged from 71 basic themes. Furthermore, for two of the global themes, some words and phrases remained after the definition of the basic underlying themes. Since the Thematic Network Analytic Tool suggests three levels of themes, the level four words and phrases were listed as '*examples*' of the basic themes.

In Appendix Q, the full contents are listed from a hierarchical point of view. The whole picture providing the salient components of MOOCs in scholarly publications was quite exhaustive. For this reason, a hierarchical list was considered more beneficial for focusing on each specific component. The list can be found in Appendix Q. Upon completion of this iterative process, the salient components of MOOCs could be discussed.

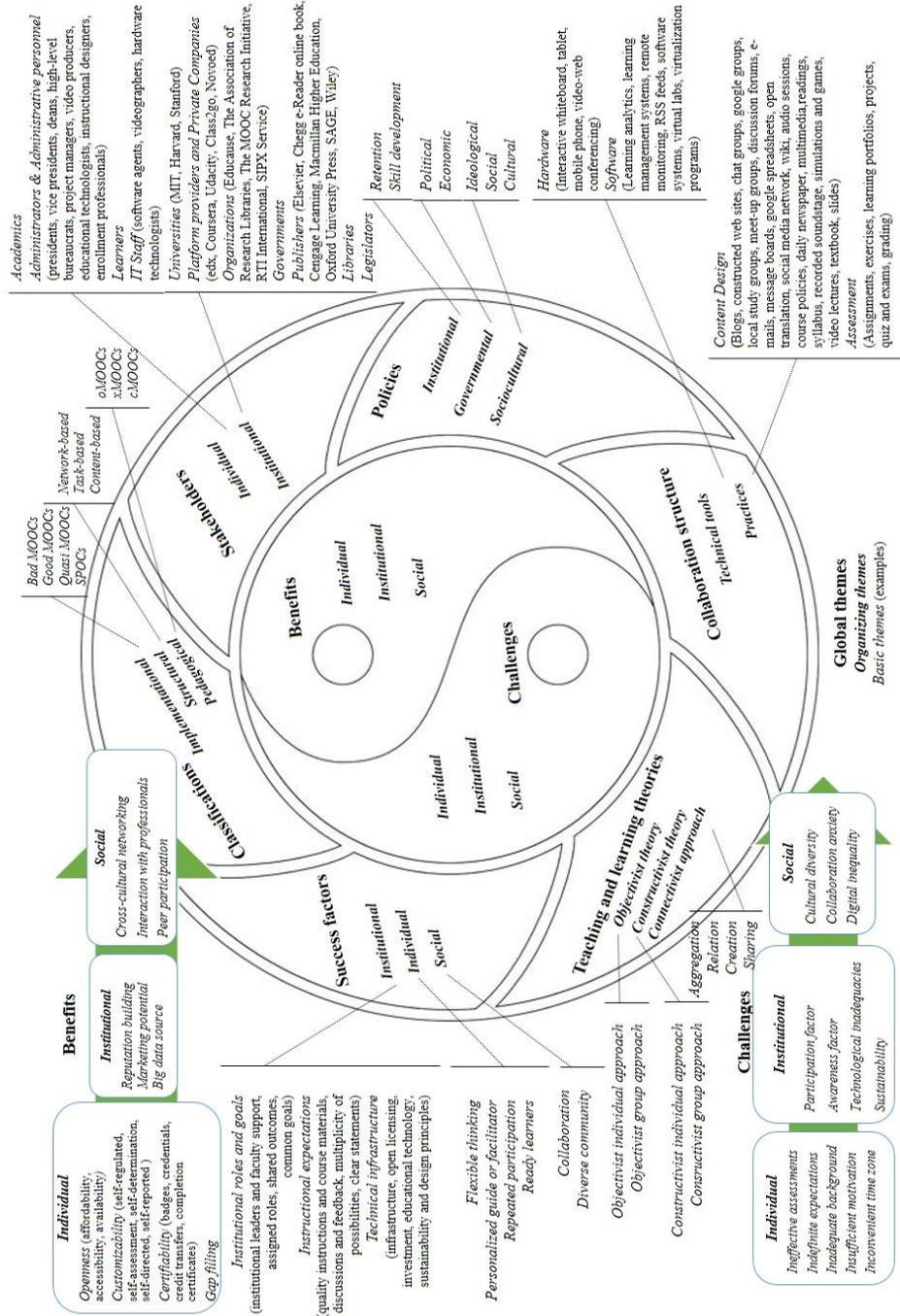


Figure 30. The result of the content analysis and the thematic network analytic tool

Step 6: Interpreting patterns

In this step, all of the network summaries are grouped together. The themes extracted from scholarly publications are used to explore significant themes, formulate relevant theories and make deductions (Attride-Stirling, 2001). The results of this process are explained in Chapter 5: *Conclusion and discussion*.

Summary of the results of the content analysis and thematic network

Since the aim of this thesis is to expound, “the salient components of MOOCs as revealed in scholarly publications”, the results of the content analysis and the thematic networking can be summarized based on the data given in Figure 30.

Eight global themes were identified based on the data in 83 scholarly publications and selected through stratified sampling within the scope of the salient components of MOOCs: These eight global themes (**Benefits, Challenges, Stakeholders, Policies, Collaboration Structures, Learning Theories, Classification Approaches, Success Factors**), which were derived through the classifications of the organizing and basic themes, were written in bold capital letters in a circle in Figure 30. **Benefits** and **Challenges**, being opposite *global themes*, were written in the center of the circle. The others were spaced around the circle. The related organizing themes belonging to each of the global themes were written in these spaces as well.

An examination of the basic themes belonging to the Benefits and Challenges global themes revealed that they can be divided into three major categories: individual, institutional, and social. The other global themes were divided into organizing themes according to the concepts revealed by their basic themes. For example,

Stakeholders can be divided into individual and institutional organizing themes, whereas **Policies** has *institutional*, *governmental* and *sociocultural* organizing themes. **Collaboration Structures** were divided into two organizing themes: *technical tools* and *practices*. The organizing themes for **Learning Theories** are *objectivist*, *constructivist* and *connectivist*. The global theme called **Classification Approaches** has been divided into *implementational*, *structural*, *pedagogical*. The last global theme **Success Factors** includes three organizing themes: *individual*, *institutional* and *social*.

The basic themes that make up each of the organizing themes are grouped to show their common features. In Figure 30, each was connected to its organizing theme using two lines; the *vertical line* was used to connect the group of basic themes and the *other line* was used to connect the vertical line to the organizing theme. Only the basic themes of the ‘**Benefits**’ and ‘**Challenges**’ global themes were written in the boxes to avoid confusion with the lines going to the center of the circle. After the basic themes, related examples were listed using bullets.

In the next chapter, definitions and a discussion of the findings of this research will provide an overview of the salient components of MOOCs as revealed in the scholarly publications analyzed.

CHAPTER 5: CONCLUSION AND DISCUSSION

Introduction

This thesis was an exploratory research based on the content analysis research method and the thematic network analytic tool aiming to unearth the salient components of MOOCs as revealed in scholarly publications for the benefit of university stakeholders. What follows is a discussion of these components through an analysis of the scholarly publications described in Chapter 4. The chapter concludes with sections on the limitations and implications of this research.

Overview of the study

In this thesis, the current scope of the study was decided after a lengthy investigation. The data were collected from scholarly publications; that is, only peer reviewed scientific journal articles were considered suitable. These articles were selected by screening online databases. A total of 303 scientific journal articles were chosen after eliminating the duplicate and triplicate records. Following a stratified sampling, 27% of these articles were selected as the main data sources.

A qualitative research paradigm involving the content analysis research method was utilized. This method aims “to obtain descriptive information about a topic” and “to formulate themes (i.e., major ideas) that help to organize and make sense out of large amounts of descriptive information” (Fraenkel and Wallen, 2009, p.474). Therefore, this research method was used while inspecting the selected scholarly publications to discover the salient components of MOOCs, which were then placed into categories and revised iteratively during the analysis. The scholarly publications were analyzed

using the qualitative software NVIVO 10 to determine latent content and conceptual confusions. This software was helpful in empowering the iterative process.

After the content analysis procedure was finished, a thematic network analytic tool was employed to define the categories that had been found. The use of this tool was also an iterative process, as explained in Chapter 3 in theory and Chapter 4 in practice. The themes were finalized with the help of four experts. In this chapter, the processes followed to achieve the results and the major findings of the study will be summarized. The categories of themes will be summarized to give an overview of the salient components of MOOCs as revealed in the scholarly publications that were examined.

Conclusions and discussions

The aim of this research was to answer the question “What are the salient components of MOOCs as revealed in scholarly publications?” The discovered components were grouped under 8 global themes. Some organizing themes were defined to embrace the basic themes. These three categories of themes were explained in detail in Chapter 4. In these definitions, some references were given to the journal articles coded in accordance with the content analysis research method. The references were easily retrieved with the help of the links provided by the qualitative research software NVIVO 10. What follows is a discussion of the global, organizing and basic themes obtained through a process known as thematic network analysis.

According to the chosen phraseology, the global themes are introduced first in this section. In the first paragraph of each section, a short description of the global theme

is given followed by definitions of the related organizing themes of each global theme. Then, the basic themes of each organizing theme are explained. Regarding the format of the themes, bold headings are used to indicate **global themes**; a bold italic format is used to show the *organizing themes* and finally simple italics are used to illustrate the *basic themes*.

The references made to various aspects of MOOCs by the authors of the scientific journal articles were varied in length and detail. According to the depth of their discussions, some basic themes are defined briefly, while others are discussed from various authors' points of view.

Benefits

The term **benefits** as a global theme is used to refer to advantages or profits of taking or offering MOOCs. The benefits are grouped into three organizing themes as revealed in scholarly publications: *individual*, *institutional* and *social*.

Individual: This organizing theme is used to refer to the personal benefits gained by learners taking MOOCs. The basic themes that make up this particular organizing theme are: *openness*, *customizability*, *certifiability* and *gap filling*.

Openness: In the abbreviation of MOOC, the first 'O' stands for 'open' and this word is used synonymously with being 'free'. MOOCs offer free online courses without prerequisites and provide learning materials to massive numbers of learners, who can freely use, update and share these materials without charge. MOOC is open for communication, open to online participation, in an open network. Although it is an open course with open content and open access, discussion is ongoing regarding

the “degree of openness” in MOOCs. (Colbran & Gilding, 2013; Kop et al., 2011; Koutropoulos et al., 2012; Spector, 2014; Hew and Cheung, 2014). In MOOCs, openness can be addressed from three aspects: affordability, accessibility and availability.

Openness refers to the affordability of MOOCs. As was mentioned before, MOOCs are free and this was seen as a basic distinction between MOOCs and distance education courses. Through the MOOCs, education became possible at little or no cost. Indeed, free MOOCs are the original MOOCs (oMOOCs) (as cited in Alraimi et al, 2015; as cited in Dolan, 2014; Spector 2014; Dillahunt, Wang, & Teasley 2014). If a MOOC is registered for official course credit, the learner needs to pay although this is much less than what would be paid for face-to-face courses. The original promise of MOOCs is that it is free, but exams and certificates must be paid for (Casement 2013; Godwin-Jones 2014; Hew and Cheung, 2014). To summarize, the term 'affordability' means somewhere between being 'free of charge' and having a 'reasonable price'. This shows how the “degree of openness” is dependent on the type or function of the course.

Openness also refers to the accessibility of MOOCs. Geographical location is not a factor for the accessibility of a MOOC, but having internet access is its first requirement. In theory, MOOCs are accessible, but practically, MOOCs are inaccessible if someone lacks an internet connection. Additionally, higher registration does not mean the education is more accessible. Some learners just register, some log in to see course sources and some only want to see what the course content is. Therefore, accessibility is a complex aspect of MOOCs, and future research is needed to understand the learners' behavior (as cited in Jordan, 2014;

Kop, 2011; Koutropoulos et al., 2012; Deimann & Farrow, 2013; Meisenhelder, 2013). It seems that being connected and taking part are the prime prerequisites of accessibility.

Openness refers to the availability of educational materials as well. Indeed, some educational materials can be found only through paid subscriptions to libraries. However, if MOOCs are open, resources should be open as well. Coursera is a signed partnership with some publishers and Chegg e-reader. Such partnerships make books or selected chapters available without payment via the MOOCs. After finishing the course, the learners can buy the full version of the e-books or the discounted version for Coursera. Elsevier has provided course eBooks for some edX courses. Thus, educational materials must be available to participants in a MOOC via an open licensing agreement (De Waard et al. 2011; Gore, 2014; Spector, 2014). To sum up, just like ‘degree of openness’, ‘degree of availability’ can be dependent on other factors; in this case, the copyrights of the educational materials. Who owns the materials needs to be made clear. Moreover, the educational materials must remain available following completion of the course.

Customizability: This basic theme is used to describe the asynchronous and autonomous aspects of MOOCs. Customizability offers considerable flexibility to learners. There is no prerequisite for MOOCs. Deciding on locations, the course tools and even time are the responsibility of learners. Due to the massiveness of MOOCs, this online environment is seen as nearly asynchronous. Learners can study the materials whenever they want (Daza et al. 2014; Spector, 2014). ‘Customizability’ represents the learners’ autonomy and phrases such as ‘self-regulated’, ‘self-assessment’, ‘self-determination’, ‘self-directed’ and ‘self-reported’ are used to refer

to the customizability of the MOOCs. However, besides bringing some benefits, this much self-oriented flexibility would require responsibility and motivation as well.

Certiability: This term is used to show how knowledge gained through MOOCs is verified. The followings are examples of ways used to certify MOOC learners:

Badges: According to McLean-Orlando (2014), badges are given for some certain achievements in a MOOC. For example, if a learner creates his own blog as part of a specific activity, he can apply for a badge.

Credentials: Originally, much of the discussion surrounding MOOCs involved how they could be used to help learners' earn educational credentials. MOOC providers create their own credentials such as Android Developer and Data Analyst Nanodegree or alternative credentials like biometric-based 'Verified Certificates' for a fee.

Credit transfers: Dolan (2014) states that some colleges accept the credits of MOOCs. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has approved some Coursera courses for college credits although some academics teaching MOOCs do not approve of this.

Completion certificates: Learners receive a completion certificate when they complete a MOOC. There are two types of such certificates: certificates of completion and certificate of completion with distinction. The former are given to learners who have completed the course with the minimum requirements. The latter are awarded to those learners who complete the course with a higher performance.

(Dillahunt, Wang & Teasley, 2014). About 74% of MOOCs offer free completion certificates to learners. The issue for discussion is the market value of MOOC certification. The decision of employers will determine the value of job candidates finishing a free MOOC versus a paid campus course. (Hew & Cheung, 2014; Nath & Agarwal, 2014; Hyman, 2012). It is obvious that certification is as controversial a component as openness. Credit transfers, achievement certificates and the value of the certificates – especially due to the security, validity and reliability of the exams – are still under discussion.

Gap filling: MOOCs can also provide an opportunity for learners in terms of gap filling. Freshman university students can register for MOOCs prior to their required courses in higher education. In Spain, Pompeu Fabra University organized a MOOC to improve the mathematic backgrounds of students graduated from high school. Learners, as well as existing or potential employees, can get some technical or special training for their jobs; for example, courses for life-long learning like blueprint design, engineering design and construction management. However, MOOCs are not seen as a solution for the growing demand for higher education due to global problems including access and quality (Daza et al., 2013; Radford et.al., 2014; Meisenhelder, 2013). Even so, MOOCs' provide an opportunity to fill the gaps in formal or informal education. MOOCs allow learners to improve their own backgrounds.

Institutional: The 'benefits' global theme has another organizing theme denoted as institutional. The institutional stakeholders of MOOCs are varied: universities, foundations, organizations, publishers, governments and service providers. The institutional benefits of offering MOOCs were inspected in terms of the stakeholders.

The basic themes of this organizing theme are listed as *reputation building*, *marketing potential* and *big data source*.

Reputation building: This is defined as the stakeholders' evaluation of the services or products they receive. MOOCs are considered to be 'reputation building' since successful MOOCs can improve individual and institutional reputations. For the top universities offering MOOCs, reputation is an essential feature. Some researchers have commented on the role of reputation in various fields. For example, students select a higher education institute due to its reputation. Even though it is subjective, reputation gives the prospective client an idea about the reliability and quality of the institution (Colbran & Gilding, 2013; Alraimi et al. 2015; Hon & Brunner, 2002; van Vught, 2008). Imitating the rock and Hollywood stars, some eminent MOOC professors are named as MOOC stars. An elite university can offer MOOCs using the institution's as well as the professors' reputations.

Marketing potential: MOOCs have the marketing potential to bring future learners. For example, MIT and Open University were the originators of many free online courses and course materials. Existing free course materials affected their free and paid courses positively. Moreover, MOOC teachers have greater marketing advantages compared to other teachers. MOOC teachers undertake public roles; they are known and recommended by many learners. In conclusion, besides the traditional departments of communication and marketing, MOOCs are now the promoting faces of university brands (Colbran & Gilding, 2013; Fomin, 2013) and obviously vice versa.

Big data source: Learners can produce large amounts of data, known as big data, while taking part in online courses. Current analytical learning techniques help to collect low-level big data from learners. Institutions can examine how learners deal with training sources and activities or interact with peers. Big data are used to infer the higher-level behaviors of learners, so that some metrics can be proposed for the effectiveness of learners' and educational activities. Therefore, well-known MOOC platforms all follow advances in big data technology. Since online education is a relatively new area, educational institutions and platform providers need to know what works and what does not work in order to determine policies for improving the effectiveness of online education. Research on the big data obtained would therefore be quite beneficial (as cited in Merino et al., 2015; Siemens, 2012; Clow, 2012; Godwin-Jones 2014). Nevertheless, big data analysis researchers and institutions need to clarify who owns the big data since the MOOCs are products of collaborative efforts. This is a general question asked by MOOC stakeholders and requires an ethical response.

Social: The benefits of MOOCs for society that were extracted from the articles are generally related to *cross-cultural networking, interaction with professionals and peer participation.*

Cross-cultural networking: 'Introduction to Artificial Intelligence' has been one of the most successful online courses to date. There were 160,000 learners enrolled from 190 countries and 23,000 of them participated in the course. One-third of the participants were from the US and one-third from European countries. The rest of the participants were from various other countries. This is a good example of how successful facilitated knowledge transfer over a virtual network can be. The

explosion of ICTs eradicated boundaries so that massive numbers of people all over the world have a chance to share and transfer knowledge, bringing their own experiences and cultures to the learning environment (Kop 2011; Hyman, 2012). Learning in networks is one of the most distinctive features of MOOCs. These networks, built by the MOOC learners, are useful for not only managing these massive courses but also generating content. Moreover, different views from different cultures help to enrich the MOOCs.

Interaction with professionals: Professionals are the experts on specific topics. MOOCs can provide a platform for learners to meet professionals from a variety of fields and benefit from their experience (Radford et al., 2014). In a MOOC, professionals who are taking the same course with the other participants bring various valuable experiences, backgrounds and knowledge levels. Collaborative participation in these courses contributes to the development and improvement of all the participants.

Peer participation: In MOOCs, learners can teach their peers, grade the assessments of peers and contribute to their development. Consequently, peer discussions on course content can help to improve MOOC content as well. To give an example, in one of the courses, learners produced more than 17,000 resources and they improved these resources more than 48,000 times (Baggaley, 2013; as cited in Alario-Hoyos, 2014; Ros et al., 2014). The massiveness of a MOOC makes it impossible to contemplate the existence of such a course without considering these participatory efforts.

Challenges

This global theme refers to problems related to both taking and offering MOOCs.

They can be further divided into three organizing themes, which are derived from the origin of the problems: *individual*, *institutional* and *social*.

Individual: This organizing theme is used to refer to the personal challenges of learners taking MOOCs. It is comprised of five basic themes: *ineffective assessments*, *indefinite expectations*, *inadequate background*, *insufficient motivation* and *inconvenient time zone*.

Ineffective assessments: It was seen from the responses to questionnaires and peer evaluations that students tend to avoid giving feedback or else fail to take it seriously. As a result, their evaluation of the MOOC lacks reliability. Due to the massive number of learners, most MOOC instructors do not discuss assessments with the learners. During peer evaluations, while some responsible learners give useful feedback, the majority of the learners do not take this responsibility seriously. Thus, peer evaluation and feedback systems are not seen to be reliable at present. As an accompanying method, machine-grading algorithms are often used for evaluating the assessments. Although automatic computer evaluations restrict the question types, they still appear to be more promising compared to the controversial peer evaluation system (as cited in Suen, 2014; as cited in Hew & Cheung (2014); Meisenhelder, 2013; McKiel, 2014). Since assessments are needed to measure gained knowledge during teaching and learning, any contribution to the solution of this problem will provide a more trustworthy learning environment in MOOCs.

Indefinite expectations: Uncertainty related to course implementation, indefinite assignments and over expectation can create frustration in some learners causing them to drop out of a course (Young, 2013; Hew & Cheung, 2014). Setting clear goals, giving detailed instructions and preparing manageable assignments are some of the precautions instructors can take to maintain the learners' interest in the course.

Inadequate background: According to Fini (2009), lifelong learners should have various skills to build and manage their own learning environment. Learners' experience and familiarity with the subject as well as their having some basic skills (including technology literacy) are the minimal requirements for self-learning. Students also need to be able and willing to collaborate with other learners. Lack of such skills can cause problems while taking MOOCs.

Insufficient motivation: There are two types of motivation: intrinsic and extrinsic. Satisfaction, interest, commitment and pleasure are the measurements for intrinsic motivation, which are generally assessed through self-reporting. Extrinsic motivation is generally measured using self-development, reputation and perceived usefulness. Motivation is a crucial factor in determining whether or not learners continue with a MOOC: the weaker the motivation of the learner, the less he will participate. While motivation is necessary, it is not a guarantee for completing a course. Future research is needed to explain the relationship between dropout rates and learner motivation (Alraimi et al., 2015; Fini, 2009; as cited in Jordan, 2013). MOOC participants should be dedicated and motivated in order to follow through with self-learning; otherwise, they will have just registered for a course without any intention of completing it.

Inconvenient time zone: As stated by Kop et al.(2011), due to the collaborative structure of MOOCs, differences between the time zones could pose another of the individual challenges that can affect a course negatively. Therefore, the synchronous aspect of these courses must be managed to deal with this challenge

Institutional: These challenges refer to the problems affecting the institutional stakeholders. They are comprised of four basic themes resulting from the *participation factor, awareness factor, technical inadequacies and sustainability.*

Participation factor: This category can be examined according to the level of participation and can be divided into groups of people: lurkers and dropouts. Some learners, called lurkers, are not actively participating but follow the course without contributing. Lurkers register for MOOCs just to see the course content, techniques and/or how the course is taught. They affect the course provider institutions in a negative way. The term dropout is used for the learners who follow the course for a short period of time and then give up for various reasons. According to some researchers, the rates of lurkers and dropouts vary from 40% to 97% (Fomin, 2013; DeBoer, et al., 2014; Koutropoulos et al., 2012). Actually, the aim of many learners is to find specific chapters that appeal to their interests (as cited in Kennedy, 2014; Fini, 2009). When they lose interest in the course, they become non-participants.

Awareness factor: This concerns the firms and peoples who have not yet been informed about the value of MOOCs. Employers often want their employees to participate in a professional development program that does not interfere with their on-the-job performance. They are unaware of the opportunities that MOOCs make available. Between November 2013 and January 2014, a survey was carried out to

discover if industries are aware of MOOCs and their employment potential. The survey was conducted among a wide variety of industries: mainly business and communications, education, technology, manufacturing, health and public administration. While 31% of 103 organizations were aware of MOOCs, the employment potential of MOOCs was known as negatively only 1% of these organizations. Nevertheless, following a description of how to use MOOCs for employment, 59% of the organizations could see its potential. This means that 41% of them still could not see the employment potential of MOOCs. Yet, MOOCs provide a solution for the limited budgets allocated for professional development (Radford, et al., 2014). Employers' acceptance of MOOCs for the professional development of their employees helps to generate revenue for MOOC providers. Thus, increasing awareness about MOOCs would be mutually beneficial to the institutions that provide courses as well as the institutions that encourage their employees to participate in the courses.

Technical inadequacies: This basic theme for institutions will be summarized in terms of ICT infrastructure, development and implementation, and regulations.

MOOC learners require a basic ICT infrastructure to follow the course videos and to participate in the lectures. This includes computers, headsets, speakers and microphones along with electricity and high-speed internet connections. However, in some regions of the world there are still electricity problems. Some MOOC providers and institutions taking advantage of MOOC opportunities have challenges due to the inaccessibility of worldwide education to the needed ICT infrastructure.

In order to provide solutions to educational issues, course development and implementation depend on the institutions demanding and delivering the courses. Cheating, plagiarism, assessment grading, high dropout rates, different time zones, lack of local context, pedagogical approaches and the quality of online discussions are all examples of controversial issues of MOOC development and implementation (Bowen, 2013; Gore, 2014; as cited in Chen, 2014). These issues are seen as obstructions for MOOCs and prevent the participation of some learners and institutions in these courses.

The institutions providing MOOCs have various challenges in terms of compliance with the regulations constituted by the American Council on Education (ACE). MOOCs often do not comply with the regulations for disabled learners. As an example, disabled learners need extra time in exams. In this context, MOOCs need to have assessment and exam standardization in addition to auditing and compulsory regulations.

Another reason why MOOCs need regulations is that they are the products of a collective endeavor, so it is not always clear who owns them. Institutions, private companies like MOOC providers, or university faculties can offer MOOCs and prepare course content. Due to the nature of MOOCs, learners contribute to the content. Universities that prepare MOOCs can offer the courses using a provider's system. The service provider can then sell these courses to other universities. The ownership of the course and course material is a complex issue with MOOCs. Standards of citation, copyright protection and licensing are some other technical challenges facing institutions.

Course credit is seen as a regulation issue because there is no standard approach for the approval of course credits by universities. According to the results of a survey, 72% of 103 professors could not agree on the college credits to be given for such courses by their institutions. Course quality and learning assessment were seen as the main unknowns for college credits. Although the ACE approved some MOOCs given for credit by Coursera, some institutions, like the Colorado State University, found their own solutions. Global Campus approves three credits of Udacity MOOCs following a proctored exam. Eventually, the credits given for MOOCs will have to be agreed on among the institutions (Hollands & Tirthali, 2014; Colbran & Gilding, 2013; Chen, 2014; as cited in Hew & Cheung, 2014).

In this study, quality assurance or accreditation is considered as a regulation issue as well. Existing rules and regulations regarding standardization and accreditation were designed for traditional teaching and learning. Online teaching and learning require special regulation criteria. As an example, in Australia, Central Queensland University has an accredited law discipline and they will provide open access to all of the lecture materials through iTunes U. Nevertheless, if the real success of learners were evaluated by their competencies, accreditation would be seen as out of fashion. Evaluation of students' learning portfolios has been suggested as an alternative to structured accreditation. Over time, as MOOCs become an effective method of education, attitudes towards accreditation will change (Colbran & Gilding, 2013; London, 2014; Jackson, 2013; McLean-Orlando, 2014).

Sustainability: This basic theme can be seen as yet another institutional challenge. Technically, the sustainability of MOOCs depends on the business model used while preparing them. Current business models are not designed for making money through

MOOCs. However, MOOCs will cause disruption, transformation or inevitable changes in the business models of traditional higher education. Various platform providers have their own business models in MOOCs. Joint venture MOOCs are seen as a means for sharing the cost of the courses and contributing to the collaborated knowledge. For example, Georgia Institute of Technology and AT&T announced a computer science master's degree in May 2013 using the Udacity MOOC platform. The program takes about three years and Proctored Pearson Vue test centers are used for exams. Its cost is around \$7,000, which is only about one fourth of full-time state university tuition. Coursera and some venture capital firms have started to get some return on their investments. Strengthening the brand is also seen as a return on investments. Signature track and proctored exams have brought \$220,000 to Coursera since the beginning of 2013. In addition, Amazon.com pays certain percentage in commissions from the sale of textbooks suggested by MOOC professors. Similar solutions need to be worked on (Gore, 2014; as cited in Dolan, 2014).

Social: This organizing theme is used to refer to social challenges that participants can face during collaborative courses. The basic themes of social challenges were listed as cultural diversity, collaboration anxiety and digital inequality.

Cultural diversity: Creating common knowledge is not easy due to the effect of cultural diversity. Discussion sessions are important in the collaborative learning medium of MOOCs. However, if such sessions are based on the educational backgrounds of learners, they may not be productive and coherent when the learners are culturally diversified. Eventually, lack of common knowledge during the discussions can damage the quality of the course and thus constitute a problem.

While the connectivist theory necessitates diversity for the wealth of the resources collectively produced, the effects of diversity cannot be anticipated (as cited in Chen, 2014; De Waard, et. al, 2011).

Collaboration anxiety: Learners with low self-confidence have a negative effect on the collaborative learning process in MOOCs because they are reluctant to contribute to discussions. As mentioned in the above component, discussion sessions are an important aspect of collaborative learning, which is actually the basis of MOOCs. In a questionnaire, 10 per cent of the learners did not prefer to work with peers due to collaboration anxiety. Collaboration with professionals increases the anxiety due to lack of knowledge or experience. Lack of participatory literacy skills can also create collaboration anxiety in some learners, resulting in the loss of valuable opportunities for interaction (Kop 2011; Beaven et al., 2014).

Digital inequity: There are controversial views regarding the effects of digital inequity on the efficacy of MOOCs. Some researchers claim that MOOCs are able to provide massive access to education and thus decrease digital inequity. Some other researchers believe that MOOCs are worsening digital inequity because of the inequality of internet and bandwidth access. Not every country has access to the high-speed internet connections required for viewing course videos. The cost of internet access may not be manageable by learners in poor countries. However, whether MOOCs are decreasing or increasing digital inequity, it is seen as a challenge to providing social equity in MOOCs (Deimann & Farrow, 2013; Jordan, 2014; Meisenhelder, 2013).

Stakeholders

The term **stakeholders** is another global theme, and it refers to anyone with an invested interest in MOOCs. Stakeholders can be grouped into two organizing themes: *individuals* and *institutions*.

Individuals: People who are taking, offering or organizing the MOOCs are included in the individual theme. *Academics, administrators* and *administrative personnel, learners* and *IT staff* are listed as individual stakeholders.

Academics: This group is mainly responsible for teaching and research. Therefore, first the role of academics as teachers and then as researchers will be explained below.

In MOOCs, the responsibility of academics is to facilitate learning. However, according to Norman (2013), academics must undertake extremely dynamic and knowledge intensive roles to be successful. They need to learn digital technologies to prepare and present the lectures and to evaluate the assessments in MOOCs with massive numbers of learners. Therefore, academics need to collaborate with other stakeholders to prepare their lectures. Course preparation is quite different from face-to-face courses. Course development for MOOCs requires teamwork.

Chen (2013) refers to Stiehm, an anthropology professor at Duke University, for the time spent on course preparation. The preparation of a MOOC lesson requires about 20 times more time than a face-to-face course. The first MOOC of Duke University had taken 600 hours. For a three-hour-lecture given on a weekly basis, the course development team spent around 20 hours for the planning and content, eight hours to

rehearse and four hours to record the lectures. Then to get approval from Coursera they spent five to 10 days to edit the course videos. Robert Sedgewick, a Princeton professor, spent hundreds of hours on course content and two weeks to record and edit the videos. The preparation of a MOOC takes a lot of time and prevents the faculty from allocating time to other duties like participating in committees, writing research papers and teaching face-to-face. If a MOOC is not planned or recorded well, this will affect the reputation of the professors as well as the university. The massive numbers of students can discuss the problems in open forums and social networks. However, the reputation of a professor does not guarantee the effectiveness of a course. Grading learners effectively, checking their homework, essays and online exams along with ensuring the ownership of these assessments are still some challenges that the academics face. Nonetheless, MOOC experience can make important contributions to the careers of academics. They can use this experience to flip their traditional classroom, improve their teaching skills, course content and materials, as well as improve their pedagogical approaches. The diversity of the massive numbers of learners can also improve the perspectives and the sources of academics (Chen, 2014; as cited in Hew & Cheung, 2014; Spector, 2014; Hyman, 2012; Norman, 2013). Academics are seen as the most important individual stakeholders of MOOCs since no MOOC can be offered without them. However, academics cannot offer a MOOC without being supported by a team.

Academics are researchers as well, and the uptrend in MOOC is an opportunity for a new research area. Some areas are being suggested by research organizations according to the changes in higher education institutions and libraries. Some of these are redesigning teaching approaches, restructuring research libraries and developing new career opportunities for research collaboration and scholarly interaction.

Furthermore, relationships among literacy, technology and course design are the socio-cultural literacy researchers' new research areas. How social networking technologies are incorporated into MOOCs by learners and professors has been suggested as another area to explore. Actually, researchers are studying MOOCs from many perspectives. However, research to determine the efficacy and efficiency of MOOCs still needs to be designed. All the subjects mentioned here and especially the need for empirical research concerning MOOCs is regarded as a research gap. Additionally, the big data consisting of the interactions of learners are crucial to exploring how they are learning. Therefore, big data and learning analytics are the interest areas of researchers as well (Pritchard, 2014; Collin & Street, 2014; Radford et al., 2014). Since MOOCs are relatively new compared to the other online teaching and learning environments, they can provide numerous research opportunities for researchers. Increasing awareness of this massive and open teaching and learning environment can contribute to academia and promote today's ICT.

Administrators and administrative personnel: The term 'administrators' is used to refer to decision makers and policy makers working for public or private institutions. For example, senior administrators such as presidents, vice presidents, deans, high-level bureaucrats and various levels of administrators in public or private companies who are the stakeholders of MOOCs. They decide to offer MOOCs or determine the policies to be applied by an institution or a company providing or using MOOCs. These administrators support or resist the implementation of MOOCs. Nevertheless, creating a MOOC requires teamwork and there are various responsibilities in a MOOC team.

The term ‘administrative personnel’ is used to refer to the basic team members who undertake various responsibilities in the team. Some core team members are project managers, video producers, educational technologists, instructional designers, and enrolment professionals. Some of them can serve as a MOOC instructor as well. Additionally, content facilitators, moderators, graduate assistants and mentors help learners and coordinate communication between learners and teachers. While academics are teaching and researching MOOCs, administrators are questioning the effectiveness of this new way of online education. Despite this, MOOCs’ contribution to the brand of a university is gaining recognition among some administrators. Therefore, administrative offices have started to sign contracts for copyright permission or collaboration with platform providers (Hollands & Tirthali, 2014; as cited in Spector, 2014; Dolan, 2014). On the other hand, while some academics are supporters of MOOCs, one university president was blamed for being late to endorse MOOCs by the board of trustees and nearly lost her job (Baggaley, 2013).

Learners: This term is used to refer to the participants or students of the MOOCs. MOOCs make it possible for learners to get free courses from the best universities in the world. Scholarly publications have various definitions of the learners’ profile. Looking at how the learner participates in a course, there are no-shows, lurkers, drop-ins, actives and passives. Participating in all activities brings wealth to the shared knowledge. Many scholars emphasize the role of the social networks of learners from all over the world in MOOC learning. Learners share their knowledge and ideas. Therefore, they can learn from mutual expertise within a social network. These learners want to improve their knowledge in a certain subject or refresh their knowledge using MOOCs. Mostly, they are already a student at a university or

graduated from a university. Eventually, they are lifelong learners and skill developer registrants of MOOCs. To give an idea about their profiles, a questionnaire answered by more than 400,000 registered participants to 32 Coursera MOOCs will be useful. Forty four per cent of the learners are university graduates; 83% have a two-year-degree. Another study done in edX platform used 17 courses and explained that around 30% of the learners are female, 6.3% are 50 or older, while the IP and e-mail addresses of 2.7% of the learners are in the UN's list of least developed countries (Alario-Hoyos, 2014; Kennedy, 2014; Tschofen & Mackness, 2012; Dillahunt et al., 2014; as cited in Hew & Cheung, 2014). Even though some high school MOOCs are available, it can be said that most learners use MOOCs as lifelong learning opportunities. However, the reason for this trend could be explained as inadequate policies, rules and regulations to embrace MOOCs in formal education. Still, there are ongoing discussions about the pedagogy, accreditation, copyrights, credits and sustainability of MOOCs.

IT staff: This basic theme is used to refer to the personnel responsible for the technical devices and programs that keep the MOOCs working. For example, software agents, videographers and hardware technologists are some examples of the IT staff who help instructors, administrative personnel and learners. The following are some examples of the roles of IT staff.

Some scholars suggest computing and internet services to provide support for the learners participating in MOOCs in their own campus, such as sufficient bandwidth speeds for the videos of MOOCs and a technical help desk for learners. The learners may complain about slow internet connections and limited hardware. In a MOOC, the learners need computers and headsets or speakers. The learners use microphones

to participate in the lectures. In addition to this, ICT facilitates the feedback and assessment activities of learners. Besides self or peer evaluations, ICT makes it possible to use automated scoring to grade exams and homework. However, technology is a challenge as well as a benefit. Learners suffer from technological problems when they fill in questionnaires. Learners refrain from connecting to learning networks due to insufficient skills and lack of familiarity with technological learning environments. Online translation tools are seen as another technological barrier. Some learners complained that technological support did not meet their expectations. As an example, Georgia Tech is still trying to recover from a MOOC accident. Ms. Wirth's MOOC, "Fundamentals of Online Education: Planning and Application" was suspended due to technical problems at the beginning of the course. Design and technical problems caused this result with 40,000 registrants. Moreover, the usage of educational software or tools needs to be explained via manuals or facilitated by technicians for the stakeholders of MOOCs. (Hollands & Tirthali, 2014; Chen, 2014; Suen, 2014; Beaven, et al. 2014). To sum up, not only the learners, but also the instructors need IT staff support to participate in and to offer MOOCs. Technology is both an opportunity and a barrier for their users. That is why MOOCs are offered as a result of team work. IT staff facilitates the adoption of the technology and interfaces the communication between the technology and its users.

Institutions: This category mainly comprises universities, private companies, platform providers, organizations and governments. Publishers, libraries, innovation supporters and advertising channels were also mentioned in the journal articles.

Universities: Elite universities are the prominent stakeholders of MOOCs. Harvard University, the Massachusetts Institute of Technology (MIT), Open University, Stanford, Princeton, the University of Michigan and the University of Pennsylvania are the frontrunners of universities offering MOOCs. The University of Manitoba in Canada first offered a course called “Connectivism and Connective Knowledge” in 2008. There were 2,200 registrations, and this was the first time the term MOOC was used to name this course. Between 2008 and 2011, the number of registrations to MOOC courses was not remarkable. In the fall of 2011, Stanford University became a free course provider with the “Introduction to Artificial Intelligence” courses designed by two professors. Stanford President John Hennessy commented that “there’s a tsunami coming”. Nowadays, many prestigious universities are offering online courses using various MOOC platforms. From 190 countries, 160,000 learners registered for these courses. Computer Science 101 was the Udacity course with the largest enrollment, 300,000 learners (Alario-Hoyos, et al., 2014; Hyman, 2012; Gore, 2014).

Platform providers and private companies: Some professors left their universities and founded companies to provide MOOC platforms. For example, MIT and Harvard University founded edX Inc. especially for their own students in May 2012. Two Stanford professors, Daphne Koller and Andrew Ng, founded Coursera Inc. as a private company to provide a platform for MOOCs. Then, Stanford University founded two platforms called Class2Go and NovoEd. In addition, Stanford and edX signed a partnership to provide collaboration among open-source developers. A professor from Stanford University, Sebastian Thrun, founded Udacity, a for-profit company providing a MOOC platform, in February 2012. Coursera, edX, and Udacity are the foremost MOOC platforms. The others discussed in the scientific

journal articles are listed in the following table alphabetically (Table 19) (Peterson, 2014; Radford et al., 2014).

Table 19
MOOC platform providers listed in scholarly publications

Platform Providers		
ALISON	iVersity	Open Study
Canvas Network	JMOOC	OpenUpEd
Class2Go	Khan Academy Platform	P2PU
Connexions	Mechanical MOOC	Peer-to-Peer University
Coursera	MERLOT	Saylor Foundation
CourseSites	MiriadaX	Schoo
CourseSmart	MIT OCW	Udacity
desire2learn	MITx	Udemy
Digital Education	Moodle	UniMOOC
EdX	NovoEd	Veduca
Eliademy	OERGlue	WEU
Ewant	Open University	Wikieducator
FutureLearn	Open2study	XuetangX
Google Course Builder	OpenLearn	

Private companies can also be considered as stakeholders in MOOCs. Actually, MOOCs bring various opportunities to private companies, especially for financial reasons. MOOCs can provide certain skills in a shorter time for the employees of a company. Supervision and accreditation of employees are possible in addition to the required skills' development. Universities, MOOC providers and employers can cooperate to develop some programs for professional needs (Langen & Bosch, 2013).

Organizations: There are some organizations supporting the MOOCs in various ways. For example, EDUCAUSE aims to improve technology usage in education.

They organized a webinar called “Beyond the MOOC Hype” and underlined some issues related to MOOCs. The National Research Council of Canada’s Institute for Information Technology works on research and development. One of their research projects was concerned with the development of a networking learning pedagogical platform. They first presented their findings on MOOCs in 2010. Yet other organization, SIPX, was established to investigate some opportunities in the area of MOOCs. SIPX is a grant funded multi-year project to provide an efficient copyright process for MOOCs. The Association of Research Libraries (ARL), a nonprofit organization comprised of 124 prominent research libraries, tries to find the materials available with open sources or creative commons. ARL needs to solve some legal issues based on the course materials as well. The Bill & Melinda Gates Foundation funds The MOOC Research Initiative (MRI). The responsibility of MRI is to address research gaps and examine MOOCs and their effects on education. The American Council on Education (ACE) is a higher education association, which represents around 1,700 members consisting of two- and four-year colleges, private and public universities as well as non-profit and for-profit entities to deal with difficult education challenges (The American Council on Education, 2015). ACE examines the academic potential of MOOCs. RTI is a research institute that actively works in 75 countries in a wide range of fields including education. RTI provides research data and tools for their customers. RTI researchers are working on MOOCs and cooperate with other researchers, institutions and government to evaluate the available MOOCs (Meisenhelder, 2013; Kop, 2011; Tananbaum, 2013; Butler, 2012; Chen, 2014; About RTI, 2015).

Governments: Today, some governments are still applying obsolete education systems in high schools. While educational costs are increasing, the reduction in

public funds is tightening higher education budgets. The graduates from these schools will be prospective employees in the 21st century. Although many governments and politicians are aware that the education system being applied at the K-12 level is obsolete, they need some reinforcements to replace the inefficient education system with one that could overcome the problems. Due to election cycles, governments tend to employ short-term fixes, but long-term policies are needed. According to Scientific American's special report published in 2013, one of the concerns was MOOCs and their role in higher education. Rowanda's MOOC projects were examined and centralized learning with digital technologies was considered a questionable solution to education problems resulting from poverty, inequality and inaccessibility (Golden, 2013; Baggaley, 2013; Collin & Street, 2013).

Indeed, if a culture has a general tendency prefer academic diplomas, it is not easy to adapt to MOOCs. Brazil is one of these countries. According to a published report after the Higher Ed Tech Summit in 2012, participants agreed that MOOCs and technology-enabled education were transformative on at least two counts: providing higher education access to low-income students and giving educational instructions for personal needs (Almeida, 2014). Today, 36.2% of higher education MOOCs originated in the US, 13% in India and 9.5% in China ("Higher Education MOOCs", 2016)

Publishers: As stakeholders, publishers are experiencing a transformation in the time of OER. The eminent publisher Elsevier provided free access to a course book for the learners of edX throughout a MOOC named "Circuits and Electronics" in 2012. Coursera collaborated with Chegg e-Reader online book Rental Company and well-known publishers to provide affordable and accessible educational materials. These

publishers were listed as Cengage Learning, Macmillan Higher Education, Oxford University Press, SAGE and Wiley in 2013. After the course, Coursera versions of e-books were sold at a discounted price. E-books are new opportunities for the publishers to provide MOOC materials. MOOCs are transforming traditional books to e-books and course content is becoming more interactive. Publishers are producing interactive versions of books. Furthermore, publishers can prevent illegal reading of e-books easier than printed books. Additionally, publishers can use learners' reading analytics to evaluate how their sources were used. Further cooperation between course providers and publishers is done for identification. Coursera, edX, and Udacity cooperate with Pearson test centers to verify the learners' identity during exams (as cited in Chen, 2014; Baggaley, 2013; Krause, 2013).

Libraries: The massive number of learners involved in MOOCs has caused some changes in libraries as well. Libraries have a critical role in connecting the faculty with students who need help in gaining the literacy skills required to deal with MOOCs and providing access to open resources and education facilities. Although insufficient documents exist regarding the role of libraries for MOOCs, Cornell shares a model and explains how libraries can keep up with these recent requirements. MOOCs are seen as an opportunity to extend library services. Issues like intellectual property rights and copyrights of open sources could be some of the reasons for extended services. Maybe MOOCs will follow the way of electronic journal articles. The online distribution of journal articles took almost twenty years. Revenue systems changed and large databases were combined. The transition of the system still continues and open access to everything is seen as a target (Gore, 2014; McKiel, 2014).

Legislators: MOOC stakeholders must be aware of legal issues such as the copyrights of MOOCs, their education materials and the content created by learners. Reading content must be open to massive number of learners. Licensing is another issue. The contents prepared within a MOOC need to be licensed. In traditional classes, the copyrighted materials are copied and distributed under the condition of ‘fair use’. Otherwise, the documents used are under the control of creative common rights. Such documents cannot be used for commercial purposes. There are for-profit MOOCs, as well as non-profit MOOCs. Therefore, some complications will be seen in the US Copyright Acts, which made need some clarification. The US Teach Act needs some revisions for online learning. The third party MOOC providers also need to be included in these new laws (Gore, 2014; Bady, 2013).

Policies

Policies can be defined as behaviors, actions, precautions or tactics to be followed in certain circumstances. **Policies** were organized into three themes; *institutional*, *governmental*, and *sociocultural*.

Institutional policies are inspected in two basic themes: ‘*retention*’ and ‘*skill development*’ of employees. Institutional policies can affect various processes as seen in the interaction model. One of these is the institutions’ use of or openness to the use of new educational technologies to advance employees’ skill and personal development through MOOCs. According to scholarly publications, there is considerable potential for the development of institutional markets. Employees can take refresher courses or skill development courses in their areas if institutions believe in the benefits of such courses. Professional development is achieved without the employee leaving the workplace for lectures or conferences. The economic

benefits to the institutions are reflected in the elimination of travel costs and time, accommodation expenses and course or conference fees. During a recession, institutions are downsized or restructured by upgrading current employees instead of hiring new ones. According to the reports of Human Resources departments, MOOCs from top universities create a positive effect for the hiring and retention of employees. Various MOOC courses for professional development help employees to feel self-value while also increasing the institution's interest in the retention of its top performers. Therefore, skill development and the retention of employees are considered easier when institutions encourage the use of MOOCs. The pros and cons for the institution and its employees have been discussed by Human Resources staff and other employees in various interviews (as cited in Radfort et al., 2014; Cascio, 2014). Institutions should be aware that MOOCs' can provide on the job training at almost no cost. Furthermore, taking courses in areas such as management, leadership or soft skills for personal development or participating in a course given by a professor from a top university on a certain topic for professional development could have a leverage effect on employee motivation.

Governmental consists of two basic themes: '*political*' and '*economic*'. The policies of governments can have an effect on the selection of educational technologies due in part to political issues and resource distribution. The number of students has increased by 50%, from 100 million to 150 million, between 2000 and 2010 and is expected to reach 262 million by 2025. The higher education investments of governments cannot keep up with this. That is why, in addition to private higher education, MOOCs and OER are seen as an opportunity. According to recent UNESCO reports, China, Russia, Brazil and Turkey offer OER to students. Since MOOCs are full courses but OERs are readily available when requested, mostly

governments take advantage of OER to provide education for those students who cannot benefit from traditional higher education. Economic crises and high unemployment ratios have created a greater demand for these courses. (as cited in Collin & Street, 2014; Ros et al., 2014; Langel & Bosch, 2014). Chen (2014) states that higher education would be accessible for everybody because of MOOCs, so some policy makers are becoming interested in MOOCs. In countries such as Turkey, where educational policies are set by the ministry of education, if governments were to consider the use of MOOCs in formal education, issues concerning quality assurance, accreditation, credit approval, exam proctoring and assessment could be solved faster.

Sociocultural is used to refer to the policies affecting the public: ideological, social or cultural. These basic themes of the socio-cultural policies have been examined by various researchers in terms of literacy. MOOCs and other Web 2.0 technologies are discussed as ways to develop literacy. Street's ideological model of literacy and Collin's interaction model of literacy are compared in the some scholarly publications. According to Street, technological skills cannot be the only factor affecting literacy; social practices are also important. Street's views conflicted with the accepted views regarding the autonomy and ideology of literacy. Instead of discussing the complexities of digital literacy, Street focused on "the workings of literacy, ideology, and technology". Ideologies need to be addressed instead of just accepting digital technologies. These communication tools define social practices as well. In Collin's interaction model, literacy is defined as a technological skill. Cultural processes develop along with technologies. The literacy research done by Street and other researchers brought to the foreground these ideological and cultural dimensions, pushing back the technological determinism. In order to discover the

potential of the technology, it is necessary to focus and ask questions about the ideology, not the technology itself. Technology is a conduit for the ideology. Ideology and social phenomena are developed together. While criticizing cultural determinism, Collins emphasized that technological processes have social effects (Collin & Street, 2014).

Collaboration infrastructure

Due to the nature of MOOCs, the design, management and delivery of the course are performed through ICT tools with a collaborative effort. The technical details of the collaboration infrastructure of MOOCs do not seem to have been examined specifically in any of the scholarly publications. However, information found in various publications was grouped into two organizing themes: *tools* and *practices*.

Tools: The term ‘tools’ refers to the physical components and supporting programs required to provide, access and use MOOCs. The indirect references made in scholarly publications to various tools indicate that they can be grouped into two basic themes: *hardware* and *software*. These two basic themes are explained below using the examples derived from publications.

Hardware: This is the term used for the physical components of computers. MOOCs provide an environment for the learners to access course sources through cloud computing, which is one of the network models employed to connect computers and serviced by third party data centers. It is defined as a way to share and arrange the sources (“cloud computing”, n.d.). MOOC learners who have sufficient hardware can access clouds independent from time and location. Providing that an internet connection exists, cloud computing enables people to achieve unlimited access to

educational sources and the latest technology hardware and software. Mobile phones and tablets are another easy way to connect to clouds. Additionally, interactive whiteboards facilitate learning. For example, Universitat Pompeu Fabra organized its first MOOC, 'Decoding Algebra', in the MiriadaX platform. They decided to use an interactive whiteboard for tablets and chose an application called 'Doceri', which allows a tablet user to control and use the computer as if he were sitting in front of it. The application allows the user to record what the computer displays on the screen as well as the accompanying audio. Therefore, learners concentrate on the videos during the course. The learners do not need to take notes because they have the recorded videos. This tablet and whiteboard application received positive feedback from 94% of the learners (de Waard, 2011; Cascio, 2014; Godwin-Jones, 2014; Daza, 2013). Today's ICTs provide a variety of hardware devices from mobile phones to the network computers and facilitate the collaboration of learners over the MOOC platforms. Learners and providers are free to communicate and connect using any device in MOOCs on the condition that an internet connection is available.

Video-web conferencing is another live communication method between learner and instructor. It helps to increase learners' motivation and the feeling of being part of a team. However, video-web conferences can affect learners in a negative manner if there is a language or self-esteem problem (Toven-Lindsey, 2015).

Software: This a generic term used to describe programs needed to work with computers. Software is needed to take advantage of web technologies, to prepare videos for lectures, to do computer-based evaluations and join online forums. Only with the help of such software can this massive number of learners hope to gain access to course content, make assessments and participate in forums to support

fellow learners. Web 2.0 technologies and learning management systems (LMS) provide collaborative environments in MOOCs. Traditional LMSs like Blackboard, Desire2Learn, WebCT and Moodle have developed their platforms to support a collaborative learning environment. Some of the LMSs turned their platforms into MOOCs or cloud based platforms. For example, Moodle is used to offer MOOCs. However, social collaboration tools have already surpassed them in terms of usage (Chen, 2014; Amemado, 2014; Sancho & de Vries, 2013)

RSS feeds are also used to support collaborative learning. These online alerts keep the learners updated about recent news on any subject. Learners can place RSS feeds in their own web sites and blogs to keep their audience updated on a specific subject. MOOCs take advantage of the “learning by doing” approach as well. For example, digital labs are gaining popularity in science and engineering education. Remote labs and virtual labs are two types of digital labs. Many articles about digital labs were published in the archival journal IEEE Transactions on Learning Technologies (TLT). ‘Virtual Instrument Systems in Reality (VISIR)’ is a popular remote laboratory used to teach remote wiring and measurement in electronics (De Waard, et al., 2011; Brusilovsky & Sharples, 2013).

Some other software (such as remote monitoring, signature track, and rhythm and characteristics analysis of typing) is needed for monitoring MOOC exams and checking the identity of examinees. Remote monitoring refers to proctoring in online exams. However, as emphasized by Andrew Ng, co-founder of Coursera, a student who wants to take a course for credit pays a fee that includes remote monitoring. This service is provided by third party companies that use screen sharing software, webcams and record videos during the exams. According to Ng, some learners pay

for better validated certification, in which case the ‘signature track’ service ensures the identity of the examinee. Webcams can be used to check identity by scanning the learner’s face. Besides self and peer grading, some computer programs or a ‘robot grader’ can be used to grade assignments like quiz and exams. Yet other kind of software is used as a cheating precaution for homework or essays. First, learners are requested to type a short phrase, then, a software program analyzes the rhythm and basic characteristics of typing. Following the submission of homework or tests, this software is used to match it with the previously typed phrase (Fomin, 2013; Godwin-Jones, 2014).

Another type of software is used to analyze data collected from learners. Cloud-based platforms provide learning analytics, which is a tool recording the activities of learners. Considerable data has been collected via learning analytics tools during the process of online learning. This data is examined to determine how learning processes are supported by technological developments. According to the findings of these assessments, the effectiveness and development of teaching and learning activities can be addressed (Colbran & Gilding, 2013, Radford et al., 2014).

Practices: This organizing theme is used to refer to the *content design* and *assessments* of MOOCs. These two basic themes are explained below using the examples extracted from publications.

Content design: Course content is used to refer to the topics that will be examined during the MOOC. The content of a MOOC results from a cooperative effort and various instruments are used to create and share it. In addition to the customary prepared content such as video lectures, audio sessions, slides, readings, textbook

and exercises, participants actively contribute to the content of the course. This is the nature of MOOCs; learners' contributions are an essential part of course content. Since a MOOC is the product of a team, project managers, video producers, faculty and platform providers all have important roles in a MOOC team. The communicative environment among the learners, instructors, technologists and course platform providers is provided by developments in ICT. Many instruments are available to support collaborative content creation, such as web sites, blogs, social media network, wiki, discussion forums, message boards, Google docs and e-mails. Collaboration groups (chat groups, local study groups, meet-up groups) and open translations made by volunteers also contribute to the success of the MOOC.

Assessments: In MOOCs, teachers develop most of the assessments. Teachers prepare course information, syllabi, assignments, quizzes and exams; however, the grading of these is another concern. Assessments are mostly comprised of fill in the blank and multiple-choice question types. Learners do assessment grading mostly by themselves or with peers. Thousands of learners review and evaluate each other's work. However, the assessment of so many learners' work with very little teacher support is not seen as a good practice for their evaluation.

Setting clear instructions and limiting the amount of time spent on peer-assessment can improve efficiency. Peer grading is suggested to be a part of summative assessments. In fact, credentials or certification are dependent on the result of these assessments (Suen, 2014). Automated grading, proctored exams or signature track can be recommended as precautions for the validity of assessment results.

Teaching and learning theories

As was stated before, **teaching** and **learning** have become a collaborative effort with online learning due to developments in ICT. Teaching and learning theories also started to take collaboration into consideration with the advent of MOOCs. In the following section, three organizational themes are examined for this global theme. These are the objectivist theory, constructivist theory and connectivist approach in online learning as revealed in the scholarly publications on MOOCs. The first two theories are accepted educational theories, while the third, the connectivist approach, is relatively new. Although it is not one of the educational theories, people working with ICT suggest the connectivist approach as an educational pedagogy to be discussed with regards to MOOCs. In online courses, the collaboration approach was examined in terms of four categories by Toven-Lindsay and et al. (2015). In this thesis, these four categories were taken as the basic themes for the objectivist and constructivist theories.

Objectivist theory: Objectivist theory can be inspected in terms of two categories. These basic themes are the *individual approach* and the *group approach*. The objectivist individual approach depends on a single objective and highlights instructional sequence and individual control for the transmission of knowledge. In this approach, knowledge is transferred from an expert to a learner. For example, a course called Open Learning Initiative, which was designed by Carnegie Mellon University, used the objectivist individual approach. Learners accessed the course content, achieved the objectives of the course and made self-assessments without getting help from peers or instructors (as cited in Toven-Lindsay et al., 2015).

In the objectivist-group approach, learners follow the course content provided by the instructor and submit the course assignments within a certain length of time after collaborating with peers (as cited in Toven-Lindsay et al., 2015). Due to the collaborative structure of MOOCs, even if group activities are not required to complete a course, some MOOCs boost collaboration activities.

Constructivist theory: The constructivist theory is also organized into two categories based on the *individual* and *group approaches*. In the constructivist-individual approach, it is assumed that learners actively construct their own knowledge. Learners use course materials and combine some external sources to learn a specific course subject. Learners make self-assessments comparing their answers with instructors' answer keys or computers check their answers. In the constructivist-group approach, however, interaction with peers is encouraged and a high level of collaboration is required. Discussion boards, debates, video conference sessions and peer reviewed writing are some examples of the tools used (as cited in Toven-Lindsay et al., 2015).

Connectivist approach: MOOC developers have suggested connectivism as a new educational approach although it has not yet been accepted among the educational philosophies. The term connectivism was first used in a course with 2,200 learners. In this course called 'Connectivism and Connective Knowledge (CCK08)' and offered by the University of Manitoba, course instructors George Siemens and Stephen Downes exemplified the connectivist approach. According to this approach, learning starts with a connection and follows the connection of knowledge sources in the people networks. Learners generate and share knowledge using human and non-human sources of information. Learning is seen as gaining the capability to build

connections (Margaryan, et al., 2015; as cited in Hew and Cheung, 2014; as cited in Tschofen & Mackness, 2012).

According to Kop (2011), there are four major activity types in connectivist learning: *aggregation*, *relation*, *creation* and *sharing*. Aggregation is used to refer to how the learners access the course sources and read, listen to or watch these sources. Then, relation denotes how they relate all this to prior knowledge and experience, what they learned while reading, listening or watching. After this step, learners might create a post using any internet service: eg. blogs, Facebook, learning management systems or discussion boards. In the last step, learners share their knowledge with other learners in the network. Thus, it can be seen that participation is required in each of the activities.

Classifications

According to the concepts found in scholarly publications, MOOCs are classified into four themes. These are coded as the *implementational*, *structural* and *pedagogical* organizational themes.

The *implementational* approach classifies the MOOCs as *Bad MOOC*, *Good MOOC*, *Quasi MOOCs*, and *SPOCs*. Good MOOCs provide social and active participation for knowledge creation. Lectures, tests and a division of labor are seen as the worst features of teaching. “bad MOOCs” present these worst features to a massive number of learners more accurately and worldwide. The MOOCs offered outside of a university system by various platform providers are quasi-MOOCs. For example, Khan Academy, Google Course Builder, ALISON and Udemy offer quasi-MOOCs. SPOCs stands for Small Private Online Courses. MOOCs are used in flipped

classrooms, to watch videos and learn the theoretical content at home or to solve automatically corrected questions. However, the challenges of MOOCs lead to the SPOCs. Harvard University used the SPOC acronym for courses offered in their edX platform for their Design School and Law School. In both MOOCs and SPOCs, there can be a large number of students, so teachers need precise strategies to know what is going on with each individual student and with the whole class (Gore, 2014; as cited in Muñoz-Merino et al., 2014).

The *structural* approach is used to classify MOOCs into three basic themes: “network-based”, “task-based” and “content-based”. In network-based MOOCs, knowledge is constructed socially through collaboration using communication tools. In task-based MOOCs, the development of skills is based on tasks through collaboration. However, the main goal is not community creation for learning. In content-based MOOCs, the main goal is the transmission and acquirement of content with the opportunities of participation and networking (as cited in Beaven and et al., 2014).

The *pedagogical* approach classifies the MOOCs in three groups; oMOOCs, xMOOCs, and cMOOCs. In oMOOCs, ‘o’ is used to denote ‘original’ and represents the idea of the first Canadian MOOC, offered by Stephen Downes and George Siemens in 2008. The term oMOOCs is used to explain how this course was embodied by educational institutions. In xMOOCs, the pedagogical model is based on cognitive-behaviorism. xMOOCs are teacher directed courses. These courses are more structured and centralized, less open to learner autonomy and different assessment forms. Courses consist of syllabus, reading assignments, short video lectures, online discussion forums, multiple choice quizzes, essays and projects.

Although xMOOCs have high dropout rates compared to cMOOCs, they are useful for learners who want to access leading professionals in a specific area or learners confused by the extreme networking and collaboration structure of cMOOCs. The characteristics of cMOOCs are open content, open materials and open knowledge constructed by the common effort of learners using any collaborative tool. The pedagogical approach of cMOOCs is based on connectivism used in distributed platforms. For beginners in such courses, the use of distributed platforms or the variety of collaboration tools can be challenging (Kennedy, 2014; Dolan, 2014; as cited in Hew & Cheung, 2014; as cited in Beaven et al., 2014).

Success factors

Success factors as a global theme is used to refer to those factors affecting how successful a MOOC is. Success factors are grouped into three organizing themes: individual, institutional and social.

Individual: These success factors are related to individuals' own skills and needs. Some of the basic themes in this category are: *flexible thinking, personalized guide or facilitator* and *repeated participation or ready learners*. Some researchers found that individual factors like gender, age and grades have no effect on the learner's achievement or the success of a MOOC. Nevertheless, while other factors are equal, learners working offline with peers or someone who knows about the subject would get a grade that was three points higher than a learner studying alone. The results of the research into edX's first MOOC indicate that guiding a learner contributes to the success of both learner and MOOC. Therefore, according to the connectivist approach to learning, the aim of networking is mainly to help learners gain different perspectives. Each learner has the opportunity to examine others' perspectives in

order to develop and deepen his own knowledge. In a MOOC, personalized guides, facilitators, peers, instructors and other professionals can support the learners.

Although the instructor is crucial for learner support, as a flexible thinker, the learner expands his own knowledge with the help of others. Furthermore, repeated interaction with fellow learners improves the chance of success for each and every learner. Familiarity, interest, satisfaction and enjoyment concerning the learning activity can motivate the learners to take part in other MOOCs. A good experience makes learners ready for the next MOOC (as cited in Hew & Cheung, 2014; deWaard, 2011; as cited in Alraimi et al., 2015).

Institutional: This supports the view that the success of a MOOC is the responsibility of institutions. The basic themes of institutional success factors are: *institutional roles and goals, instructional expectations* and *technical infrastructure*. These basic themes are explained with the following examples.

Institutional roles and goals: Institutional leaders, faculty support, assigned roles, shared outcomes and common goals explain ‘institutional roles and goals’. For the development of successful online communities, there is a need for institutional leaders and the support of faculty also contributes to the achievement of the assigned roles according to the common goals or shared outcomes of the institution (as cited in deWaard et al., 2011).

Instructional expectations: The instructional expectations can be explained with various examples such as quality instructions and course materials, discussions and feedback, multiplicity of possibilities and clear statements. Parallel to the other online learning characteristics for success, quality is required for instructions and course materials as well as in the discussions and feedback that contribute to the

interactions. The multiplicity of possibilities during the interaction with peers and professionals and the tools used for collaboration create a flexible learning environment for every level and skill of learner. In addition, being explicit and making clear statements is another requirement mentioned in scholarly publications (deWaard et al., 2011; Beaven et al., 2014; Chen, 2014).

Technical infrastructure: This should be strong for the MOOC to provide adequate support for the courses and the massive number of learners. Some examples of such infrastructure are open licensing, investment, educational technology, sustainability and design principles. Some parts of MOOC content are produced by a collaborative effort as in an OER. These sources should have an open license to allow the reuse and updating of resources like video, audio or course books that make up a quality MOOC. Designing a high quality MOOC requires a large investment as well. Nevertheless, how the sustainability of a MOOC is achieved is still unknown. MOOCs are free. Learners can pay to obtain certificates or badges and to have exams proctored. These charges help to support the development of new courses and obtain up-to-date educational technology. More research is needed to find new business models for the sustainability of MOOCs. Finally, MOOCs do not work with traditional learning principles. Therefore, the design principles of MOOCs need to be determined and defined through the common experience of learners during lessons for the courses to be successful (Ros et al., 2014; Chen, 2014; deWaard, 2011; Deimann & Farrow, 2013). As Jackson (2013) says, the authors are aware of distrustfulness in higher education, so successful online systems like MOOCs can be an opportunity:

We are persuaded that well-designed interactive systems in higher education have the potential to achieve at least equivalent educational outcomes while opening up the possibility of freeing up significant resources that could be redeployed more productively (p.246).

Social: This term is used to refer to the social factors that contribute to the success of MOOCs. The basic themes of social success factors are listed as *collaboration* and *diverse community*. Learning through collaboration is in the nature of MOOCs since it motivates and boosts the performance of learners. They expand their knowledge and make careful analysis considering the input of more knowledgeable learners. A diverse community is seen as a positive property of MOOCs. Diverse perspectives enrich ideas, discussions and materials produced during the courses. However, some researchers assert that in a diverse community, due to the learners' varied backgrounds, the creation of common knowledge is not easy. Nevertheless, most scholars agree that the rich perspectives of a diverse community contribute to learning and knowledge. Thus, diversity was considered to be a core component of a MOOC in a mobile learning experience (Dolan, 2014; as cited in Hew & Cheung, 2014; deWaard, 2011).

Implications for practice

John Chambers, former CEO of Cisco Systems had said that, "The next big killer application on the internet is going to be education. Education over the internet is going to be so big it is going to make email usage look like a rounding error" (1999). Throughout the history of education, technological developments have been followed by educationalists. Now, since the internet is the biggest network, why shouldn't educationalists be a part of it?

Keeping in mind that the healing power of education, as emphasized by Johnstone (2005), directs the educationalist to new discoveries: “No single concept or project can possibly solve all the problematic issues afflicting people all over the world, but increasing educational options can help people help themselves” (p.4).

As a new educational option, the MOOC phenomenon has been discussed in detail but often with warnings. The New York Times wrote: “the year of the MOOC” (Pappanov, 2012), Anant Agarwal, president of edX, said: “I like to call this the year of disruption”. The Economist wrote: “the attack of the MOOC” (2013). John Hennessy, the president of Stanford, said: “There's a tsunami coming” (Auletta, 2012). Barber et al (2013) were emphasized as “An avalanche is coming”.

Washington Post “Are MOOCs already over?” (2013). MOOC stakeholders should find their ways between the ‘MOOC hype’ and ‘MOOC hate’. Therefore, ‘implications for practice’ section of this study are informing individual and institutional stakeholders of MOOCs (Wildavsky, 2015).

This study summarizes the descriptive themes for the salient components of MOOCs as revealed in scholarly publications and direct implications for practice, brings a new conceptual framework through the findings. Therefore, audiences of this study are shortly summarized as the stakeholders of the MOOCs. These stakeholders are determined by examining the scholarly publications during this study and are described by referencing the publications. Academics (including the researchers, administrators and administrative personnel, learners, and IT staff) are the individual stakeholders of the MOOCs. Institutions such as universities, private companies, platform providers, organizations, governments, publishers, libraries, innovation supporters and advertising channels are stakeholders of MOOCs as well. All these

individuals and institutions have different duties and responsibilities regarding MOOCs. The findings indicate that individuals and institutions can focus on their own contexts and find a way to gain their own MOOC experience. The following are examples for some of the stakeholders who want to benefit from this study.

Governments and administrators should recognize that MOOCs can be used with various aims in mind: decreasing costs or hybrid learning in higher education and in high schools. They can enhance life-long learning and be used to increase the quality of face-to-face hours. Administrators charged with the integration of MOOC with its contradictory fame in education world may read this study to compare issues and opportunities. If they decide that the opportunities outweigh the issues, they can examine it to determine what characteristics are required for a MOOC to be successful.

Prospective students who want to learn using MOOCs need to know the issues and opportunities for themselves. They have to be made aware of recognition formats like certificates and badges or how much interest employers show in such courses for employment. Employers can also use MOOCs to provide life-long learning potential or decrease internal education costs. IT staff can get an idea concerning the role they will be serving in this learning environment. Lawyers might be interested in this scope of research since they are responsible for the intellectual properties and copyright issues of MOOCs. Publishers and libraries want to know how they can keep up with online materials. As regards academics as researchers, they could benefit from examining the findings of this research. The descriptive themes explained in detail would provide them with valuable information inaccessible elsewhere.

In all aspects, the components of MOOCs extracted from the scholarly publications will provide holistic view for all stakeholders. Additionally, the findings of this study, the key words used in referring to MOOCs, demonstrate to stakeholders how to collect further information for their interest area. The stakeholders of MOOCs as well as researchers can use Figure 30 as a framework for further research according to their own context.

Limitations

The limitations of this study can be listed and explained in terms of the sample, *pedagogy, content analysis, thematic network analytic tool, qualitative research.*

Sample

The sample can be addressed from three perspectives. First of all is the size. The MOOC components were based on 83 articles obtained from scholarly publications. However, the original population of the research articles (303) would not have been too much to deal with. If I had worked with a research team, The whole population could have been examined. Second, prior to the publication of a research article, the process of researching, writing and editing takes a long time. As a result, when data collection, coding, writing, and revizing processes of sampling of this research were finalized, it was noted that the sampling was mostly based on 2012 and 2013 publications. Third, although stratified sampling was used in this study, the stratification was done using the impact factors of the scientific journals. However, the indexes were not recognized by all of the journals.

The population of the study was the result of a query run of online library databases to find references to MOOCs. The search results included more than 700 articles

published in scientific journals after deleting the duplicate results. When the search results were inspected closely, it was discovered that due to the different data entries made by these database providers, the list still had duplicate and even triplicate records. When all redundant entries were cleared from the list, the population of the study consisted of 303 scientific journal articles (see Chapter 3 for the process). If the study had been done by a research team consisting of 4-5 researchers, all the scientific articles on MOOCs could have been examined and the findings of the study would have been based on all of the articles (303) obtained from the online databases. Even though generalization is not a main concern of qualitative research, a larger population size would have allowed the findings for this study to be generalized. The findings of this study were derived from 83 out of 303 scientific articles. That is to say, 27% of the population was examined as the study sample. Thus, the findings were obtained from approximately one fourth of the total population.

There is a time concern regarding the sampling for this study. The decision to collect articles was made at the beginning of January 2015. Moreover, the MOOC topic is considered to be relatively new in the field of education. In fact, the word MOOC was first used in 2008. That is why it was possible for MOOC as a keyword to be searched for only between 2008 and 2015. As a result, only one article was found for each of 3 years: 2009, 2010 and 2015. There were four articles in 2011, 31 in 2012 and 132 and 133 articles for 2013 and 2014 respectively. As a result, most of the publications belong to the years 2013 and 2014. In Nvivo 10 the coding process of these articles was started in January 2015 and finished at the beginning of April 2015. The finalizing the coding process with experts ended in January 2016. Then the analysis and writing processes started. The first draft of this paper was completed

in August 2015. After feedback, the revising process of the thesis started and was almost finished by the end of March 2016. Finally, after determining the sample, coding and writing processes of this qualitative research in a year, the salient component of MOOCs were revealed based on scientific journal articles published mostly in 2013 and 2014. Considering the data collection, preparation and publication processes for journal papers, it would not be inaccurate to say that these articles reflect information gathered in 2012 and 2013. Thus, the findings of this thesis are based on research done between 2012 and 2013 and explained almost four years later. This could be seen as a drawback for qualitative research of this scope.

Only scientific journal articles were inspected to constitute the sampling of the study. The samples were selected using the stratified sampling method. Stratification was done according to the impact factors of the scientific journals analyzed. During this process, it was not possible to find any index recognizing all scientific journals in the education area. After several indexes were examined, it was decided to use Scopus since it has impact factors for 48% of the related scientific journals. This implies that 58 journals out of 120 were recognized by Scopus. The nearest index to Scopus was Bioxbio with 30%; TUBITAK followed with 23% and Citefactor recognized only 8% of the scientific journals (see Chapter 4 for the process). This study could have influenced the interpretation of the findings from the stratified sampling.

Pedagogy

In this research, the pedagogical side of MOOCs was not taken into consideration. The pedagogical approach that has been suggested for MOOCs is called the connectivist approach, which is not one of the known educational teaching and learning theories. Thus, rather than educational experts, it is the technology experts

who suggested the connectivism as a new pedagogical approach. It stems from the view that people are connected through ICT in order to create and share knowledge collaboratively. There is considerable discussion concerning this approach between technical people offering MOOCs and educational theorists. Since connectivism is not yet seen as a new educational theory, its components could not be included in the MOOC components.

Content analysis

Content analysis can be applied using a deductive or inductive approach. In addition to this, content analysis can provide qualitative and quantitative results.

Deductive vs. inductive approach: In this research, the inductive approach was used. The codes and categories used in the research were derived during the analysis of the scientific journal articles. The codes obtained from the research articles could be analyzed using the deductive approach to determine whether the results were the same as the existing codes

Content analysis as a research method could be more quantitative to ascertain the frequencies of codes and to find maximum and minimum numbers of the codes as well. It would be beneficial to make a comparison of the frequencies of each component to determine what the most important or widely emphasized components are. The following word cloud (Figure 31) produced by Nvivo is just an example to show the most and the least used words (codes) from the articles. The following table (Table 20) is one of the examples of Nvivo outputs summarizing the word counts in the table format. However, the aim of thesis was to find salient components of

MOOCs as revealed in scholarly publications. The scope of the thesis did not include these types of analysis, but this could be done in detail in future research.



Figure 31. A Sample Figure from Nvivo 10

Table 20
A sample table from Nvivo 10.

Word	Length	Count	Weighted Percentage (%)
learning	8	5212	1.45
moocs	5	2771	0.77
online	6	2640	0.73
education	9	2540	0.71
course	6	2054	0.57
moooc	4	2008	0.56
students	8	2020	0.56
2013	4	1796	0.50
research	8	1689	0.47
courses	7	1515	0.42
open	4	1467	0.41
university	10	1472	0.41
language	8	1419	0.39
2012	4	1211	0.34
technology	10	1203	0.33
new	3	1065	0.30
higher	6	1051	0.29
study	5	1047	0.29
learners	8	989	0.28
one	3	1003	0.28

After creating the codes and their categories, it was possible to mark the relations between the codes and categories using Nvivo 10. Then writing queries would find and draw the code relationships diagrams according to the affecting factors of the codes. This was not in the scope of thesis but could be dealt with in future as well.

The thematic network analytic tool

In this research, the content analysis research method was used along with the thematic network analytic tool. The tool was helpful in managing the analysis and describing the findings obtained from the analysis. Since this tool suggested three levels of hierarchy, it was very useful for organize the findings. Otherwise, the research would have involved more than three levels, making it difficult to explain the components as a model. Some of the basic themes would be more meaningful if they had been explained using the examples derived from the research articles, whose existence would have further clarified some of the MOOC components.

Qualitative research

This is a qualitative study and it employed an exploratory approach and consisted of descriptive categories of the words and phrases derived from scholarly publications. It could be considered quite demanding for a non-native researcher. However, to overcome this limitation, the researcher worked with two native speakers during the research for all the themes constituted from the publications. Some slight changes were made in the themes, mostly related to the form of the words. The main concern seemed to be whether the theme should be a noun or an adjective.

Implications for further research

This research was conducted with 83 (27%) out of 303 of the scholarly publications on MOOCs retrieved from the search results of the library online databases. Even if the aim is not to generalize the research findings, this study could be expanded to determine and define the salient components of MOOCs as revealed in all of the scholarly publications. As was mentioned in the 'limitations' section, a research team would be able to share and code all the available journal articles related to MOOCs. The result of this kind of research might provide valuable information to better explain MOOCs based on the articles published between 2008 and 2016.

This thesis was the result of an inductive approach to content analysis. As was stated in the 'limitations' section, the categories can be defined before the analysis based on previous knowledge, experience or theory and this would be a deductive approach. The results obtained could be compared with the findings of this thesis. For example, for the years 2015 and/or 2016, scholarly publications could be investigated to determine how well the MOOCs components resemble those of this thesis.

This thesis did a content analysis with the qualitative data. The findings of the thesis would be enriched if various survey questions were directed to stakeholders, to deduce the extent to which they agree with the findings or their perceptions about the findings. Survey results could be coded and could be used to check findings from the standpoints of stakeholders. Furthermore, coding the words and phrases would generate some quantitative data in Nvivo to demonstrate frequencies, ratios and visual data. Nvivo features, such as word frequencies, coding queries, charts, word clouds, word trees, exploration and comparison diagrams, virtual data, coding relationships and coding comparison queries were not used in this thesis. Including

such factors would enriched the findings of the thesis. However, the scope of the thesis did not go beyond coding and determining the themes. Therefore, implementing a survey and expanding the factors dealt with would be possible research areas.

REFERENCES

- 05.04.2012 Tarihli yükseköğretim genel kurul toplantısında alınan kararlar, (2012, April 05). Retrieved from <http://egitim.gop.edu.tr/birimDuyurularDetay.aspx?dilId=1&birimlerId=7&duyuruId=240>
- About RTI. (2015, August 7). Retrieved from http://www.rti.org/page.cfm/About_RTI
- Adkins, A.A. (2013). *Worldwide market for self-paced e-learning products and services: 2011-2016 forecast and analysis*. Retrieved from <http://www.ambientinsight.com/Resources/Documents/AmbientInsight-2011-2016-Worldwide-Self-paced-eLearning-Market-Premium-Overview.pdf>
- Al, U., & Madran, R. O. (2004). Web-based distance education systems: required features and standards. *Bilgi Dünyası*, 5(2), 259-271. Retrieved from <http://www.bby.hacettepe.edu.tr/yayinlar/dosyalar/259-271.pdf>
- Alario-Hoyos, C., Pérez-Sanagustín, M., Delgado-Kloos, C., & Munoz-Organero, M. (2014). Delving into participants' profiles and use of social tools in MOOCs. *IEEE Transactions on Learning Technologies*, (3), 260-266.
- Alkan, C. (1987). *Açıköğretim uzaktan eğitim sistemlerinin karşılaştırmalı olarak incelenmesi*. Ankara: Ankara Üniversitesi Eğitim Bilimleri Fakültesi Yayınları.
- Alraimi, K. M., Zo, H., & Ciganek, A. P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. *Computers & Education*, 80, 28-38.

- Amemado, D. (2014). Integrating technologies in higher education: the issue of recommended educational features still making headline news. *Open Learning: The Journal of Open, Distance and e-Learning*, 29(1), 15-30.
- Atkins, D. E., Brown, J. S., & Hammond, A. L. (2007). *External review of the Hewlett Foundation's open educational resources (OER) program: Achievements, challenges, and opportunities*. CA: Hewlett Foundation.
- Attride-Stirling, J. (2001). Thematic networks: An analytic tool for qualitative research. *Qualitative Research*, 1(3), 385-405.
- Auletta, K. (2012, April 30). Get rich U. *The Newyorker*. Retrieved from <http://www.newyorker.com/magazine/2012/04/30/get-rich-u>
- Bady, A. (2013). The MOOC moment and the end of reform. *The New Inquiry*. Retrieved from <http://thenewinquiry.com/blogs/zunguzungu/the-mooc-moment-and-the-end-of-reform>
- Baggaley, J. (2013). MOOC rampant. *Distance Education*, 34(3), 368-378.
- Balasubramanian, K., Clark-Okah, W., Daniel, J., Fererira, F., Kanwar, A., Kwan, A., et al. (2009). *ICTs for higher education: Background paper from the Commonwealth of Learning*. Paper presented at the UNESCO world conference on higher education, France: Paris.
- Beaven, T., Hauck, M., Comas-Quinn, A., Lewis, T., & de los Arcos, B. (2014). MOOCs: Striking the right balance between facilitation and self-determination. *MERLOT Journal of Online Learning and Teaching*, 10(1), 31-43.
- Bergmann, H. F. (2001). The silent university: The society to encourage studies at home, 1873-1897. *The New England Quarterly*, 74(3), 447-477.

- Bilgi teknolojileri sertifika programı. (2016, April 29). Retrieved from <http://idea.metu.edu.tr/>
- Bowen, W. G. (2013). *Higher education in the digital age USA*: Princeton University Press
- Brusilovsky, P., & Sharples, M. (2013). Editorial: A message from the editorial team and an introduction to the january-march 2013 Issue. *Learning Technologies, IEEE Transactions on*, 6(1), 2-3.
- Butler, B. (2012). *Massive open online courses: Legal and policy issues for research libraries*. Retrieved from <http://www.arl.org/bm~doc/issuebrief-mooc-22oct12.pdf>
- Cascio, W. F. (2014). Leveraging employer branding, performance management and human resource development to enhance employee retention. *Human Resource Development International*, 17(2), 121-128.
- Casement, W. (2013). Will online learning lower the price of college? *Journal of College Admission*, 220, 14-18.
- Cevizci, A. (2010). *Paradigma felsefe sözlüğü* (7th ed.). İstanbul: ParadigmaYayıncılık
- Cheek, J., Garnham, B., & Quan, J. (2006). What's in a number? Issues in providing evidence of impact and quality of research (ers). *Qualitative Health Research*, 16(3), 423-435.
- Chen, Y. (2014). Investigating MOOCs through blog mining. *The International Review of Research in Open and Distributed Learning*, 15(2), 18-26.
- Clark, J. J. (1906). The correspondence school: Its relation to technical education and some of its results. *Science*, 327-334.

- Cloud computing.(n.d.).In *Wikipedia*. Retrieved August 22, 2015 from https://en.wikipedia.org/wiki/Cloud_computing.
- Clow, D. (2012). The learning analytics cycle: closing the loop effectively. *Proceedings of the 2nd International Conference on Learning Analytics and Knowledge* (pp. 134-138). ACM.
- Colbran, S., & Gilding, A. (2013). MOOCs and the rise of online legal education. *Journal of Legal Education*, 63(3), 405-428.
- Collin, R., & Street, B. V. (2014). Ideology and interaction: Debating determinisms in literacy studies. *Reading Research Quarterly*, 49(3), 351-359.
- Dahllöf, U. (1988). Continuing education: New needs and challenges for distance education studies, developing distance education, *International Council for Distance Education*, Oslo, Norway.
- Daniel, S. J. (1995). *The mega universities and the knowledge media: Implications of new technologies for large distance teaching universities*. (Published master thesis). Retrieved from <http://spectrum.library.concordia.ca/132/1/MM10836.pdf>
- Daza, V., Makriyannis, N., & RoviraRiera, C. (2013). MOOC attack: Closing the gap between pre-university and university mathematics. *Open Learning: The Journal of Open, Distance and e-Learning*, 28(3), 227-238.
- 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.
- De Waard, I., Abajian, S., Gallagher, M. S., Hogue, R., Keskin, N., Koutropoulos, A., & Rodriguez, O. C. (2011). Using eLearning and MOOCs to understand

- chaos, emergence, and complexity in education. *The International Review of Research in Open and Distributed Learning*, 12(7), 94-115.
- Dean, L. (1994). Telecomputer communication: The model for effective distance learning. *ED Journal*, 8(12), 1-9.
- DeBoer, J., Ho, A. D., Stump, G. S., & Breslow, L. (2014). Changing “course” reconceptualizing educational variables for massive open online courses. *Educational Researcher*, 43, 74-84.
- Deimann, M., & Farrow, R. (2013). Rethinking OER and their use: Open education as Bildung. *The International Review of Research in Open and Distributed Learning*, 14(3), 344-360.
- Demiray, U. (1997). *A review of the literature on the Open Education Faculty (1982-1997). An expanded and revised third edition*. Eskişehir: Anadolu University.
- Demiray, U., & Adiyaman, Z. (2010). *A review of the literature on the open high school in Turkey between the years on its 10th Anniversary (1992-2002): A revised and expanded version. Online Submission*.
- Demiray, U., İnceelli, A., & Candemir. (2008). *Anadolu Üniversitesi Açık Öğretim Fakültesi ile ilgili olarak yapılan çalışmalar kaynakçası (1982-2007)* (5th ed., p. 353). Eskişehir: Anadolu University.
- 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). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/1841>
- Dolan, V. L. (2014). Massive online obsessive compulsion: What are they saying out there about the latest phenomenon in higher education? *The International Review of Research in Open and Distributed Learning*, 15(2), 268-281.

- Duman, A., & Williamson, B. (1996). Organization, constraints and opportunities: An analysis of adult education in Turkey. *International Journal of Lifelong Education*, 15(4), 286-302.
- EASE. The European Association of Science Editors. (2016). *Impact factor statement*. Retrieved from <http://www.ease.org.uk/publications/impact-factor-statement>
- Eşme, İ. (2001). *Yükseköğretmen okulları*. İstanbul: Bilgi-BaşarıYayınevi.
- Europa, O. E. (2014). *European MOOCs scoreboard*. Retrieved from http://www.openeducationeuropa.eu/en/european_scoreboard_moocs [06.05.2014].
- European Commission, (1996). *White paper on education and training: Towards the learning society*. Retrieved from http://europa.eu/documents/comm/white_papers/pdf/com95_590_en.pdf
- Field, J. (2006). *Lifelong learning and the new educational order* (2nd ed). Staffordshire, England: Trentham Books.
- Fini, A. (2009). The technological dimension of a massive open online course: The case of the CCK08 course tools. *The International Review of Research in Open and Distributed Learning*, 10(5). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/643/1402>
- Fomin, E. (2013). MOOCs: Tips for enrollment professionals. *Journal of College Admission*, 220, 19-20.
- Fraenkel, J. R. & Wallen, N. E. (1998). *How to design and evaluate research in education*. New York: McGraw-Hill.
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (1993). *How to design and evaluate research in education* (Vol. 7). New York: McGraw-Hill.

- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2009). *How to design and evaluate research in education*. New York: McGraw-Hill.
- García-Peñalvo, F.J., Seoane-Pardo, A.M. (Ed.). (2014). *Online Tutor 2.0: Methodologies and case studies for successful learning: Methodologies and case studies for successful learning*. Spain: IGI Global.
- Georgiev, T., Georgieva, E., & Smrikarov, A. (2004, June). M-learning-a new stage of e-learning. *International Conference on Computer Systems and Technologies-CompSysTech*, 28-35.
- Godwin-Jones, R. (2014). Global reach and local practice: The promise of MOOCS. *Language Learning & Technology*, 18(3), 5–15.
- Golden, R. (2013). Northern twilight: SUNY and the decline of the public comprehensive college. *Thought & Action*, 29(44), 45-56.
- Gore, H. (2014). Massive open online courses (MOOCs) and their impact on academic library services: Exploring the issues and challenges. *New Review of Academic Librarianship*, 20(1), 4-28.
- Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *ECTJ*, 29(2), 75-91.
- Hakkımızda. (2016, April 29). Retrieved from [http:// http://sem.metu.edu.tr/#home](http://sem.metu.edu.tr/#home)
- 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.
- Higher Education MOOCs (2016, April 2). Retrieved from http://www.moocs.co/Higher_Education_MOOCs.html.

- Hollands, F. M., & Tirthali, D. (2014). Resource requirements and costs of developing and delivering MOOCs. *The International Review of Research in Open and Distributed Learning*, 15(5), 113-133.
- Holmberg, B. (1982). *Recent research into distance education*. Hagan: Zentrales Institut für Fernstudienforschung Arbeitsbereich: Fernstudienentwicklung.
- Hon, L., & Brunner, B. (2002). Measuring public relationships among students and administrators at the University of Florida. *Journal of Communication Management*, 6(3), 227-238. Retrieved from http://ulakbim.tubitak.gov.tr/sites/images/Ulakbim/ubyt_2014_dergi_listesi.xls
- Hyman, P. (2012). In the year of disruptive education. *Communications of the ACM*, 55(12), 20-22.
- Impact Factors. (2014). Retrieved from <http://www.bioxbio.com/if>.
- Intelsat (2013). *A practical introductory guide on using satellite technology for communications*. Retrieved from <http://www.intelsat.com/wp-content/uploads/2013/01/5941-SatellitePrimer-2010.pdf>
- İşman, A. (2011). *Distance education* (4th ed.). Ankara: Pegem Academi.
- Jackson, R. L. (2013). Books, articles, and items of academic interest. *Academic Questions*, 26(4), 510-517.
- Johnstone, S. M. (2005). Open educational resources serve the world. *Educause Quarterly*, 28(3), 15-18
- Jordan, K. (2014). Initial trends in enrolment and completion of massive open online courses. *The International Review Of Research In Open And Distributed Learning*, 15(1). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/1651>

- Kennedy, J. (2014). Characteristics of Massive Open Online Courses (MOOCs): A Research Review, 2009-2012. *Journal of Interactive Online Learning*, 13(1), 1-13.
- Khan Academy Türkçe (2015). *Home page*. Retrieved from <http://khanacademy.org.tr/>
- Kop, R., Fournier, H., & Mak, J. S. F. (2011). A pedagogy of abundance or a pedagogy to support human beings? Participant support on massive open online courses. *The International Review Of Research In Open And Distributed Learning*, 12(7), 74-93.
- Koutropoulos, A., Gallagher, M. S., Abajian, S. C., de Waard, I., Hogue, R. J., Keskin, N. Ö., & Rodriguez, C. O. (2012). Emotive vocabulary in MOOCs: context & participant retention. *European Journal of Open, Distance and E-Learning*, 15(1).
- Krause, S. D. (2013). MOOC response about 'listening to world music.' *College Composition and Communication*, 64(4), 689-695.
- List of largest universities by enrollment.(n.d.).In *Wikipedia*. Retrieved from http://en.wikipedia.org/wiki/List_of_largest_universities_by_enrollment.
- Little, B. (2013). You MOOC, iMOOC. *Training Journal*. 19-22.
- London, H. I. (2014). MOOCs on the march. *Academic Questions*, 27(3), 313-315.
- Mackness, J., Mak, S. F. J., & Williams, R. (2010). The ideals and reality of participating in a MOOC. In L. Dirckinck-Holmfeld, V. Hodgson, C. Jones, M. de Laat, D. McConnell, & T. Ryberg (Eds.), *Proceedings of the 7th International Conference on Networked Learning 2010* (pp. 266–274). Lancaster: Lancaster University. Retrieved from <http://www.lancs.ac.uk/fss/organisations/netlc/past/nlc2010/abstracts/Mackness.html>

- Margaryan, A., Bianco, M., & Littlejohn, A. (2015). Instructional quality of Massive Open Online Courses (MOOCs). *Computers & Education, 80*, 77-83.
- Massive open online course. (n.d.). In *Wikipedia*. Retrieved January 02, 2014, from http://en.wikipedia.org/wiki/Massive_open_online_course.
- Mayring, P. (2000). Qualitative content analysis. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 1*(2). Retrieved from <http://www.qualitative-research.net/index.php/fqs/article/view/1089/2385>
- McConagy, T. (1991). *The global village*. USA: Phi Delta Kapan.
- McIsaac, M. S., & Gunawardena, C. N. (1996). Distance education. In D. J. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp. 403–437). New York: Macmillan
- McKiel, A. (Eds.). (2014). *Changing Library Operations – MOOCs Some Thoughts from Library Experience: Charleston Conference Proceedings, 2013*. Purdue University Press.
- McLean-Orlando, S. (2014). MOOCs: All that glitters may not be gold... *Modern English Teacher, 23*(1), 35-37.
- Meisenhelder, S. (2013). MOOC mania. *Thought & Action, 7*-26.
- Moore, M. G. (1989). Three types of interaction.. *American Journal of Distance Education, 3*(2), 1–6.
- Moore, M., & Kearsley, G. (2005). *Distance education: A systems view* (2nd ed.). Belmont, CA: Wadsworth.
- Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2008). Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods, 1*(2), 13-22.

- Muñoz-Merino, P. J., Ruipérez-Valiente, J. A., Alario-Hoyos, C., Pérez-Sanagustín, M., & Kloos, C. D. (2015). Precise Effectiveness Strategy for analyzing the effectiveness of students with educational resources and activities in MOOCs. *Computers in Human Behavior*, 47, 108-118.
- Nasıl işler. (2016, April 29). Retrieved from <http://idea.metu.edu.tr/?pid=29>
- Nath, A., & Agarwal, S. (2014). Massive Open Online Courses (MOOCs)—A comprehensive study and its application to green computing in higher education institution. *International Journal*, 2(2), 7-14.
- Norman, G. (2013). The decline and fall of the art of teaching? *Advances in Health Sciences Education*, 18(5), 869-871.
- ÖSYM Ölçme, Seçme ve Yerleştirme Merkezi, (2014). *2014 öğrenci seçme ve yerleştirme sistemi (ösys) yükseköğretim programları ve kontenjanları kılavuzu*. Retrieved from <http://www.osym.gov.tr/belge/1-23564/2015-lys-sonuclarina-iliskin-sayisal-bilgiler.html>
- ÖSYM Ölçme, Seçme ve Yerleştirme Merkezi, (2014). *2014 öğrenci seçme ve yerleştirme sistemi (ösys) yükseköğretim programları ve kontenjanları kılavuzu*. Retrieved from <http://dokuman.osym.gov.tr/pdfdokuman/2014/OSYS/Tercih/2014-OSYSKONTKILAVUZU14072014.pdf>. [25 January 2015].
- ÖSYM Ölçme, Seçme ve Yerleştirme Merkezi, (2015). *ÖSYS yerleştirme sonuçlarına ilişkin sayısal bilgiler*. Retrieved from <http://dokuman.osym.gov.tr/pdfdokuman/2015/OSYS/2015-OSYSYerlestirmeSonucSayisalBilgiler23072015.pdf>
- Özarslan, Y., & Ozan, Ö. (n.d.). Yükseköğretimde uzaktan eğitim programı açma sorunsalı. Retrieved from <http://inet-tr.org.tr/inetconf19/bildiri/84.pdf>

- Özgül, İ. (1986). *Uzaktan öğretimin evrensel çerçevesi ve Türk eğitim sisteminde uzaktan öğretimin yeri*. Eskişehir: Anadolu Üniversitesi.
- Özer, B. (1989). Türkiye'de uzaktan eğitim: Anadolu Üniversitesi Açık Öğretim Fakültesi'nin uygulamaları. *Anadolu Üniversitesi Eğitim Fakültesi Dergisi*, 2(2), 1-24.
- Pappanov, L. (2012, November 2). The year of the MOOC. *NY Times*. Retrieved from http://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-courses-are-multiplying-at-a-rapid-pace.html?_r=0.
- Peters, O., & Keegan, D. (1994). *Otto Peters on distance education: The industrialization of teaching and learning*. London: Routledge
- Peterson, R. D. (2014). MOOC fizzles. *Academic Questions*, 27(3), 316-319.
- Pritchard, S. M. (2014). Innovative research in academic libraries: Do editorials, agendas, or think tanks make a difference? *Portal: Libraries and the Academy*, 14(2), 133-136.
- Programs. (2016, 29 April). Retrieved from <http://ii.metu.edu.tr/>
- Radford, A. W., Robles, J., Cataylo, S., Horn, L., Thornton, J., & Whitfield, K. E. (2014). The employer potential of MOOCs: A mixed-methods study of human resource professionals' thinking on MOOCs. *The International Review of Research in Open and Distributed Learning*, 15(5).
- 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*, 15(2), 1-13.
- Ros, S., Hernandez, R., Read, T., Rodriguez Artacho, M., Pastor, R., & Diaz Orueta, G. (2014). UNED OER Experience: From OCW to Open UNED. *Education, IEEE Transactions on*, 57(4), 248-254.

- Şahin, M. C., & Tekdal, M. (2005). İnternet tabanlı uzaktan eğitimin etkililiği: Bir meta-analiz çalışması. *Akademik Bilişim 2005*, 02-04 February. Gaziantep: Gaziantep Üniversitesi
- Sancho, T., & de Vries, F. (2013). Virtual learning environments, social media and MOOCs: key elements in the conceptualisation of new scenarios in higher education: EADTU conference 2013. *Open Learning: The Journal of Open, Distance and e-Learning*, 28(3), 166-170.
- Schlosser, L. A., & Simonson, M. (2009). *Distance education: Definition and glossary of terms* (3rd ed.). Charlotte, NC: Information Age.
- Severance, C. (2012). Teaching the world: Daphne Koller and Coursera. *Computer*, 8, 8-9.
- Siemens, G. (2012, April). Learning analytics: envisioning a research discipline and a domain of practice. *Proceedings of the 2nd International Conference on Learning Analytics and Knowledge* (pp. 4-8). ACM.
- Simonson, M., Smaldino, S., Albright, MJ., & Zvacek, S. (2014). *Teaching and learning at a distance*. Charlotte, NC: Information Age.
- Spector, J. M. (2014). Remarks on MOOCS and Mini-MOOCS. *Educational Technology Research and Development*, 62(3), 385-392.
- Suen, H. K. (2014). Peer assessment for massive open online courses (MOOCs). *The International Review of Research in Open and Distributed Learning*, 15(3).
- T.R. Ministry of Development (2013). *The tenth development plan 2014-2018*. Retrieved from [http://www.mod.gov.tr/Lists/DevelopmentPlans/Attachments/5/The%20Tenth%20Development%20Plan%20\(2014-2018\).pdf](http://www.mod.gov.tr/Lists/DevelopmentPlans/Attachments/5/The%20Tenth%20Development%20Plan%20(2014-2018).pdf). [25.January.2015].

- Tananbaum, G. (2013). I Hear the train a comin'--ALCTS: Part 1. *Against the Grain*, 19(1), 40-51.
- The Attack of MOOCs (2013; July 209. *The Economist*. Retrieved from http://www.fulbright.de/fileadmin/files/tousa/stipendien/ees/Educational_Experts_Seminar_2013/The_Economist_-_The_attack_of_the_MOOC.pdf.
- Toven-Lindsey, B., Rhoads, R. A., & Lozano, J. B. (2015). Virtually unlimited classrooms: Pedagogical practices in massive open online courses. *The Internet and Higher Education*, 24, 1-12.
- 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.
- TUBITAK The Scientific and Technological Research Council of Turkey, (2005). *Vision 2023 teknoloji öngörü projesi*. Ankara: Tubitak
- TUBITAK ULAKBİM, 2014 Yılı UBYT Dergi Listesi. Retrieved from
- TUIK Turkey Statistics Foundation. (2014). *Statistics tables and dynamic queries*. Retrieved from http://www.tuik.gov.tr/PreTablo.do?alt_id=1018
- Turkey. (2016). Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/geos/tu.html>
- UNESCO United Nations Educational, Scientific and Cultural Organization. (2009). *Final report*. World conference on higher education, Paris. Retrieved from <http://unesdoc.unesco.org/images/0018/001892/189242e.pdf>
- Uzun, A. & Şentürk A., (2010). Blending makes the difference: Comparison of blended and traditional instruction on students' performance and attitudes in computer literacy. *Contemporary Educational Technology*, 1(3), 196-205.

- Van Vught, F. (2008). Mission diversity and reputation in higher education. *Higher Education Policy*, 21(2), 151-174.
- Vaughan-Nichols, S. (2015, January 21). Get on the Linux job train with a new system administration class | ZDNet. Retrieved from <http://www.zdnet.com/article/get-on-the-linux-job-train-with-a-new-system-administration-class/>
- Verduin, J. R., & Clark, T. (1994). *Distance education: Guidelines for effective use*. Eskişehir: Anadolu University.
- Wardrop M. M. (13 March 2013). Online learning: Campus 2.0. *Nature International Weekly Journal of Science*, 495, 160-163.
- Wildavsky, B. (2015). MOOCs in the developing world: Hope or hype? *International Higher Education*, (80), 23-25.
- YÖK, YüksekÖğretimKurulu (2016). Üniversiteler. Retrieved from <http://www.yok.gov.tr/web/guest/universitelerimiz>.
- Young, J. R. (2013). What professors can learn from “hard core” MOOC students. *Chronicle of Higher Education*, 59(37), A4.
- Yuan, L., MacNeill, S., & Kraan, W. G. (2008). Open Educational Resources: Opportunities and challenges for higher education. *Joint Information Systems Committee*, 1-34.

APPENDICES

Appendix A: 2014 - 2015 Two Year Distance Education Programs

AFYON KOCATEPE ÜNİVERSİTESİ

Uzaktan Eğitim Meslek Yüksekokulu

AMASYA ÜNİVERSİTESİ

Amasya Teknik Bilimler Meslek Yüksekokulu (three dept.)

Sabuncuoğlu Şerefeddin Sağlık Hizmetleri Meslek Yüksekokulu (two dept.)

ANKARA ÜNİVERSİTESİ

Adalet Meslek Yüksekokulu (One dept.)

Sağlık Hizmetleri Meslek Yüksekokulu (One dept.)

Beypazarı Meslek Yüksekokulu (two dept.)

Elmadağ Meslek Yüksekokulu (One dept.)

ATILIM ÜNİVERSİTESİ (ANKARA)

Atılım Meslek Yüksekokulu (two dept.)

AKDENİZ ÜNİVERSİTESİ (ANTALYA)

Sosyal Bilimler Meslek Y.O. (One dept.)

BİNGÖL ÜNİVERSİTESİ

Bingöl Sosyal Bilimler Meslek Yüksekokulu (One dept.)

BİTLİS EREN ÜNİVERSİTESİ

Sağlık Hizmetleri Meslek Yüksekokulu (One dept.)

ÇANAKKALE ONSEKİZ MART ÜNİVERSİTESİ

Çanakkale Sosyal Bilimler Meslek Yüksekokulu (two dept.)

ÇUKUROVA ÜNİVERSİTESİ (ADANA)

Adana Meslek Yüksekokulu (four department)

TRAKYA ÜNİVERSİTESİ (EDİRNE)

Tunca Meslek Yüksekokulu (One dept.)

ERZİNCAN ÜNİVERSİTESİ

Refahiye Meslek Yüksekokulu (One dept.)

SÜLEYMAN DEMİREL ÜNİVERSİTESİ (ISPARTA)

Uzaktan Eğitim Meslek Yüksekokulu (two dept.)

BEYKENT ÜNİVERSİTESİ (İSTANBUL)

Meslek Yüksekokulu (two dep. Full or 50% scholarship)

BEYKOZ LOJİSTİK MESLEK YÜKSEKOKULU (İSTANBUL)

Beykoz Lojistik Meslek Yüksekokulu (two dep. Full or 50% scholarship)

FATİH ÜNİVERSİTESİ (İSTANBUL)

Adalet Meslek Yüksekokulu (two dep. Full scholarship and paid)

Meslek Yüksekokulu (two dep. Full scholarship and paid)

İSTANBUL AYDIN ÜNİVERSİTESİ

Anadolu BİL Meslek Yüksekokulu (one dept. Full, 50%, 25% scholarship or paid)

(two dept. full scholarship or paid)

İSTANBUL ÜNİVERSİTESİ

Açık ve Uzaktan Eğitim Fakültesi (five dept.)

Sosyal Bilimler Meslek Y.O. (two dept.)

MARMARA ÜNİVERSİTESİ (İSTANBUL)

Sosyal Bilimler Meslek Yüksekokulu (three dept.)

Teknik Bilimler Meslek Yüksekokulu (three dept.)

OKAN ÜNİVERSİTESİ (İSTANBUL)

Meslek Yüksekokulu (two dept. full scholarship or paid)

DOKUZ EYLÜL ÜNİVERSİTESİ (İZMİR)

İzmir Meslek Yüksekokulu (one dept.)

GEDİZ ÜNİVERSİTESİ (İZMİR)

Meslek Yüksekokulu (two dep. Full or 50% scholarship)

KAHRAMANMARAŞ SÜTÇÜ İMAM ÜNİVERSİTESİ

Kahramanmaraş Meslek Y.O. (one dept.)

KARABÜK ÜNİVERSİTESİ

Sağlık Hizmetleri Meslek Yüksekokulu (one dept.)

Eskipazar Meslek Yüksekokulu (one dept.)

Safranbolu Meslek Yüksekokulu (one dept.)

KIRIKKALE ÜNİVERSİTESİ

Kırıkkale Meslek Yüksekokulu (three dept.)

Hacılar Hüseyin Aytemiz Meslek Yüksekokulu (four dept.)

KOCAELİ ÜNİVERSİTESİ

Kocaeli Meslek Yüksekokulu (three dept.)

MEVLANA ÜNİVERSİTESİ (KONYA)

Meslek Yüksekokulu (one dep. Full scholarship and paid)

İNÖNÜ ÜNİVERSİTESİ (MALATYA)

Malatya Meslek Yüksekokulu (two dept.)

CELÂL BAYAR ÜNİVERSİTESİ (MANİSA)

Ahmetli Meslek Yüksekokulu (one dept.)

Salihli Meslek Yüksekokulu (one dept.)

Soma Meslek Yüksekokulu (one dept.)

Turgutlu Meslek Yüksekokulu (one dept.)

MERSİN ÜNİVERSİTESİ

Mersin Meslek Yüksekokulu (seven dept.)

MUĞLA SITKI KOÇMAN ÜNİVERSİTESİ

Muğla Meslek Yüksekokulu (one dept.)

KAPADOKYA MESLEK YÜKSEKOKULU (NEVŞEHİR)

Kapadokya Meslek Yüksekokulu (one dep. Full scholarship and paid)

NEVŞEHİR HACI BEKTAŞ VELİ ÜNİVERSİTESİ

İncekara Sağlık Hizmetleri Meslek Yüksekokulu (one dept.)

SAKARYA ÜNİVERSİTESİ

Adapazarı Meslek Yüksekokulu (five dept.)

ONDOKUZ MAYIS ÜNİVERSİTESİ (SAMSUN)

Samsun Meslek Yüksekokulu (three dept.)

Alaçam Meslek Yüksekokulu (one dept.)

PLATO MESLEK YÜKSEKOKULU

ADANA (One dep. Full or 50%scholarship)97

ANKARA (two dep. Full or 50% scholarship)

ANTALYA (four dep. Full or 50% scholarship)

BURSA (four dep. Full or 50% scholarship)

DİYARBAKIR (three dep. Full or 50% scholarship)

ESKİŞEHİR (three dep. Full or 50% scholarship)

İSTANBUL (three dep. Full or 50% scholarship)

İZMİR (two dep. Full or 50% scholarship)

KAYSERİ (three dep. Full or 50% scholarship)

KONYA (three dep. Full or 50% scholarship)

MARDİN (one dept. Full or 50% scholarship)

MERSİN (two dept. Full or 50% scholarship)

SAMSUN (two dept. Full or 50% scholarship)

TRABZON (three dept. Full or 50% scholarship)

**HOCA AHMET YESEVİ ULUSLARARASI TÜRK-KAZAK
ÜNİVERSİTESİ (TÜRKİSTAN-KAZAKİSTAN)**

Türkistan Meslek Yüksekokulu (one dept. paid)

TOTAL: 36 Universities – 64 Vocational Schools – 130 programs

Appendix B: Population of the peer reviewed journal articles on MOOCs

No	Author(s)	Name of Article	Year
1	Meisenhelder, Susan	"MOOC Mania"	2013
2	Porterfield, Daniel R.	2013: Year of the Seminar	2013
3	Gose, Ben	4 MOOC's and How They Work	2012
4	Gardner, Lee., Young, Jeffrey R.	A Bold Move Toward MOOCs Sends Shock Waves, but Details Are Scarce	2013
5		A Catholic Case Against MOOCs	2013
6	Campbell, Jennifer., Gibbs, Alison.,Najafi, Hedieh.,Severinski, Cody	A Comparison of Learner Intent and Behaviour in Live and Archived MOOCs.	2014
7	Nkuyubwatsi, Bernard	A Cross-Modal Analysis of Learning Experience from a Learner's Perspective.	2014
8	Potter, Claire Bond	A Hacker in Every History Department: An Intelligent Radical's Guide to the Digital Humanities.	2014
9	Hanley, Gerard L.	A Message from the MERLOT Executive Director: MOOCs, MERLOT, and Open Educational Services.	2013
10	Lindsay, Thomas	A Middle Path.	2014
11	Parry, Marc	A MOOC Star Defects, at Least for Now	2013
12	Taylor, Jermaine	A MOOC That Would Make a Real Difference; An online format could help low-income students learn how to apply to college	2013
13	Schoenack, Lindsie	A New Framework for Massive Open Online Courses (MOOCs).	2013
14	Kop, R., Fournier, H., Mak, J.S.F.	A pedagogy of abundance or a pedagogy to support human beings? Participant support on massive open online courses	2011
15	Rita Kop, Hélène Fournier, John Sui Fai Mak	A Pedagogy of Abundance or a Pedagogy to Support Human Beings? Participant Support on Massive Open Online Courses	2011
16	Adams, Catherine. Yin, Yin., Vargas Madriz, Luis Francisco., Mullen, C. Scott	A phenomenology of learning large: the tutorial sphere of xMOOC video lectures.	2014
17	Kirschner, Ann	A Pioneer in Online Education Tries a MOOC	2012
18	Olsson, Ulf	A Preliminary Exploration of Operating Models of	2014

No	Author(s)	Name of Article	Year
		Second Cycle/Research Led Open Education Involving Industry Collaboration	
19	Kalman, Yoram M.	A race to the bottom: MOOCs and higher education business models.	2014
20	Kellogg, Shaun., Booth, Sherry., Oliver, Kevin	A Social Network Perspective on Peer Supported Learning in MOOCs for Educators.	2014
21	NIX, ELIZABETH., ETHERIDGE, BRIAN., WALSH, PAUL	A Traditional Educational Practice Adapted for the Digital Age.	2014
22	Graham, Greg	After the Buzz: How the Embrace of MOOC's Could Hurt Middle America	2012
23	Kolowich, Steve	American Council on Education Recommends 5 MOOCs for Credit	2013
24	Kolowich, Steve	American Council on Education Recommends 5 MOOCs for Credit	2013
25	Siemens, George. , Irvine, Valerie., Code, Jillianne	An Academic Perspective on an Emerging Technological and Social Trend.	2013
26	Audsley, Samantha., Fernando, Kalyani., Maxson, Bronwen., Robinson, Brittany., Varney, Katie	An Examination of Coursera as an Information Environment: Does Coursera Fulfill its Mission to Provide Open Education to All?	2013
27	Cheng, Jeremy C. Y.	An Exploratory Study of Emotional Affordance of a Massive Open Online Course	2014
28	MacNeill, Sheila. , Campbell, Lorna M. , Hawksey, Martin	Analytics for Education.	2014
29	Pence, Harry E.	Are MOOCs a Solution or a Symptom?	2013
30	Walkow, Janet C., Reilly, Erin	Are We Ready for Robots to Grade?	2014
31	Kolowich, Steve	As MOOC Debate Simmers at San Jose State, American U. Calls a Halt	2013
32	Pricer, Wayne	At Issue: MOOCs, an annotated webliography.	2013
33	Gilson, Tom. , Joy, Albert	ATG Interviews Jim O'Donnell.	2014
34	Santoveña Casal, Sonia. , Kolowich, Steve	Bases, mediaciones y futuro de la educación a distancia en la sociedad digital.	2014
35	Fischer, Gerhard	Beyond hype and underestimation: identifying research challenges for the future of MOOCs.	2014

No	Author(s)	Name of Article	Year
36	Slomanson, William R.	Blended Learning: A Flipped Classroom Experiment.	2014
37	Jackson, Robert	Books, Articles, and Items of Academic Interest.	2013
38	Iannone, Carol	Bracing Civilization.	2014
39		Building Different MOOC's for Different Pedagogical Needs	2012
40	Young, Jeffrey R.	California State U. Will Experiment With Offering Credit for MOOCs	2013
41	Ruth, Stephen	Can MOOC's and Existing E-Learning Efficiency Paradigms Help Reduce College Costs?	2012
42	Howard, Jennifer	Can MOOC's Help Sell Textbooks?	2012
43	Lucas, Henry C., Jr.	Can the Current Model of Higher Education Survive MOOCs and Online Learning?	2013
44	Firmin, Rob., Schiorring, Eva. , Whitmer, John. Willett, Terrence., Collins, Elaine D., Sujitparapitaya, Sutee	Case study: using MOOCs for conventional college coursework.	2014
45	Mehaffy, George L.	Challenge and Change	2012
46	Kirkup, Gill	Challenges to producing high-quality distance learning.	2014
47	Fournier, Helene., Kop, Rita., Durand, Guillaume	Challenges to Research in MOOCs.	2014
48	DeBoer, J. Ho, AD., Stump, GS., Breslow, L.	Changing "Course": Reconceptualizing Educational Variables for Massive Open Online Courses	2014
49	DeBoer, Jennifer., Ho, Andrew D., Stump, Glenda S., Breslow, Lori	Changing "Course": Reconceptualizing Educational Variables for Massive Open Online Courses	2014
50	McKiel, Allen, Dooley, Jim	Changing Library Operations -- MOOCs Some Thoughts from Library Experience.	2013
51	Kennedy, Jolie	Characteristics of Massive Open Online Courses (MOOCs): A Research Review, 2009-2012.	2014
52	Cisel, Matthieu. ,Bruillard, Éric	Chronique des MOOC.	2012
53	Friesen, Norm., Smith, Erika E.	CJLT Special Issue Editorial: Tensions & Intersections: Exploring Philosophies of Education & Technology.	2013

No	Author(s)	Name of Article	Year
54	Yeager, Carol., Hurley-Dasgupta, Betty., Bliss, Catherine A.	cMOOCs and Global Learning: An Authentic Alternative	2013
55	Gillani, Nabeel. , Eynon, Rebecca	Communication patterns in massively open online courses	2014
56	Schweizer, Bernard	Confessions of an Unreconstructed MOOC(h)er	2013
57	Tschofen, Carmen.,Mackness, Jenny	Connectivism and Dimensions of Individual Experience.	2012
58	Bell, Frances	Connectivism: Its Place in Theory-Informed Research and Innovation in Technology-Enabled Learning.	2011
59	Fraser, Kym. , Ryan, Yoni	Could MOOCs answer the problems of teaching AQF-required skills.	2013
60	Sergio Luján-Mora	De la clase magistral tradicional al MOOC: doce años de evolución de la enseñanza de la programación de aplicaciones web	2013
61	Alario-Hoyos, C., Perez-Sanagustin, M., Delgado-Kloos, C., Parada G., H.A., Munoz-Organero, M.	Delving into participants' profiles and use of social tools in MOOCs	2014
62	Dillahunt, Tawanna., Zengguang Wang., Teasley, Stephanie D.	Democratizing Higher Education: Exploring MOOC Use Among Those Who Cannot Afford a Formal Education.	2014
63	King, Carolyn. , Kelder, Jo-Anne., ., Doherty, Kathleen, Phillips, Rob., McInerney, Fran., Walls, Justin. Robinson, Andrew. , Vickers, James	Designing for Quality: The Understanding Dementia MOOC.	2014
64	Calderwood, Barbara J.	Developments.	2013
65	Knox, Jeremy	Digital culture clash: “massive” education in the E- learning and Digital Cultures MOOC.	2014
66		DIGITAL DISCIPLESHIP: CHRISTIAN EDUCATION IN A DIGITAL WORLD.	2013
67	Weller, Martin, Anderson, Terry Wilson, Alexander	Digital Resilience in Higher Education	2013

No	Author(s)	Name of Article	Year
68	Méndez García, Carmen M.	Diseño e implementación de cursos abiertos masivos en línea (MOOC): expectativas y consideraciones prácticas.	2013
69	Skiba, D.J.	Disruption in higher education: Massively open online courses (MOOCs)	2012
70	Kolowich, Steve	Doubts About MOOCs Continue to Rise	2014
71	Marron, Maria B.	Drones in Journalism Education.	2013
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80	Weller, Martin	Editorial: Spring 2013 issue.	2013
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87	Koutropoulos, Apostolos., Gallagher, Michael Sean., Abajian, Sean C., de Waard, Inge., Hogue, Rebecca, Joanne., Keskin, Nilgun Ozdamar. ,	Emotive Vocabulary in MOOCs: Context & Participant Retention	2012

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	Rodriguez, C. Osvaldo		
88	Marshall, Stephen J.	Evaluating the Strategic and Leadership Challenges of MOOCs.	2013
89	Reilly, Erin Dawna. , Stafford, Rose Eleanore., Williams, Kyle Marie., Brooks Corliss, Stephanie.	Evaluating the Validity and Applicability of Automated Essay Scoring in Two Massive Open Online Courses.	2014
90	Zutshi, Samar., O'Hare, Sheena. .Rodafinos, Angelos.	Experiences in MOOCs: The Perspective of Students.	2013
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97	Thomas, Howard., Lee, Michelle.,	Future scenarios for management education.	2014
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101	Lokey-Vega, A	Grab a MOOC by the Horns	2014
102	Guralnick, David	GUEST EDITORIAL.	2014
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112	Rubens, W.	Improving the learning design of massive open online courses	2014
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117	Suhang Jiang., Williams, Adrienne E., Warschauer, Mark., Wenliang He., O'Dowd, Diane K.	Influence of Incentives on Performance in a Pre-College Biology MOOC.	2014
118	Jordan, K.	Initial trends in enrolment and completion of massive open online courses	2014
119	Pritchard, Sarah M.	Innovative Research in Academic Libraries: Do Editorials, Agendas, or Think Tanks Make a Difference?	2014
120	Margaryan, A. Bianco, M.	Instructional quality of Massive Open Online	2014

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	Littlejohn, A.	Courses (MOOCs)	
121	Margaryan, Anoush., Bianco, Manuela., Littlejohn, Allison	Instructional quality of Massive Open Online Courses (MOOCs).	2015
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123	Amemado, Dodzi	Integrating technologies in higher education: the issue of recommended educational features still making headline news.	2014
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129	Ahn, June., Butler, Brian S., Alam, Alisha.,	Learner Participation and Engagement in Open Online Courses: Insights from the Peer 2 Peer University.	2013
130	Mackness, Jenny., Waite, Marion., Roberts, George., Lovegrove, Elizabeth	Learning in a Small, Task-Oriented, Connectivist MOOC: Pedagogical Issues and Implications for Higher Education	2013
131	Jenny Mackness, Marion Waite, George Roberts, Elizabeth Lovegrove	Learning in a Small, Task-Oriented, Connectivist MOOC: Pedagogical Issues and Implications for Higher Education	2013
132	Colvin, K.F., Champaign, J. , Liu, A., Pritchard, D.E., Zhou, Q., Fredericks, C.	Learning in an introductory physics MOOC: All cohorts learn equally, including an on-campus class	2014
133	Clara, M. Barbera, E.	Learning online: massive open online courses (MOOCs), connectivism, and cultural psychology	2013
134		Learning online: massive open online courses (MOOCs), connectivism, and cultural psychology.	2013
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136	Herman, Russell L.	Letter from the Editor-in-Chief: MOOCs - How Are	2014

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137	Herman, Russell L.	Letter from the Editor-in-Chief: The MOOCs Are Coming.	2012
138		Leveraging employer branding, performance management and human resource development to enhance employee retention.	2014
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140	Waite, Marion., Mackness, Jenny., Roberts, George., Lovegrove, Elizabeth	Liminal Participants and Skilled Orienteers: Learner Participation in a MOOC for New Lecturers.	2013
141	Giannakos, Michail N., Jaccheri, Letizia., Krogstie, John	Looking at MOOCs Rapid Growth Through the Lens of Video-Based Learning Research.	2014
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143	JOUNEAU-SION, CAROLINE	Magic MOOC.	2012
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145	Bulfin, Scott., Pangrazio, Luci., Selwyn, Neil	Making 'MOOCs': The Construction of a New Digital Higher Education within News Media Discourse.	2014
146	John Daniel	Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility.	2012
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150		Massive Open Online Course (MOOC) Movement and Academic Advising.	2013
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152	Leontyev, A. , Baranov, D.	Massive Open Online Courses in Chemistry: A	2013

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153		Massive Open Online Courses in Scotland.	2014
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155	Stark, Christina M., Pope, Jamie	Massive Open Online Courses: How Registered Dietitians Use MOOCs for Nutrition Education.	2014
156	Murphy, Jamie., Kalbaska, Nadzeya., Williams, Alan.,Ryan, Peter., Cantoni, Lorenzo., Horton-Tognazzini, Laurel C.	Massive Open Online Courses: Strategies and Research Areas.	2014
157	Chernesky, F.	Massive Possibilities? A Forum on MOOCs	2014
158	Stewart, Bonnie	Massiveness + Openness = New Literacies of Participation?	2013
159	Sadykova, Gulnara	Mediating Knowledge through Peer-to-Peer Interaction in a Multicultural Online Learning Environment: A Case Study of International Students in the US.	2014
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162	Portmess, Lisa	Mobile Knowledge, Karma Points and Digital Peers: The Tacit Epistemology and Linguistic Representation of MOOCs	2013
163	Portmess, Lisa	Mobile Knowledge, Karma Points and Digital Peers: The Tacit Epistemology and Linguistic Representation of MOOCs.	2013
164	RODRIGUEZ, C. Osvaldo	MOBIMOOC 2012: A New Tree Structure For The Delivery of Connectivist Moocs.	2014
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166		MOCKING THE MOOCS.	2013
167	Gad-el-Hak, Mohamed	Monologues of Learning.	2014
168	Abramson, Gertrude (Trudy)	MOOA: Massive Open Online Administration.	2013

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169	Daza, Vanesa., Makriyannis, Nikolaos., Rovira Riera, Carme	MOOC attack: closing the gap between pre- university and university mathematics.	2013
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171	Najafi, Hedieh., Evans, Rosemary., Federico, Christopher	MOOC Integration into Secondary School Courses.	2014
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173	Hu, Helen	MOOC migration: massive open online courses are changing the way we think about higher education	2013
174	Bali, Maha	MOOC Pedagogy: Gleaning Good Practice from Existing MOOCs.	2014
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176	Baggaley, Jon	MOOC rampant.	2013
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178	Krause, SD	MOOC Response about "Listening to World Music"	2013
179	Selingo, Jeffrey	MOOC U: The Revolution Isn't Over	2014
180	Daniel, John	MOOCs - Evolution or Revolution?	2014
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182	Rodriguez, C. Osvaldo	MOOCs and the AI-Stanford Like Courses: Two Successful and Distinct Course Formats for Massive Open Online Courses	2012
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190		MOOCs May Not Be So Disruptive After All	2013
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194	O'Connor, Kate	MOOCs, institutional policy and change dynamics in higher education.	2014

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195	Liyanagunawardena, Tharindu Rekha, Adams, Andrew Alexandar., Williams, Shirley Ann	MOOCs: A Systematic Study of the Published Literature 2008-2012	2013
196	Tharindu Rekha Liyanagunawardena, Andrew Alexandar Adams, Shirley Ann Williams	MOOCs: A Systematic Study of the Published Literature 2008-2012	2013
197	McLean-Orlando, Susan	MOOCs: all that glitters may not be gold ...	2014
198	Pritchard, SM	MOOCs: An Opportunity for Innovation and Research	2013
199	Pritchard, Sarah M	MOOCs: An Opportunity for Innovation and Research	2013
200	Rollins, Thomas M.	MOOCs: Been There, Done That	2014
201		MOOCs: digesting the facts.	2014
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207	Brown, Stephen	MOOCs: Opportunities, Impacts, and Challenges. Massive Open Online Courses in Colleges and Universities by Michael Nanfito.	2014
208	Beaven, Tita, Hauck, Mirjam., Comas-Quinn, Anna.,	MOOCs: Striking the Right Balance between Facilitation and Self-Determination.HIGHER education -- Social aspects	2014
209	Barnes, Cameron	MOOCs: The Challenges for Academic Librarians.	2013
210	Fomin, Elizabeth	MOOCs: Tips for Enrollment Professionals	2013
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		Time, Any Place.	
215	Golden, Robert	Northern Twilight: SUNY and the Decline of the Public Comprehensive College	2013
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220	Skiba, Diane J.	On the horizon: the year of the MOOCs	2013
221	Hill, Phil	Online Educational Delivery Models: A Descriptive View	2012
222	Gallagher, Sean., LaBrie, John	Online Learning 2.0: Strategies for a Mature Market	2012
223	Baggaley, Jon	Online learning: a New Testament.	2014
224	Parry, Marc	Online, bigger classes may be better classes	2010
225	Sidorenko, T. V.	Open Educational Resources as a Tool to Improve Language Education Effectiveness in the Russian Higher Education Institutions.	2014
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227	Rhind-Tutt, Stephen	Our Next Challenge: Integrating Video into the Academy.	2013
228	Milman, Natalie B.	Out with MOOCs and in with SPOCs? Not so fast	2013
229	Saadatmand, Mohsen., Kumpulainen, Kristiina	Participants' Perceptions of Learning and Networking in Connectivist MOOCs.	2014
230	Andersen, Renate., Ponti, Marisa	Participatory pedagogy in an open educational course: challenges and opportunities.	2014
231	Milligan, Colin., Littlejohn, Allison., Margaryan, Anoush	Patterns of Engagement in Connectivist MOOCs.	2013
232	Suen, H.K.	Peer assessment for massive open online courses (MOOCs)	2014
233	Hoi K. Suen	Peer Assessment for Massive Open Online Courses	2014

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		(MOOCs).	
234	Garner, Russell	Post-Secondary Strategic Planning in the Age of Disruption.	2013
235	Santos, Olga C., Boticario, Jesus G.	Practical guidelines for designing and evaluating educationally oriented recommendations	2014
236	Muñoz-Merino, Pedro J., Ruipérez-Valiente, José A., Alario-Hoyos, Carlos., Pérez-Sanagustín, Mar., Delgado Kloos, Carlos	Precise Effectiveness Strategy for analyzing the effectiveness of students with educational resources and activities in MOOCs	2014
237	Zapata-Ros, Miguel	Presentación Hacia una nueva interculturalidad (educativa).	2014
238	Selingo, Jeffrey	Presidents and Professors Largely Agree on Who Should Lead Innovation	2013
239	Young, Jeffrey R.	Providers of Free MOOC's Now Charge Employers for Access to Student Data	2012
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245	Esposito, Antonella	Research ethics in emerging forms of online learning: issues arising from a hypothetical study on a MOOC.	2012
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247	Hollands, Fiona M., Tirthali, Devayani	Resource Requirements and Costs of Developing and Delivering MOOCs.	2014
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251	Aundree Baxter, Jacqueline., Haycock, Jo., Scholz, Claudia W.	Roles and Student Identities in Online Large Course Forums: Implications for Practice.	2014
252	Murray, Adam	Running aMOOC? Massive open online courses	2013
253	Davidson, Cathy N.	Size Isn't Everything; For academe's future, think mash-ups not MOOC's	2012
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255	Siemens, George	Special Issue: Research into Massive Open Online Courses.	2014
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257	Hew, Khe Foon., Cheung, Wing Sum	Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges	2014
258	Khe Foon Hew. , Wing Sum Cheung	Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges.	2014
259	Milligan, Colin. ,Littlejohn, Allison.	Supporting Professional Learning in a Massive Open Online Course.	2014
260		Symposium on Massive Open Online Courses	2013
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270	Kop, R.	The challenges to connectivist learning on open online networks: Learning experiences during a massive open online course	2011
271	Rita Kop	The Challenges to Connectivist Learning on Open Online Networks: Learning Experiences during a Massive Open Online Course	2011
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273		The Dynamic Flux of Continuing Higher Education: Redefining the New Roles, Responsibilities, and Expectations.	2013
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275	Walton Radford, Alexandria., Robles, Jessica., Cataylo, Stacey., Horn, Laura., Thornton, Jessica., Whitfield, Keith.	The Employer Potential of MOOCs: A Mixed-Methods Study of Human Resource Professionals' Thinking on MOOCs.	2014
276	O'Donnell, James J.	The Future Is Now, and Has Been for Years	2012
277	Bell, Steven	The Great Age of Experimentation: What's Good for Higher Ed Is Good for Academic Libraries.	2014
278	Lombardi, Marilyn M.	The Inside Story: Campus Decision Making in the Wake of the Latest MOOC Tsunami.	2013
279		The Issue at a Glance.	2014
280	BRAN, Camelia-Nadia	THE LEGITIMACY OF THE UNIVERSITIES IN THE CONTEXT OF THE EXPANTION OF MASIVE OPEN ONLINE COURSES (MOOCs).	2014
281	Wooten, Courtney Adams	The Mediation of Literacy Education and Correspondence Composition Courses at UNC-Chapel Hill, 1912-1924.	2013
282	Bady, Aaron	The MOOC moment and the end of reform	2013
283	Holford, John., Jarvis, Peter., Milana, Marcella., Waller, Richard., Webb, Susan	The MOOC phenomenon: toward lifelong education for all?	2014
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285	Courtney, Kyle K.	The MOOC Syllabus Blues: Strategies for MOOCs and Syllabus Materials	2013
286	Abramson, Gertrude (Trudy)	The Newest Disruptive Technology -- MOOCs.	2013
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294	Fini, A.	The technological dimension of a massive open online course: The case of the CCK08 course tools	2009
295	Vazquez-Cano, E	The Videoarticle: New Reporting Format in Scientific Journals and its Integration in MOOCs	2013
296	Vázquez-Cano, Esteban	The Videoarticle: New Reporting Format in Scientific Journals and its Integration in MOOCs.	2013
297	Clarà, M., Barberà, E.	Three problems with the connectivist conception of learning.	2014
298	Youngman, Owen	To Measure a MOOC's Value, Just Ask Students	2013
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	Abhimanu.,Xing, Eric P.,Rosé, Carolyn Penstein	MOOCs.	
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305	Ros, Salvador. , Hernandez, Roberto., Read, Timothy., Artacho, Miguel Rodriguez., Pastor, Rafael.,Diaz Orueta, Gabriel.	UNED OER Experience: From OCW to Open UNED.	2014
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307	Ebben, Maureen., Murphy, Julien S.	Unpacking MOOC scholarly discourse: a review of nascent MOOC scholarship.	2014
308	Demiray, Ugur	Untitled.	2013
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310	Inge deWaard. , Sean Abajian., Michael Sean Gallagher., Rebecca Hogue., Nilgün Keskin., Apostolos	Using mLearning and MOOCs to Understand Chaos, Emergence, and Complexity in Education	2011

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	Koutropoulos., Osvaldo C. Rodriguez		
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312	Toven-Lindsey, B. Rhoads, R.A., Lozano, J.B.	Virtually unlimited classrooms: Pedagogical practices in massive open online courses	2015
313	Toven-Lindsey, Brit., Rhoads, Robert A., Lozano, Jennifer Berdan	Virtually unlimited classrooms: Pedagogical practices in massive open online courses	2014
314	Verma, H., Skevi, A., Zufferey, G., Blom, J., Dillenburg, P., Li, N.	Watching MOOCs together: investigating co-located MOOC study groups	2014
315	Li, Nan., Verma, Himanshu., Skevi, Afroditi., Zufferey, Guillaume., Blom, Jan., Dillenburg, Pierre	Watching MOOCs together: investigating co-located MOOC study groups.	2014
316	Rice, J	What I Learned in MOOC	2013
317	DEMIRCI, Neşet	What is Massive Open Online Courses (MOOCs) and What is promising us for learning?: A Review- evaluative Article about MOOCs.	2014
318	Cook, David A	What is the role of e-learning? Looking past the hype.	2014
319	Young, Jeffrey R.	What Professors Can Learn From 'Hard Core' MOOC Students	2013
320	Koutropoulos, A., Abajian, S.C., de Waard, I., Hogue, R., Keskin, N.Ö., Rodriguez, C.O.	What tweets tell us about MOOC participation	2014
321	Riendeau, Diane	What will you do on your summer vacation?	2014
322	Pence, Harry E.	When Will College Truly Leave the Building: If MOOCs are the Answer, What Is the Question?	2012
323	Pence, Harry E.	When Will College Truly Leave the Building: If MOOCs Are the Answer, What Is the Question?	2013
324	Gašević, Dragan.,	Where is Research on Massive Open Online Courses	2014

No	Author(s)	Name of Article	Year
	Kovanović, Vitomir., Joksimović, Srećko., Siemens, George	Headed? A Data Analysis of the MOOC Research Initiative.	
325	Hollands, Fiona M., Tirthali, Devayani, Lewis, Tim.,	Why Do Institutions Offer MOOCs?	2014
326	Kolowich, Steve	Why Some Colleges Are Saying No to MOOCs, at Least for Now	2013
327	Marr, Liz	Widening Participation, Lifelong Learning and MOOCs.	2013
328	Shah, Mahsood.Goode, Elizabeth., West, Susan., Clark, Helene	Widening Student Participation in Higher Education through Online Enabling Education.	2014
329	Young, Jeffrey R.	Will MOOCs Change Campus Teaching?	2013
330	Casement, William	Will Online Learning Lower the Price of College?	2013
331	Kolowich, Steve	With Open Platform, Stanford Seeks to Reclaim MOOC Brand	2013
332	Bruff, Derek O., Fisher, Douglas H., McEwen, Kathryn E.,	Wrapping a MOOC: Student Perceptions of an Experiment in Blended Learning.	2013
333	Comer, Denise K., Clark, Charlotte R.,Canelas, Dorian A.	Writing to Learn and Learning to Write across the Disciplines: Peer-to-Peer Writing in Introductory-Level MOOCs.	2014

Appendix C: Selected samples of the peer reviewed journal articles on MOOCs

Journal Articles
Group 1
What is the role of e-learning_ Looking past the hype
Virtually unlimited classrooms_ Pedagogical practices in massive open online courses
UNED OER Experience_ From OCW to Open UNED
Understanding the MOOCs continuance_ The role of openness and reputation
The decline and fall of the art of teaching
Students and instructors use of massive open online courses (MOOCs)_ Motivations and challenges.
Remarks on MOOCS and Mini-MOOCs
Precise Effectiveness Strategy for analyzing the effectiveness of students with educational resources and activities in MOOCs
Practical guidelines for designing and evaluating educationally oriented recommendations
Organisational learning as an emerging process_ The generative role of digital tools in informal learning practices
MOOCs_ An Opportunity for Innovation and Research
MOOCs, institutional policy and change dynamics in higher education
Massive Open Online Courses (MOOCs) and Their Impact on Academic Library Services_ Exploring the Issues and Challenges
Instructional quality of Massive Open Online Courses
Innovative Research in Academic Libraries_ Do Editorials, Agendas, or Think Tanks Make a Difference
In the Year of Disruptive Education
ideology and interaction_ Debating Determinism in Literacy Studies
Higher education in the digital age
Exploring the video-based learning research_ A review of the literature
Editorial_ A Message from the Editorial Team and an Introduction to the January-March 2013 Issue
Delving into participants profiles and use of social tools in MOOCs
Characteristics of Massive Open Online Courses (MOOCs)_ A Research Review, 2009-2012.
Group 2
Using mLearning and MOOCs to Understand Chaos Emergence and
The technological dimension of a massive open online course_ The case of the CCK08 course tools
The Employer Potential of MOOCs
The Challenges to Connectivist Learning
Supporting Professional Learning in a Massive Open Online Course
Special Issue_ Research into Massive Open Online Courses
Rethinking OER and Their Use_ Open Education as Bildung
Resource Requirements and Costs of Developing and Delivering MOOCs
Peer Assessment for Massive Open Online Courses (MOOCs)
Mediating Knowledge through Peer to Peer Interaction in a
Massive Online Obsessive Compulsion_ What are They Saying Out There about the Latest Phenomenon in Higher Education
Investigating MOOCs Through Blog Mining
Initial trends in enrolment and completion of massive open online courses
Democratizing Higher Education_ Exploring MOOC Use Among Those Who Cannot Afford a Formal Education.
Connectivism and Dimensions of Individual Experience
Group 3
Virtual learning environments, social media and MOOCs_ key elements in the conceptualisation of new scenarios in higher education_ EADTU

Transforming MOOCs and MOORFAPs into MOOLOs
Symposium on Massive Open Online Courses
MOOC rampant
MOOC Postscript
MOOC attack_ closing the gap between pre-university and university mathematics.
Massive Open Online Courses_ Disruptive Innovations or Disturbing Inventions
Learning online_ massive open online courses MOOCs connectivism and cultural psychology
Integrating technologies in higher education_ the issue of recommended educational features still making headline news.
Challenges to producing high-quality distance learning
A race to the bottom_ MOOCs and higher education business models
Group 4
The rise of MOOCs
The Issue at a Glance
Speaking Personally—With Marcio Mugnol
MOOCs on the March
MOOCs and the Rise of Online Legal Education
MOOC Fizzles
Massive Possibilities_ A Forum on MOOCs
Bracing Civilization
Books, Articles, and Items of Academic Interest
Blended Learning_ A Flipped Classroom Experiment
A Middle Path
Group 5
Will Online Learning Lower the Price of College
The MOOC moment and the end of reform
The Mediation of Literacy Education and Correspondence Composition Courses at UNC-Chapel Hill 1912-1924
Running AMOOC
Out With MOOCs and in with SPOCs
Our next challenge integrating video into the academy
Northern Twilight_SUNY and the Decline of the Public Comprehensive College
MOOCs_ what are they_Plus 20 Questions we should be asking about
MOOCs_ Striking the Right Balance between Facilitation and Self-Determination
MOOCs_ All that glitters may not be gold
MOOCs_ free online course that are really worth knowing about
MOOCs. Tips for Enrollment Professionals
MOOCs in Your Future
MoocMania
Leveraging employer branding, performance management and human resource development to enhance employee retention
I Hear the Train A Comin_ An Interview with the SIPX Team
Global Reach and Local Practise_ The Promises of MOOC
From Your -relocating-Editor
Educational and online technologies and the way we learn.
EDITORIAL OVERVIEW
Confessions of an Unreconstructed MOOC(h)er
ChangingLibraryOperations_ Some Thoughts from Library Experience
ATG Interviews Jim O'Donnell
And They Were There

Appendix D: A sample page for TUBITAK journal points

Journals	ISSN	Journal Points
NINETEENTH-CENTURY CONTEXTS-AN INTERDISCIPLINARY JOURNAL	0890-5495	0.00
4OR-A Quarterly Journal of Operations Research	1619-4500	36.63
A + U-ARCHITECTURE AND URBANISM	0389-9160	34.36
AAA-ARBEITEN AUS ANGLISTIK UND AMERIKANISTIK	0171-5410	28.61
AAOHN JOURNAL	0891-0162	34.88
AAPG BULLETIN	0149-1423	100.00
AAPS Journal	1550-7416	56.37
AAPS PHARMSCITECH	1530-9932	15.34
AATCC REVIEW	1532-8813	6.44
Abacus-A Journal of Accounting Finance and Business Studies	0001-3072	6.78
ABDOMINAL IMAGING	0942-8925	30.65
ABHANDLUNGEN AUS DEM MATHEMATISCHEN SEMINAR DER UNIVERSITAT HAMBURG	0025-5858	27.94
Abstract and Applied Analysis	1085-3375	15.60
ACADEMIC EMERGENCY MEDICINE	1069-6563	62.69
Academy of Management Annals	1941-6520	100.00
Academy of Management Learning & Education	1537- 260X	89.35
ACADEMY OF MANAGEMENT JOURNAL	0001-4273	100.00
Academy of Management Perspectives	1558-9080	52.09
ACADEMY OF MANAGEMENT REVIEW	0363-7425	100.00
ACADEMIC MEDICINE	1040-2446	91.49
Academic Pediatrics	1876-2859	89.58
ACADEMIC PSYCHIATRY	1042-9670	19.92
ACADEMIC RADIOLOGY	1076-6332	42.50
Academia-Revista Latinoamericana de Administracion	1012-8255	0.57
ACADIENSIS	0044-5851	0.00
ACCIDENT ANALYSIS AND PREVENTION	0001-4575	82.74
Accounting Auditing & Accountability Journal	0951-3574	40.56
ACCOUNTING AND BUSINESS RESEARCH	0001-4788	5.40
Accounting and Finance	0810-5391	4.59
Accounting Horizons	0888-7993	62.58
ACCOUNTING ORGANIZATIONS AND SOCIETY	0361-3682	24.58
Accountability in Research-Policies and Quality Assurance	0898-9621	38.24
ACCOUNTING REVIEW	0001-4826	35.16
ACCOUNTS OF CHEMICAL RESEARCH	0001-4842	100.00

Retrieved from
<http://ulakbim.tubitak.gov.tr/tr/haber/2014-yili-ubyt-dergi-listesi-hazirlanmistir>

Appendix E: Indexes used to constitute stratified sampling

Journals (#N/A Shows “Not Applicable” for Unmatched Journals According to the Formula)	TUBITAK	SCOPUS	http:// www.b ioxbio. com/if	citfactor
Academic Questions	#N/A	0.107	#N/A	#N/A
Academy Of Management Learning And Education	#N/A	1.959	2.121	#N/A
Against The Grain	#N/A	#N/A	#N/A	#N/A
Aishe-J: The All Ireland Journal Of Teaching And Learning In Higher Education	#N/A	#N/A	#N/A	#N/A
American Journal Of Distance Education	#N/A	0.326	#N/A	#N/A
American Journal Of Pharmaceutical Education	#N/A	0.344	1.188	1.188
Australian Academic And Research Libraries	#N/A	1.178	0.526	#N/A
Australian Universities Review	#N/A	#N/A	#N/A	#N/A
Cahiers Pédagogiques	#N/A	#N/A	#N/A	#N/A
Canadian Journal Of Learning And Technology	#N/A	#N/A	#N/A	#N/A
Canadian Journal Of University Continuing Education	#N/A	#N/A	#N/A	#N/A
Change: The Magazine Of Higher Learning	#N/A	#N/A	#N/A	#N/A
Christian Education Journal	#N/A	#N/A	#N/A	#N/A
Clinical Teacher	#N/A	0.457	#N/A	#N/A
Community College Enterprise	#N/A	#N/A	#N/A	#N/A
Composition Studies	#N/A	#N/A	#N/A	#N/A
Computers And Education	#N/A	2.558	2.63	#N/A
Continuing Higher Education Review	#N/A	#N/A	#N/A	#N/A
College And Research Libraries	#N/A	3.715	1.333	#N/A
Dean And Provost	#N/A	#N/A	#N/A	#N/A
Distance Learning	#N/A	#N/A	#N/A	#N/A
Diverse Issues In Higher Education	#N/A	#N/A	#N/A	#N/A
Education And Training	#N/A	0.39	#N/A	#N/A
Education Digest	#N/A	#N/A	#N/A	#N/A
Education Journal	#N/A	#N/A	#N/A	#N/A
Education Next	#N/A	0.317	#N/A	#N/A
Educational Technology Research And Development	#N/A	1.785	#N/A	#N/A
Educational Theory	#N/A	0.491	#N/A	#N/A
Educause Review	#N/A	#N/A	#N/A	#N/A
Electronic Journal Of E-Learning	#N/A	0.146	#N/A	#N/A
European Journal Of Open, Distance And E-Learning	#N/A	#N/A	#N/A	#N/A
History Teacher	#N/A	#N/A	#N/A	#N/A
Honors In Practice	#N/A	#N/A	#N/A	#N/A
Human Resource Development International	#N/A	#N/A	#N/A	#N/A
Innovative Higher Education	#N/A	0.437	#N/A	#N/A
Interdisciplinary Humanities	#N/A	#N/A	#N/A	#N/A
International Journal Of Advanced Corporate Learning	#N/A	#N/A	#N/A	#N/A

Journals (#N/A Shows “Not Applicable” for Unmatched Journals According to the Formula)	TUBITAK	SCOPUS	http:// www.b ioxbio. com/if	citefactor
International Journal Of Emerging Technologies In Learning	#N/A	0.19	#N/A	#N/A
International Journal Of Lifelong Education	#N/A	0.378	#N/A	#N/A
International Journal Of Technology In Teaching And Learning	#N/A	#N/A	#N/A	#N/A
International Schools Journal	#N/A	#N/A	#N/A	#N/A
Journal For Critical Education Policy Studies (Jceps)	#N/A	#N/A	#N/A	#N/A
Journal Of Applied Learning Technology	#N/A	#N/A	#N/A	#N/A
Journal Of Asynchronous Learning Networks	#N/A	#N/A	#N/A	#N/A
Journal Of College Admission	#N/A	#N/A	#N/A	#N/A
Journal Of College Science Teaching	#N/A	#N/A	#N/A	#N/A
Journal Of Developmental Education	#N/A	#N/A	#N/A	#N/A
Journal Of Educational Technology Systems	#N/A	#N/A	#N/A	#N/A
Journal Of Effective Teaching	#N/A	#N/A	#N/A	#N/A
Journal Of Hospitality And Tourism Education	#N/A	#N/A	1.125	#N/A
Journal Of Interactive Media In Education	#N/A	#N/A	#N/A	#N/A
Journal Of Interactive Online Learning	#N/A	1.232	#N/A	#N/A
Journal Of Management Development	#N/A	0.318	#N/A	#N/A
Journal Of Management Education	#N/A	0.502	#N/A	#N/A
Journal Of Online Learning And Teaching	#N/A	#N/A	#N/A	#N/A
Journal Of Research In Innovative Teaching	#N/A	#N/A	#N/A	#N/A
Journal Plus Education / Educatia Plus	#N/A	#N/A	#N/A	#N/A
Journalism And Mass Communication Educator	#N/A	#N/A	#N/A	#N/A
Language Learning And Technology	#N/A	1.308	1.929	#N/A
Learning, Media And Technology	#N/A	0.72	0.958	#N/A
Legal Education Review	#N/A	#N/A	#N/A	#N/A
Liberal Education	#N/A	#N/A	#N/A	#N/A
Libraries And Academy	#N/A	#N/A	#N/A	#N/A
Library Issues	#N/A	#N/A	#N/A	#N/A
Mentor: An Academic Advising Journal	#N/A	#N/A	#N/A	#N/A
Merlot Journal Of Distance Education	#N/A	#N/A	#N/A	#N/A
Modern English Teacher	#N/A	#N/A	#N/A	#N/A
Mpaea Journal Of Adult Education	#N/A	#N/A	#N/A	#N/A
Multicultural Education	#N/A	0.134	#N/A	#N/A
Necatibey Faculty Of Education Electronic Journal Of Science And Mathematics Education	#N/A	#N/A	#N/A	#N/A
New Review Of Academic Librarianship	#N/A	1.149	#N/A	#N/A
Nursing Education Perspectives	#N/A	0.731	#N/A	#N/A
On The Horizon	#N/A	0.398	#N/A	#N/A
Online Journal Of Distance Learning Administration	#N/A	#N/A	#N/A	#N/A
Online Learning	#N/A	#N/A	#N/A	#N/A

Journals (#N/A Shows “Not Applicable” for Unmatched Journals According to the Formula)	TUBITAK	SCOPUS	http:// www.b ioxbio. com/if	citfactor
Open Learning	#N/A	0.632	#N/A	#N/A
Our Schools / Our Selves	#N/A	#N/A	#N/A	#N/A
Physics Teacher	#N/A	#N/A	#N/A	#N/A
Portal: Libraries And The Academy	#N/A	1.336	0.651	#N/A
Radical Teacher	#N/A	#N/A	#N/A	#N/A
Redu : Revista De Docencia Universitaria	#N/A	#N/A	#N/A	#N/A
Revista De La Educación A Distancia	#N/A	#N/A	#N/A	#N/A
Revista De Universidad Y Sociedad Del Conocimiento	#N/A	0.268	#N/A	#N/A
Seminar.Net: Media, Technology And Life-Long Learning	#N/A	#N/A	#N/A	#N/A
Serials Librarian	#N/A	0.757	#N/A	#N/A
STICEF: Sciences Et Techniques De L'Information Et De La Communication Pour L'Education Et La Formation	#N/A	#N/A	#N/A	#N/A
TESL-EJ: Teaching English As A Second Or Foreign Language	#N/A	#N/A	#N/A	#N/A
The Chronicle Of Higher Education	#N/A	#N/A	#N/A	#N/A
Thought And Action	#N/A	#N/A	#N/A	#N/A
Turkish Journal Of Educational Technology	#N/A	#N/A	#N/A	#N/A
Turkish Online Journal Of Distance Education	#N/A	0.177	#N/A	#N/A
Widening Participation And Lifelong Learning	#N/A	#N/A	#N/A	#N/A
Journal Of The Academy Of Nutrition And Dietetics	0	1.605	2.444	2.444
Comunicar	2.6	0.188	0.35	#N/A
Journal Of Legal Education	6.21	0.191	0.355	#N/A
Journal Of Chemical Education	9.65	0.332	1.001	1.001
Phi Delta Kappan	9.73	0.251	0.214	#N/A
Educational Leadership	13.26	0.398	0.123	#N/A
Ieee Transactions On Education	21.23	1.205	1.221	1.221
Foreign Language Annals	21.7	0.822	0.76	#N/A
Computers In Human Behavior	21.78	1.791	2.273	#N/A
Ieee Transactions On Learning Technologies	23.37	0.982	1.221	1.22
Australian Academic And Research Libraries	25.28	1.178	0.526	#N/A
Distance Education	27.13	0.766	0.725	#N/A
Issues In Science And Technology	31.39	0.193	1.059	1.059
International Review Of Research In Open And Distance Learning	34.18	0.959	0.271	#N/A
Learning, Media And Technology	36.55	0.72	0.958	#N/A
Higher Education	39.69	1.31	1.124	#N/A
British Journal Of Educational Technology	40.31	1.523	1.394	#N/A
Computers And Education	54.56	2.558	2.63	#N/A
Journal Of Computer Assisted Learning	55.86	2.144	1.023	#N/A
Language Learning And Technology	75.27	1.308	1.929	#N/A

Journals (#N/A Shows "Not Applicable" for Unmatched Journals According to the Formula)	TUBITAK	SCOPUS	http:// www.b ioxbio. com/if	citfactor
Advances In Health Sciences Education	75.78	1.843	2.705	2.705
Communications Of The Acm	87.87	1.822	2.863	2.863
Medical Education	95.48	2.457	0.826	3.617
College Composition And Communication	100	0.666	#N/A	#N/A
Educational Research Review	100	3.122	3.107	#N/A
Educational Researcher	100	3.575	0.704	#N/A
Internet And Higher Education	100	2.565	2.048	#N/A
Reading Research Quarterly	100	2.6	1.65	#N/A
Number Of Recognized Article by Indexes:	28	58	36	9
Recognized Percentage of the Population:	23%	48%	30%	8%

Appendix F: Trial search keywords and results for online database search.

Keyword	From	To	All Sources	Searched Term(S)
Title	2011	2014	261	MOOC
All text	2000	2014	1,029	MOOC
Subject terms	2009	2014	41	MOOC
Abstract	2009	2014	251	MOOC
Title	2009	2014	144	massive open online course
All text	2000	2014	12,854	massive open online course
Subject terms	2009	2014	163	massive open online course
Abstract	2009	2014	215	massive open online course
Title	2012	2014	42	massive open online course and MOOC
All text	2009	2014	728	massive open online course and MOOC
Subject terms	2009	2014	16	massive open online course and MOOC
Abstract	2009	2014	193	massive open online course and MOOC

Date: 3/24/2014 all articles were peer reviewed, all content providers were selected before search

As it seen from the above table, at the *title* keyword, there were 261 sources including *MOOC* searched term during trial searches published between 2011 and 2014. However, if the *title* keyword were replaced with *massive open online course* terms, only 144 sources would be found. If it were expected to find *massive open online course and MOOC* terms together, 42 sources would be listed.

When *subject* terms considered, 41 sources were including *MOOC* term in their subjects. However, 163 sources were found including *massive open online course* terms and 16 sources when *massive open online course and MOOC* terms were searched together.

Considering *abstract* keyword 251 sources were resulted of *MOOC* term, and respectively 215 and 193 sources were result of *massive open online course* and *massive open online course and MOOC* terms together.

All text keyword was the least restricting one looking at the number of sources listed: respectively 1029, 12854, and 728 sources were found as the result of *MOOC*, *massive open online course* and *massive open online course* and *MOOC* terms together.

After the trials on online search, it was seen that the *title* and *abstract* keywords were returned more close and consistent number of resources to deal with when *MOOC* or *massive open online course* terms used. *Subject terms* were resulted with the least number of resources for each of the keyword and search term. On the contrary, *all text* was listing too many resources, impossible to examine.

Appendix G: Detailed trial search results for online database search

Keyword	From	to	All Sources	Journal	Review	Magazines	Trade Pub.	Book	Total
MOOC									
Title	2011	2014	261	254			1		255
All text	2000	2014	1,029	975	36	1	1		1,013
Subject terms	2009	2014	41	49					49
Abstract	2009	2014	251	233	3				236
massive open online course									
Title	2009	2014	144	137					137
All text	2000	2014	12,854	12,057	736	27		1	12,821
Subject terms	2009	2014	163	163					163
Abstract	2009	2014	215	197	3				200
massive open online course and MOOC									
Title	2012	2014	42	81					81
All text	2009	2014	728	692	19	1			712
Subject terms	2009	2014	16	21					21
Abstract	2009	2014	193	176	3				179
Date: 3/24/2014 all articles were peer reviewed, all content providers were selected before search									

As it seen in above, after the trial keyword search mostly academic journal articles, few reviews, several magazines, two trade publications and a book were listed when searched with *MOOC*, massive open online course terms *and* two of the terms together. Vast majority of the found publication types was belong to academic journal articles.

Appendix H: Confirmation letter for the requested data

Subject: Re: Discovery service hk.

From: "Şelale Korkut" [REDACTED]

Date: Fri, October 17, 2014 10:49 am

To: "ARZU ?K?NC?" aikinci@bilkent.edu.tr

Arzu Hanım merhabalar,
Seçtiğiniz tarama kriterlerine göre ulaşılan sonuç tamamıdır.
Saygılarımla,
Şelale Korkut

Merhabalar Selale Hanım,

Cok tesekkurler bu bilgi icin. Gerçi ben bana gözüken listelenenler arasında duplicate kayıt hala görüyorum. 709 doküman varken 311'ini gösteriyorsa, kesinlikle unique olarak 311 doküman var ve ben analizimde onları kullanırken hepsine eriştim mi sayacağım bu durumda.

Tesekkurler, Saygılar,

Arzu

Arzu Hanım merhabalar,
Tarama ile ilgili olarak firmadan gelen cevabı aşağıda görebilirsiniz.

Saygılarımla,
Şelale Korkut

Quick Search'de tarama yaptığınızda ulaştığınız toplam kayıt sayısı, sayfaları çevirdiğinizde azalmaktadır. Bunun nedeni de "her sayfada" duplike kayıtları çıkarmasıdır.

Duplikeleri tüm kayıtlar arasında çıkarmaz çünkü aksi halde sistem çok yavaşlardı.

Araştırma sonuçlarında bazı duplike kayıtların olması, tarama Sonuçlarında listelenen "aynı makalelerin" farklı kurumlar tarafından indekslenmesi ve tarama havuzunda yer almaları nedeniyledir. Kullanıcıların mümkün olan en az duplike kayıtlarla karşılaşmaları için Quick Search, makale başlığı, yazar veya yazarlar, yayın tarihi, ISSN/ISBN veya dergi adı gibi alanlara önem sırasına göre bakar ve bu alanlarda yüksek eşleşme söz konusu ise, kayıtlın duplike olduğuna karar verip, bu kayıtları "her sayfadaki" kayıt listesinden çıkarmaya çalışır. Buna rağmen, arka planda çalışan tarama motoru, bazen kayıtların aynı olduğunu algılayamayıp, aynı kayıtları eleyemeyebilir.

Saygılarımızla,

Appendix I: Examples for cleared duplicate records

As another example of the duplicate articles, punctuations can be given. There was a period (.) at the end of the article name. It was seen as a distinctive character by the library program..

- Peer assessment for massive open online courses (MOOCs)
- Peer Assessment for Massive Open Online Courses (MOOCs).

Next example is a triplet; the article in the second bullet has. In this example there are differences between the journal names of the article as well. In the online search database, Journal names provided by the library listed with the column title *“/rec/header/controlInfo/jinfo/jtl”* written in uppercase or lowercase. The case sensitiveness as it seen in the above example had distinctive role in the below articles as well. The articles listed in the first bullet and third bullet, even if the name of the articles were identical, listed twice due to the case sensitiveness. Additionally, capital I and lowercase i are different characters, it was seen as a different article by the library system. The articles listed in second and third bullets were different because of the period (.) at the end of the article name listed in the second bullet.

- Symposium on Massive Open Online Courses

Journal name: COLLEGE COMPOSITION AND COMMUNICATION

- Symposium on Massive Open Online Courses.

Journal name: College Composition and Communication

- Symposium on Massive Open Online Courses

Journal name: College Composition and Communication

As a last example to summarize reasons of duplicate records, wrong entries can be given;

- On the horizon: The year of the MOOCs
- On the horizon: the year of the MOOCs

Appendix J: Academic journal articles list through online database search

Article #	identical	Articles
1		Massive Open Online Courses (MOOCs) and Their Impact on Academic Library Services: Exploring the Issues and Challenges
2		"MOOC Mania"
3		2013: Year of the Seminar
4		4 MOOC's and How They Work
5		A Bold Move Toward MOOCs Sends Shock Waves, but Details Are Scarce
6		A Catholic Case Against MOOCs
7		A Comparison of Learner Intent and Behaviour in Live and Archived MOOCs.
8		A Cross-Modal Analysis of Learning Experience from a Learner's Perspective.
9		A Hacker in Every History Department: An Intelligent Radical's Guide to the Digital Humanities.
10		A Message from the MERLOT Executive Director: MOOCs, MERLOT, and Open Educational Services.
11		A Middle Path.
12		A MOOC Star Defects, at Least for Now
13		A MOOC That Would Make a Real Difference; An online format could help low-income students learn how to apply to college
14		A New Framework for Massive Open Online Courses (MOOCs).
15	1	A pedagogy of abundance or a pedagogy to support human beings? Participant support on massive open online courses
16	2	A Pedagogy of Abundance or a Pedagogy to Support Human Beings? Participant Support on Massive Open Online Courses
17		A phenomenology of learning large: the tutorial sphere of xMOOC video lectures.
18		A Pioneer in Online Education Tries a MOOC
19		A Preliminary Exploration of Operating Models of Second Cycle/Research Led Open Education Involving Industry Collaboration
20		A race to the bottom: MOOCs and higher education business models.
21		A Social Network Perspective on Peer Supported Learning in MOOCs for Educators.
22		A Traditional Educational Practice Adapted for the Digital Age.
23		After the Buzz: How the Embrace of MOOC's Could Hurt Middle America
24	3	American Council on Education Recommends 5 MOOCs for Credit
25	4	American Council on Education Recommends 5 MOOCs for Credit
26		An Academic Perspective on an Emerging Technological and Social Trend.

Article #	identical	Articles
27		An Examination of Coursera as an Information Environment: Does Coursera Fulfill its Mission to Provide Open Education to All?
28		An Exploratory Study of Emotional Affordance of a Massive Open Online Course
29		Analytics for Education.
30		Are MOOCs a Solution or a Symptom?
31		Are We Ready for Robots to Grade?
32		As MOOC Debate Simmers at San Jose State, American U. Calls a Halt
33		At Issue: MOOCs, an annotated webliography.
34		ATG Interviews Jim O'Donnell.
35		Bases, mediaciones y futuro de la educación a distancia en la sociedad digital.
36		Beyond hype and underestimation: identifying research challenges for the future of MOOCs.
37		Blended Learning: A Flipped Classroom Experiment.
38		Books, Articles, and Items of Academic Interest.
39		Bracing Civilization.
40		Building Different MOOC's for Different Pedagogical Needs
41		California State U. Will Experiment With Offering Credit for MOOCs
42		Can MOOC's and Existing E-Learning Efficiency Paradigms Help Reduce College Costs?
43		Can MOOC's Help Sell Textbooks?
44		Can the Current Model of Higher Education Survive MOOCs and Online Learning?
45		Case study: using MOOCs for conventional college coursework.
46		Challenge and Change
47		Challenges to producing high-quality distance learning.
48		Challenges to Research in MOOCs.
49	5	Changing "Course": Reconceptualizing Educational Variables for Massive Open Online Courses
50	6	Changing "Course": Reconceptualizing Educational Variables for Massive Open Online Courses
51		Changing Library Operations -- MOOCs Some Thoughts from Library Experience.
52		Characteristics of Massive Open Online Courses (MOOCs): A Research Review, 2009-2012.
53		Chronique des MOOC.
54		CJLT Special Issue Editorial: Tensions & Intersections: Exploring Philosophies of Education & Technology.
55		cMOOCs and Global Learning: An Authentic Alternative
56		Communication patterns in massively open online courses

Article #	Identical	Articles
57		Confessions of an Unreconstructed MOOC(h)er
58		Connectivism and Dimensions of Individual Experience.
59		Connectivism: Its Place in Theory-Informed Research and Innovation in Technology-Enabled Learning.
60		Could MOOCs answer the problems of teaching AQF-required skills.
61		De la clase magistral tradicional al MOOC: doce años de evolución de la enseñanza de la programación de aplicaciones web
62		Delving into participants' profiles and use of social tools in MOOCs
63		Democratizing Higher Education: Exploring MOOC Use Among Those Who Cannot Afford a Formal Education.
64		Designing for Quality: The Understanding Dementia MOOC.
65		Developments.
66		Digital culture clash: “massive” education in the E-learning and Digital Cultures MOOC.
67		DIGITAL DISCIPLESHIP: CHRISTIAN EDUCATION IN A DIGITAL WORLD.
68		Digital Resilience in Higher Education
69		Diseño e implementación de cursos abiertos masivos en línea (MOOC): expectativas y consideraciones prácticas.
70		Disruption in higher education: Massively open online courses (MOOCs)
71		Doubts About MOOCs Continue to Rise
72		Drones in Journalism Education.
73		EAGER ADOPTERS IN EDUCATION: Strategic Plan Ideas for Integrating Instructional Technology.
74	7	Editorial Overview.
75	8	Editorial Overview.
76	9	Editorial Overview.
77		Editorial: A Message from the Editorial Team and an Introduction to the January-March 2013 Issue.
78		Editorial: JIME Autumn 2013.
79		Editorial: Massive Open Online Courses, a perspective paper by Sir John Daniel.
80	10	Editorial: Spring 2013 issue.
81	11	Editorial: Spring 2013 issue.
82		Education glossary
83		Education questions in the Commons.
84		Education Roundup.
85		Educational and online technologies and the way we learn.
86		Educational paradigm shift: Are we ready to adopt MOOC?
87		E-LEARNING IN AUSTRALIAN LAW SCHOOLS.
88		Emotive Vocabulary in MOOCs: Context & Participant Retention

Article #	Articles
89	Evaluating the Strategic and Leadership Challenges of MOOCs.
90	Evaluating the Validity and Applicability of Automated Essay Scoring in Two Massive Open Online Courses.
91	Experiences in MOOCs: The Perspective of Students.
92	Exploring Business Models for MOOCs in Higher Education
93	Exploring co-studied massive open online course subjects via social network analysis
94	Exploring the ethical implications of MOOCs.
95	Exploring the video-based learning research: A review of the literature.
96	'Fit for Purpose': a cohort-centric approach to MOOC design.
97	From Your (relocating) Editor:.
98	Future scenarios for management education.
99	Ga. Tech to Offer a MOOC-Like Online Master's Degree, at Low Cost
100	Global reach and local practice: The promise of MOOCS
101	Going to College Online? A PEST Analysis of MOOCs.
102	Grab a MOOC by the Horns
103	GUEST EDITORIAL.
104	Harnessing the Power of a Massive Open Online Course (MOOC): Inspiring Leadership Through Emotional Intelligence.
105	Harvesting Alternative Credit Transfer Students: Redefining Selectivity in Your Online Learning Program Enrollment Leads.
106	Higher education in the digital age.
107	Higher Education: New Models, New Rules
108	Holding courses accountable for competencies central to the degree
109	Hong Kong MOOC Draws Students from Around the World
110	Hybrid identities & MOOCS: the implications of massive open online courses for multicultural civic education
111	I Hear the Train A Comin' -- An Interview with the SIPX Team.
112	Ideology and Interaction: Debating Determinisms in Literacy Studies.
113	Improving the learning design of massive open online courses
114	In search of "what works" in online and distance education.
115	In the Year of Disruptive Education.
116	In This Issue.
117	Independent Learning, MOOCs, and the Open Badges Infrastructure.
118	Influence of Incentives on Performance in a Pre-College Biology MOOC.
119	Initial trends in enrolment and completion of massive open online courses
120	Innovative Research in Academic Libraries: Do Editorials, Agendas, or Think Tanks Make a Difference?

Article #	identical	Articles
121	12	Instructional quality of Massive Open Online Courses (MOOCs)
122	13	Instructional quality of Massive Open Online Courses (MOOCs).
123		Integrating MOOCs into Traditional Higher Education: The Emerging "MOOC 3.0" Era
124		Integrating technologies in higher education: the issue of recommended educational features still making headline news.
125		Interaction Equivalency in an OER, MOOCs and Informal Learning Era.
126		Into the Future With MOOC's
127		Introduction.
128		Investigating MOOCs Through Blog Mining.
129		Keeping Them Clicking: Promoting Student Engagement In MOOC Design.
130		Learner Participation and Engagement in Open Online Courses: Insights from the Peer 2 Peer University.
131	14	Learning in a Small, Task-Oriented, Connectivist MOOC: Pedagogical Issues and Implications for Higher Education
132	15	Learning in a Small, Task-Oriented, Connectivist MOOC: Pedagogical Issues and Implications for Higher Education
133		Learning in an introductory physics MOOC: All cohorts learn equally, including an on-campus class
134	16	Learning online: massive open online courses (MOOCs), connectivism, and cultural psychology
135	17	Learning online: massive open online courses (MOOCs), connectivism, and cultural psychology.
136		Lessons Learned Building the Online History Program at the University of Memphis.
137		Letter from the Editor-in-Chief: MOOCs - How Are They Doing?
138		Letter from the Editor-in-Chief: The MOOCs Are Coming.
139		Leveraging employer branding, performance management and human resource development to enhance employee retention.
140		Liberal arts in a new era.
141		Liminal Participants and Skilled Orienteers: Learner Participation in a MOOC for New Lecturers.
142		Looking at MOOCs Rapid Growth Through the Lens of Video-Based Learning Research.
143		Los MOOCs como tecnologías disruptivas: estrategias para mejorar la experiencia de aprendizaje y la calidad de los MOOCs.
144		Magic MOOC.
145		Making His MOOC an 'Outreach for Poetry'
146		Making 'MOOCs': The Construction of a New Digital Higher Education within News Media Discourse.

Article #	identical	Articles
147		Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility.
148		Massive Online Obsessive Compulsion: What are They Saying Out There about the Latest Phenomenon in Higher Education?
149		Massive Online Open Courses (MOOCs) and Your Library.
150		Massive Open Online Adventure; Teaching a MOOC is not for the faint-hearted (or the untenured)
151		Massive Open Online Course (MOOC) Movement and Academic Advising.
152		Massive Open Online Courses in Chemistry: A Comparative Overview of Platforms and Features
153		Massive Open Online Courses in Scotland.
154		Massive Open Online Courses: Disruptive Innovations or Disturbing Inventions?
155		Massive Open Online Courses: How Registered Dietitians Use MOOCs for Nutrition Education.
156		Massive Open Online Courses: Strategies and Research Areas.
157		Massive Possibilities? A Forum on MOOCs
158		Massiveness + Openness = New Literacies of Participation? Mediating Knowledge through Peer-to-Peer Interaction in a Multicultural Online Learning Environment: A Case Study of International Students in the US.
159		Merging the Tower and the Cloud through Virtual Instruction: The New Academy of Distance Education.
160		Michael Gove addresses the United Nations - of education, that is...
162	18	Mobile Knowledge, Karma Points and Digital Peers: The Tacit Epistemology and Linguistic Representation of MOOCs
163	19	Mobile Knowledge, Karma Points and Digital Peers: The Tacit Epistemology and Linguistic Representation of MOOCs.
164		MOBIMOOC 2012: A New Tree Structure For The Delivery of Connectivist Moocs.
165	20	MOCKING THE MOOCS.
166	21	MOCKING THE MOOCS.
167		Monologues of Learning.
168		MOOA: Massive Open Online Administration.
169		MOOC attack: closing the gap between pre-university and university mathematics.
170		MOOC Fizzles.
171		MOOC Integration into Secondary School Courses.
172		MOOC madness
173		MOOC migration: massive open online courses are changing the way we think about higher education
174		MOOC Pedagogy: Gleaning Good Practice from Existing MOOCs.

Article #	identical	Articles
175		MOOC postscript.
176		MOOC rampant.
177	22	MOOC Response about 'Listening to World Music'
178	23	MOOC Response about "Listening to World Music"
179		MOOC U: The Revolution Isn't Over
180		MOOCs - Evolution or Revolution?
181		MOOCs and democratic education
182		MOOCs and the AI-Stanford Like Courses: Two Successful and Distinct Course Formats for Massive Open Online Courses
183		MOOC's and the Future of Nursing.
184		MOOCs and the Liberal Arts College.
185		MOOCs and the Material World
186		MOOCs and the Rise of Online Legal Education
187		MOOCs Are Usefully Middlebrow
188		MOOCs for High School.
189		MOOCs in Your Future.
190		MOOCs May Not Be So Disruptive After All
191		MOOCs on the March.
192		MOOCs plus.
193		MOOCs, Emerging Technologies, and Quality.
194		MOOCs, institutional policy and change dynamics in higher education.
195	24	MOOCs: A Systematic Study of the Published Literature 2008-2012
196	25	MOOCs: A Systematic Study of the Published Literature 2008-2012
197		MOOCs: all that glitters may not be gold ...
198	26	MOOCs: An Opportunity for Innovation and Research
199	27	MOOCs: An Opportunity for Innovation and Research
200		MOOCs: Been There, Done That
201		MOOCs: digesting the facts.
202		MOOCs: DISRUPTIVE INNOVATION AND THE FUTURE OF HIGHER EDUCATION.
203		MOOCs: emerging research.
204		MOOCs: Fad or Revolution?
205		MOOCs: free online course that are really worth knowing about
206		MOOCs: getting to know you better.
207		MOOCs: Opportunities, Impacts, and Challenges. Massive Open Online Courses in Colleges and Universities by Michael Nanfito.
208		MOOCs: Striking the Right Balance between Facilitation and Self-Determination.HIGHER education -- Social aspects
209		MOOCs: The Challenges for Academic Librarians.
210		MOOCs: Tips for Enrollment Professionals
211		MOOCs: what are they? Plus 20 questions we should be asking about

Article #	identical	Articles
		them
212		More Than MOOC's
213		My Modern MOOC Experience
214		New Spaces New Realities: Expanding Learning Any Time, Any Place.
215		Northern Twilight: SUNY and the Decline of the Public Comprehensive College
216		Nuevas formas de aprendizaje informales: ¿O estamos formalizando lo informal?
217		Observation de deux MOOC (Gamification et Writing in the Sciences) et pistes de recherche.
218		OCs: Legitimizing the Enterprise.
219	28	On the horizon: The year of the MOOCs
220	29	On the horizon: the year of the MOOCs
221		Online Educational Delivery Models: A Descriptive View
222		Online Learning 2.0: Strategies for a Mature Market
223		Online learning: a New Testament.
224		Online, bigger classes may be better classes
225		Open Educational Resources as a Tool to Improve Language Education Effectiveness in the Russian Higher Education Institutions.
226		Organisational learning as an emerging process: The generative role of digital tools in informal learning practices.
227		Our Next Challenge: Integrating Video into the Academy.
228		Out with MOOCs and in with SPOCs? Not so fast
229		Participants' Perceptions of Learning and Networking in Connectivist MOOCs.
230		Participatory pedagogy in an open educational course: challenges and opportunities.
231		Patterns of Engagement in Connectivist MOOCs.
232	30	Peer assessment for massive open online courses (MOOCs)
233	31	Peer Assessment for Massive Open Online Courses (MOOCs).
234		Post-Secondary Strategic Planning in the Age of Disruption.
235		Practical guidelines for designing and evaluating educationally oriented recommendations
236		Precise Effectiveness Strategy for analyzing the effectiveness of students with educational resources and activities in MOOCs
237		Presentación Hacia una nueva interculturalidad (educativa).
238		Presidents and Professors Largely Agree on Who Should Lead Innovation
239		Providers of Free MOOC's Now Charge Employers for Access to Student Data

Article #	identical	Articles
240		Realigning Higher Education for the 21st-Century Learner through Multi-Access Learning.
241		Reinventing Universities: Continuing Education and the Challenge of the 21st Century.
242		Remarks from the editor.
243		Remarks on MOOCS and Mini-MOOCS.
244		Reports of Meetings -- ARLIS 2013, WILU 2013 and the 32nd Annual Charleston Conference.
245		Research ethics in emerging forms of online learning: issues arising from a hypothetical study on a MOOC.
246		Researching what works in online learning.
247		Resource Requirements and Costs of Developing and Delivering MOOCs.
248		Rethinking OER and Their Use: Open Education as Bildung
249	32	Review: Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges
250	33	Roles and Student Identities in Online Large Course Forums: Implications for Practice
251	34	Roles and Student Identities in Online Large Course Forums: Implications for Practice.
252		Running aMOOC? Massive open online courses
253		Size Isn't Everything; For academe's future, think mash-ups not MOOC's
254		Speaking Personally--With Marcio Mugnol
255		Special Issue: Research into Massive Open Online Courses.
256		Student, Teacher, Professor: Three Perspectives on Online Education.
257	35	Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges
258	36	Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges.
259		Supporting Professional Learning in a Massive Open Online Course.
260	37	Symposium on Massive Open Online Courses
261	38	Symposium on Massive Open Online Courses
262	39	Symposium on Massive Open Online Courses.
263	40	Table of Contents
264	41	Table of Contents
265		Taylorizing Academia, Deskillng Professors and Automating Higher Education: The Recent Role of MOOCs.
266		Teacher Experiences and Academic Identity: The Missing Components of MOOC Pedagogy.
267		Teaching large classes in an increasingly internationalising higher education environment: pedagogical, quality and equity issues.

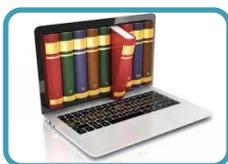
Article #	identical	Articles
268		Teaching Machines and the Humanities: Paragraphs on Critical Media Pedagogy.
269		The Advance of the MOOCs (Massive Open Online Courses): The Impending Globalisation of Business Education?
270	42	The challenges to connectivist learning on open online networks: Learning experiences during a massive open online course
271	43	The Challenges to Connectivist Learning on Open Online Networks: Learning Experiences during a Massive Open Online Course
272		The decline and fall of the art of teaching?
273		The Dynamic Flux of Continuing Higher Education: Redefining the New Roles, Responsibilities, and Expectations.
274		The Elephants in the Fire Hoses
275		The Employer Potential of MOOCs: A Mixed-Methods Study of Human Resource Professionals' Thinking on MOOCs.
276		The Future Is Now, and Has Been for Years
277		The Great Age of Experimentation: What's Good for Higher Ed Is Good for Academic Libraries.
278		The Inside Story: Campus Decision Making in the Wake of the Latest MOOC Tsunami.
279		The Issue at a Glance.
280		THE LEGITIMACY OF THE UNIVERSITIES IN THE CONTEXT OF THE EXPANTION OF MASIVE OPEN ONLINE COURSES (MOOCs).
281		The Mediation of Literacy Education and Correspondence Composition Courses at UNC-Chapel Hill, 1912-1924.
282		The MOOC moment and the end of reform
283		The MOOC phenomenon: toward lifelong education for all?
284		The MOOC Revolution: A new form of education from the technolgical paradigm?
285		The MOOC Syllabus Blues: Strategies for MOOCs and Syllabus Materials
286		The Newest Disruptive Technology -- MOOCs.
287		The Online Challenge to Higher Education.
288		The Open Courseware Movement in Higher Education: Unmasking Power and Raising Questions about the Movement's Democratic Potential.
289		The Open Translation MOOC: creating online communities to transcend linguistic barriers.
290		The Professors Behind the MOOC Hype
291		The Relentless Pursuit of Excellence in Pharmacy Education.
292		The rise of MOOCs
293		The Role of Facilitation in Technology-Enhanced Learning for Public Employment Services.

Article #	identical	Articles
294		The technological dimension of a massive open online course: The case of the CCK08 course tools
295	44	The Videoarticle: New Reporting Format in Scientific Journals and its Integration in MOOCs
296	45	The Videoarticle: New Reporting Format in Scientific Journals and its Integration in MOOCs.
297		Three problems with the connectivist conception of learning.
298		To Measure a MOOC's Value, Just Ask Students
299		Towards an Integration of Text and Graph Clustering Methods as a Lens for Studying Social Interaction in MOOCs.
300		Transforming MOOCs and MOORFAPs into MOOLOs.
301		Two Distinct Course Formats in the Delivery of Connectivist MOOCs
302		Understanding MOOCs as an Emerging Online Learning Tool: Perspectives From the Students.
303	46	Understanding the MOOCs continuance: The role of openness and reputation
304	47	Understanding the MOOCs continuance: The role of openness and reputation
305		UNED OER Experience: From OCW to Open UNED.
306	48	Unpacking MOOC scholarly discourse: A review of nascent MOOC scholarship
307	49	Unpacking MOOC scholarly discourse: a review of nascent MOOC scholarship.
308		Untitled.
309	50	Using mLearning and MOOCs to Understand Chaos, Emergence, and Complexity in Education
310	51	Using mLearning and MOOCs to Understand Chaos, Emergence, and Complexity in Education
311		Virtual learning environments, social media and MOOCs: key elements in the conceptualisation of new scenarios in higher education: EADTU conference 2013.
312	52	Virtually unlimited classrooms: Pedagogical practices in massive open online courses
313	53	Virtually unlimited classrooms: Pedagogical practices in massive open online courses
314	54	Watching MOOCs together: investigating co-located MOOC study groups
315	55	Watching MOOCs together: investigating co-located MOOC study groups.
316		What I Learned in MOOC
317		What is Massive Open Online Courses (MOOCs) and What is promising us for learning?: A Review-evaluative Article about MOOCs.

Article #	Identical	Articles
318		What is the role of e-learning? Looking past the hype.
319		What Professors Can Learn From 'Hard Core' MOOC Students
320		What tweets tell us about MOOC participation
321		What will you do on your summer vacation?
322	56	When Will College Truly Leave the Building: If MOOCs are the Answer, What Is the Question?
323	57	When Will College Truly Leave the Building: If MOOCs Are the Answer, What Is the Question?
324		Where is Research on Massive Open Online Courses Headed? A Data Analysis of the MOOC Research Initiative.
325		Why Do Institutions Offer MOOCs?
326		Why Some Colleges Are Saying No to MOOCs, at Least for Now
327		Widening Participation, Lifelong Learning and MOOCs.
328		Widening Student Participation in Higher Education through Online Enabling Education.
329		Will MOOCs Change Campus Teaching?
330		Will Online Learning Lower the Price of College?
331		With Open Platform, Stanford Seeks to Reclaim MOOC Brand
332		Wrapping a MOOC: Student Perceptions of an Experiment in Blended Learning.
333		Writing to Learn and Learning to Write across the Disciplines: Peer-to-Peer Writing in Introductory-Level MOOCs.

Appendix K: General summary of processes about population and sample

1. Determining Keywords for Boolean Search



- Trial searches and determination of search criteria
- Search on online library databases
- *Title:* MOOC -OR- Massive Open Online Course
- *Abstract:* MOOC -OR- Massive Open Online Course
- *Limiters:* Peer Reviewed, Full Text, between 2008-2015
- *Discipline:* Education

2. Hit Counts: Population



- Result: number of academic journal is 783 and the number of reviews is six.
- After duplicate records removed by library program, 333 documents were listed.
- Database search results were requested as an Excel file.

3. Population was Organized in MS-Excel



- These search results were revised to see one article in each row in a Excel worksheet. All attributes of an article moved in to a column such as author, publishing year, journal title, etc.
- Missing information in the column titles were found using scholar Google. For example journal name of 23 articles were not listed. Article names searched from Scholar Google to find the journals.
- Author names were not standardized. Starts with names/lastnames or only one letter or all letters of the middle names. They were revised to search by author name.
- Journal name were standardized. For example & or AND had been used interchangeably. Only AND used.

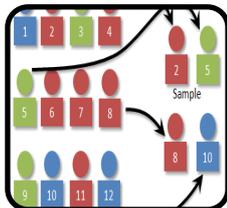
4. Organized Population and Sample Size

- After the organization of the journal articles, some other duplicates and triplets were found (see in the *Data: Theoretical Framework section*).
- Writing conditional IF functions duplicate and triplet records were determined.
- The reasons were justified to explain why these duplicates and triplets were not recognized by library software.
- Finally 303 journal articles were the population of this study.
- These journals and articles were examined by various aspects.
- The journals were sorted by *publishing years*
- The articles were sorted by *database providers* and articles per database providers were found.
- The articles were sorted by *academic journals* and articles per academic journal were found
- The articles were sorted by *authors* and journal articles per authors were found.



5. Preparations for Stratified Sampling

- To provide equal chance for each article, the *stratified sampling* one of the sampling methods used in content analysis was employed.
- Four different indexes were used to categorize the journals.
- TUBITAK and Scopus indexes were attained in MS-Excel file format and used to find rank of each journal writing *vlookup* function in MS-Excel.
- Other two indexes were matched manually to find the rank of the journals.



6. Method Stratified Sampling

- First *TUBITAK* journal scores were used to categorize the journals. In total 28 of the journals was found in the TUBITAK journal scores list.
- Then *citefactor* were used and only *nine* of the journals were found in the citefactor index.
- In the third index *bioxbio.com*, 36 of the journals were found.
- The last used index *Scopus* was providing ranks for 58 of the journals.
- The *Scopus* index was used to stratify the journals since it was more wide-reaching.



Appendix L: List of articles according to the groups of sampling defined using impact factors

GROUP 1: The folder named “Group1” is used to save first group of articles. Their impact factors between 3.575 and 0.982. There are 22 articles in this group.

Group1				
Name	Nodes	References	Size (KB)	
Massive Open Online Courses (MOOCs) and Their Impact on Acade	86	521	357	
Students and instructors use of massive open online courses (MOOC	71	343	331	
ideology and interaction_Debating Determinism in Literacy Studies	60	622	196	
Delving into participants profiles and use of social tools in MOOCs	43	259	945	
Virtually unlimited classrooms_Pedagogical practices in massive open	39	92	324	
UNED OER Experience_ From OCW to Open UNED	37	197	866	
Characteristics of Massive Open Online Courses (MOOCs)_A Resear	35	104	1038	
Remarks on MOOCS and Mini-MOOCS	34	149	275	
In the Year of Disruptive Education	33	106	1964	
Understanding the MOOCs continuance_The role of openness and re	27	72	548	
What is the role of e-learning_ Looking past the hype	23	112	126	
Instructional quality of Massive Open Online Courses	22	95	231	
MOOCs_ An Opportunity for Innovation and Research	19	58	378	
Precise Effectiveness Strategy for analyzing the effectiveness of stud	19	60	1277	
Practical guidelines for designing and evaluating educationally oriente	13	22	1436	
Higher education in the digital age	12	47	47	
Editorial_A Message from the Editorial Team and an Introduction to th	12	35	48	
Exploring the video-based learning research_ A review of the literatur	9	49	197	
MOOCs, institutional policy and change dynamics in higher education	9	19	164	
The decline and fall of the art of teaching	8	57	105	
Organisational learning as an emerging process_The generative role	5	20	220	
Innovative Research in Academic Libraries_Do Editorials, Agendas, o	1	23	467	

GROUP 2: The folder named “Group2” is used to save second group of articles.

Their impact factor is 0.959 and there are 15 files with this impact factor. The articles marked with purple to differentiate during the analysis.

Group2				
Name	Nodes	Reference	Size (KB)	
Investigating MOOCs Through Blog Mining	100	585	675	●
The technological dimension of a massive open online course_ The c	65	326	651	●
Using mLearning and MOOCs to Understand Chaos Emergence and	63	391	862	●
Peer Assessment for Massive Open Online Courses (MOOCs)	62	326	354	●
The Challenges to Connectivist Learning	56	292	1108	●
Massive Online Obsessive Compulsion_ What are They Saying Out	53	199	436	●
Supporting Professional Learning in a Massive Open Online Course	47	288	324	●
The Employer Potential of MOOCs	45	460	443	●
Rethinking OER and Their Use_ Open Education as Bildung	44	253	530	●
Resource Requirements and Costs of Developing and Delivering MO	43	371	395	●
Democratizing Higher Education_ Exploring MOOC Use Among Thos	31	183	560	●
Connectivism and Dimensions of Individual Experience	22	194	331	●
Initial trends in enrolment and completion of massive open online cou	19	35	821	●
Mediating Knowledge through Peer to Peer Interaction in a	11	111	703	●
Special Issue_ Research into Massive Open Online Courses	7	12	129	●

GROUP 3: The folder named “Group3” is used to save third group of articles. Their impact factor is between 0.822 and 0.502. There are 15 files and marked with orange color.

Group3				
Name	Nodes	Referen	Size (KB)	
MOOC rampant	49	213	108	●
Integrating technologies in higher education_ the issue of recommended ed	43	180	306	●
A race to the bottom_ MOOCs and higher education business models	41	264	167	●
Massive Open Online Courses_ Disruptive Innovations or Disturbing Invent	38	239	255	●
MOOC attack_ closing the gap between pre-university and university math	35	119	264	●
Transforming MOOCs and MOORFAPs into MOOLOs	30	72	73	●
Virtual learning environments, social media and MOOCs_ key elements in t	25	67	116	●
Challenges to producing high-quality distance learning	22	87	116	●
MOOC Postscript	20	112	116	●
Symposium on Massive Open Online Courses	19	45	1213	●
Learning online_ massive open online courses MOOCs connectivism and c	7	24	86	●

GROUP 4: The folder named “Group4” is used to save fourth group of articles.

Their impact factor is between 0.491 and 0.107. There are 11 articles and marked with yellow color.

Group4				
	Name	Nodes ▾	References	Size (KB) 
	MOOCs and the Rise of Online Legal Education	69	370	1321 
	MOOC Fizzles	42	128	77 
	The rise of MOOCs	20	57	75 
	MOOCs on the March	14	68	64 
	Speaking Personally—With Marcio Mugnol	9	75	90 
	Blended Learning_A Flipped Classroom Experiment	9	81	615 
	Bracing Civilization	7	10	60 
	Massive Possibilities_ A Forum on MOOCs	5	10	47 
	A Middle Path	5	49	85 
	The Issue at a Glance	3	8	66 
	Books, Articles, and Items of Academic Interest	1	5	106 

GROUP 5: The folder named “Group5” is used to save fifth group of articles. Their impact factor is between 0.491 and 0.107. There are 24 articles and marked with red color.

Group5				
Name	Nodes ▾	Referen	Size (KB)	
 MoocMania	59	245	4752	
 The MOOC moment and the end of reform	57	406	394	
 MOOCs_Striking the Right Balance between Facilitation and Self-Determin	52	281	550	
 Global Reach and Local Practise_The Promises of MOOC	48	62	4661	
 Running AMOOC	37	92	850	
 MOOCs_what are they_Plus 20 Questions we should be asking about	34	90	134	
 MOOCs. Tips for Enrollment Professionals	32	106	206	
 MOOCS_All that glitters may not be gold	30	52	159	
 MOOCs in Your Future	25	59	162	
 I Hear the Train A Comin_An Interview with the SIPX Team	23	51	493	
 ChangingLibraryOperations_Some Thoughts from Library Experience	20	47	482	
 Leveraging employer branding, performance management and human reso	20	26	132	
 Will Online Learning Lower the Price of College	18	109	278	
 ATG Interviews Jim O'Donnell	17	53	1824	
 Out With MOOCs and in with SPOCs	16	48	227	
 MOOCs_free online course that are really worth knowing about	14	52	2042	
 The Mediation of Literacy Education and Correspondence Composition Co	10	93	980	
 Confessions of an Unreconstructed MOOC(h)er	10	39	907	
 Northern Twilight_SUNY and the Decline of the Public Comprehensive Coll	10	63	923	
 Educational and online technologies and the way we learn.	9	18	160	
 EDITORIAL OVERVIEW	9	26	37	
 Our next challenge integrating video into the academy	7	12	468	
 And They Were There	3	4	414	
 From Your -relocating-Editor	2	2	241	

Appendix M: List of sample articles with number of nodes, references and size

Name	Nodes	References	Size (KB)
Investigating MOOCs Through Blog Mining	100	585	675
Massive Open Online Courses (MOOCs) and Their Impact on Academic Library Services_Exploring the Issues and Challenges	86	521	357
Students and instructors use of massive open online courses (MOOCs)_Motivations and challenges.	71	343	331
MOOCs and the Rise of Online Legal Education	69	370	1321
The technological dimension of a massive open online course_ The case of the CCK08 course tools	65	326	651
Using mLearning and MOOCs to Understand Chaos Emergence and	63	391	862
Peer Assessment for Massive Open Online Courses (MOOCs)	62	326	354
ideology and interaction_Debating Determinism in Literacy Studies	60	622	196
MoocMania	59	245	4752
The MOOC moment and the end of reform	57	406	394
The Challenges to Connectivist Learning	56	292	1108
Massive Online Obsessive Compulsion_ What are They Saying Out There about the Latest Phenomenon in Higher Education	53	199	436
MOOCs_Striking the Right Balance between Facilitation and Self-Determination	52	281	550
MOOC rampant	49	213	108
Global Reach and Local Practise_The Promises of MOOC	48	62	4661
Supporting Professional Learning in a Massive Open Online Course	47	288	324
The Employer Potential of MOOCs	45	460	443
Rethinking OER and Their Use_ Open Education as Bildung	44	253	530
Integrating technologies in higher education_ the issue of recommended educational features still making headline news.	43	180	306
Resource Requirements and Costs of Developing and Delivering MOOCs	43	371	395
Delving into participants profiles and use of social	43	259	945

Name	Nodes	References	Size (KB)
tools in MOOCs			
MOOC Fizzles	42	128	77
A race to the bottom_ MOOCs and higher education business models	41	264	167
Virtually unlimited classrooms_ Pedagogical practices in massive open online courses	39	92	324
Massive Open Online Courses_ Disruptive Innovations or Disturbing Inventions	38	239	255
Running AMOOC	37	92	850
UNED OER Experience_ From OCW to Open UNED	37	197	866
MOOC attack_ closing the gap between pre-university and university mathematics.	35	119	264
Characteristics of Massive Open Online Courses (MOOCs)_ A Research Review, 2009-2012.	35	104	1038
MOOCs_ what are they_ Plus 20 Questions we should be asking about	34	90	134
Remarks on MOOCS and Mini-MOOCS	34	149	275
In the Year of Disruptive Education	33	106	1964
MOOCs. Tips for Enrollment Professionals	32	106	206
Democratizing Higher Education_ Exploring MOOC Use Among Those Who Cannot Afford a Formal Education.	31	183	560
MOOCS_ All that glitters may not be gold	30	52	159
Transforming MOOCs and MOORFAPs into MOOLOs	30	72	73
Understanding the MOOCs continuance_ The role of openness and reputation	27	72	548
MOOCs in Your Future	25	59	162
Virtual learning environments, social media and MOOCs_ key elements in the conceptualisation of new scenarios in higher education_ EADTU	25	67	116
I Hear the Train A Comin_ An Interview with the SIPX Team	23	51	493
What is the role of e-learning_ Looking past the hype	23	112	126
Challenges to producing high-quality distance learning	22	87	116
Connectivism and Dimensions of Individual Experience	22	194	331
Instructional quality of Massive Open Online	22	95	231

Name	Nodes	References	Size (KB)
Courses			
ChangingLibraryOperations_Some Thoughts from Library Experience	20	47	482
Leveraging employer branding, performance management and human resource development to enhance employee retention	20	26	132
The rise of MOOCs	20	57	75
MOOC Postscript	20	112	116
Symposium on Massive Open Online Courses	19	45	1213
Initial trends in enrolment and completion of massive open online courses	19	35	821
MOOCs_ An Opportunity for Innovation and Research	19	58	378
Precise Effectiveness Strategy for analyzing the effectiveness of students with educational resources and activities in MOOCs	19	60	1277
Will Online Learning Lower the Price of College	18	109	278
ATG Interviews Jim O'Donnell	17	53	1824
Out With MOOCs and in with SPOCs	16	48	227
MOOCs_ free online course that are really worth knowing about	14	52	2042
MOOCs on the March	14	68	64
Practical guidelines for designing and evaluating educationally oriented recommendations	13	22	1436
Editorial_A Message from the Editorial Team and an Introduction to the January-March 2013 Issue	12	35	48
Higher education in the digital age	12	47	47
Mediating Knowledge through Peer to Peer Interaction in a	11	111	703
The Mediation of Literacy Education and Correspondence Composition Courses at UNC-Chapel Hill 1912-1924	10	93	980
Confessions of an Unreconstructed MOOC(h)er	10	39	907
Northern Twilight_SUNY and the Decline of the Public Comprehensive College	10	63	923
Educational and online technologies and the way we learn.	9	18	160
EDITORIAL OVERVIEW	9	26	37
Speaking Personally—With Marcio Mugnol	9	75	90
Blended Learning_A Flipped Classroom Experiment	9	81	615

Name	Nodes	References	Size (KB)
Exploring the video-based learning research_ A review of the literature	9	49	197
MOOCs, institutional policy and change dynamics in higher education	9	19	164
The decline and fall of the art of teaching	8	57	105
Our next challenge integrating video into the academy	7	12	468
Bracing Civilization	7	10	60
Learning online_ massive open online courses MOOCs connectivism and cultural psychology	7	24	86
Special Issue_ Research into Massive Open Online Courses	7	12	129
Massive Possibilities_ A Forum on MOOCs	5	10	47
A Middle Path	5	49	85
Organisational learning as an emerging process_ The generative role of digital tools in informal learning practices	5	20	220
And They Were There	3	4	414
The Issue at a Glance	3	8	66
From Your -relocating-Editor	2	2	241
Books, Articles, and Items of Academic Interest	1	5	106
Innovative Research in Academic Libraries_Do Editorials, Agendas, or Think Tanks Make a Difference	1	23	467
AVERAGE	28.43	137.43	
MINIMUM	1	2	
MAXIMUM	100	622	

Appendix N: All possible codes listed in NVIVO during the content analysis

Nodes	Source	Ref.
MOOC	77	1611
a MOOC model	10	17
Challenge	10	37
examples of Legal OE	1	2
big data	8	28
business model	11	115
customer value proposition	2	7
finance	4	6
organisations' infrastructure	3	15
processors	2	3
resources	3	5
cost (community investment)	9	173
defined terms	0	0
altruism	2	3
connectivism	2	2
digital divide	3	4
bandwidth divide	1	1
digital imigrants	1	1
digital native	3	4
formal learning	8	35
informal learning	8	55
distruptive innovation	25	92
ecosystem roles	5	8
administrators	12	58
advertising channels	1	1
Content facilitator	11	24
critical friend	1	4
employers	1	5
enrollment professional	2	7
grants	1	1
instructional designer	1	1
legislators	3	7
library	10	104
mentor	1	5
moderator	1	8
politicians_governments	4	9
probusiness	1	1
project managers	1	2
researchers-research	14	44
software agents	0	0

Nodes	Source	Ref.
technologists	7	10
videographers	1	2
Voyeur	1	4
How are MOOCs used	3	25
access	1	3
alumni development	1	3
cost reduction	3	5
lifelong networked learning	12	23
Potential credentials and awards	3	5
potential to international links	1	2
How could be MOOCs used	5	41
How to set up a MOOC	1	2
assisting information system	2	17
assumptions	1	16
automated assessment	3	8
communication and collaboration tools	10	30
digital tutors	1	7
introductory guide	1	7
standards of citation	1	6
influences	2	13
key players	8	14
faculty	46	341
frontiers	6	10
Andrew Ng	6	9
Bryan Alexander	3	3
Daphne Koller	9	15
Dave Cormier	11	18
George Siemens	24	58
Peter Norvig	4	8
Salman Khan	2	2
Sebastian Thrun	11	33
Stephen Downes	22	48
organisations	3	5
educause	3	4
National Research Council of Canada's Institute for IT	1	6
RTI International	0	0
SIPX Service	2	4
The American Council on Education	2	4
The Association of Research Libraries	0	0
The MOOC Research Initiative (MRI)	2	2
private companies-providers	41	192

Nodes	Source	Ref.
ALISON	1	1
Canvas Network	1	1
Class2Go	1	1
Connexions	0	0
Coursera	17	72
CourseSites	1	1
CourseSmart	1	1
EdX	13	48
Eliademy	1	1
Ewant	1	1
FutureLearn	3	8
Google Course Builder	1	1
iVersity	2	2
JMOOC	1	1
Khan Academy Platform	5	6
Mechanical MOOC	0	0
MERLOT	1	1
MIT OCW	0	0
MITx	0	0
Moodle	1	2
NovoEd	1	1
OERGlue	0	0
Open University	3	4
Open2study	1	1
OpenLearn	0	0
OpenStudy	1	1
OpenUpEd	2	2
P2PU	1	1
Peer-to-Peer University	0	0
Saylor Foundation	1	1
Schoo	1	1
Udacity	11	26
Udemy	2	2
UniMOOC	1	1
Veduca	0	0
WEU	1	1
Wikieducator	0	0
XuetangX	1	1
publishers	14	46
student-participant	46	621
4C	1	1

Nodes	Source	Ref.
Fisher's Framework	1	4
For Forums	1	1
Hills	2	5
Milligan et al.	1	1
MiradaX-DEF	1	35
to be successful	9	18
Universities	52	279
Harvard	9	23
MIT	11	17
MITx	5	10
Open Courseware Project	6	12
Stanford	9	28
pedagogical tools	23	146
assessment	8	13
assignments	10	19
audio sessions	3	3
blogs	9	36
chat groups	5	8
constructed web sites	1	1
content design	8	28
course policies	3	3
daily newspaper	1	1
discussion forums	23	68
emails	6	24
exercises	3	7
fill in the blank	1	1
Google group	1	3
google spreadsheets	1	2
interactive whiteboard	1	3
ipad	1	2
Learning analytics	4	7
Learning Management System	10	26
learning portfolios	5	5
local study groups	1	1
meet up groups	0	0
message boards	2	2
Mobile Phone	1	4
multimedia	7	8
multiple choice test	5	8
office hours	1	3
open translation	1	4

Nodes	Source	Ref.
peer grading	17	44
projects	1	1
quiz and exams	6	7
readings	7	13
recorded in a soundstage	2	3
remote monitoring	0	0
robo-grading	5	5
RSS	2	4
self-assessment	2	3
simulate face-to-face	0	0
simulations and games	1	1
slides	1	1
social media network	23	143
software systems	1	2
syllbus	0	0
textbook	6	18
video - web conferencing	3	6
video lectures	26	121
virtual labs	1	4
virtualization	1	1
wiki	4	8
prominent features	5	6
ad hoc	3	4
affordability	14	29
fixed cost	1	2
variable cost minimization	2	18
asynchronous	3	5
badges	3	5
certificate	21	58
community engagement	17	51
interaction with professionals	10	14
networking and profile building	7	18
participatory	16	46
peer to peer interaction	17	115
cost effectiveness	7	47
course	29	186
design	10	34
formative assessment	4	14
summative assessment	5	8
skills training or refresher courses	4	11
cross-cultural	1	1

Nodes	Source	Ref.
customize workload	1	1
distributed	4	13
filling gap	3	29
heterogeneity	4	8
marketing potential	8	16
massive	34	68
media outlets	14	47
online	18	32
open - free	49	177
access	17	46
specified start and end date	1	2
source	8	22
personal or professional interest	5	58
phenomenon	20	32
Removal of constraints	1	1
reputation building	7	9
revolutionizing	10	22
sage on stage	1	2
self-organized	8	28
teaching approaches	9	11
try before buy	2	4
research gap	24	127
few empirical studies	9	11
roadblocks	15	28
accreditation issues	14	23
additional costs	3	5
ambiguous assignments	2	2
ambiguous expectations	1	1
assessment	10	56
automated essay scoring	2	6
cheating and fraudulent	9	31
collaboration anxiety	2	6
copyrights and licensing	17	91
credits_degree	21	75
academically adrift	1	2
college credit	13	29
cultural diversity	3	11
disability regulations	1	1
drop-out rates	28	114
participant autonomy	19	97
extrinsic motivation	6	13

Nodes	Source	Ref.
perceived usefulness	2	3
reputation	1	3
self-development	8	11
intrinsic motivation	8	25
commitment	0	0
enjoyment	2	3
interest	3	5
participatory literacy skills	16	190
satisfaction	1	2
self-determination	10	58
self-directed	11	27
self-reported	3	4
participation funnel	1	2
activity	0	0
awareness	0	0
process	0	0
registration	2	2
effectiveness	22	67
1_eff. of students with peers	1	1
2_eff. of students with instructors	1	1
3_eff. of students with contents	1	2
assumptions	1	1
PES	2	3
experience	1	1
financial problems	3	4
hidden costs	2	4
variable cost minimization	2	3
future of the professoriate	1	3
gap bw literature demands & literature outcomes	1	2
e-learning life cycle of personalised educational systems	1	2
the layered evaluation of adaptation features	0	0
User centered design	0	0
infrastructure	2	9
adoption of mobile	1	1
greater modularity	1	1
knowledge assumption	2	3
lack of familiarity	2	4
evaluation	1	1
feedback and testing	1	1
skills and technology	11	28
lack of feedback	12	54

Nodes	Source	Ref.
lack of incentive	4	6
lack of interactivity	9	27
lack of time	5	11
language	10	23
limited research	14	40
localization	4	4
lurkers	7	39
metodology of peer evaluation	5	11
Bayesian Models	1	8
Calibrated Peer Review (CPR)	1	16
Credibility Index	1	10
no one for help	3	3
no standart	0	0
not to see	1	2
pitfalls of peer grading	5	67
technical difficulties	11	26
time zone	4	7
successful implementation	17	59
assigned roles	1	1
clear statements	1	3
How to participate	2	2
nature of the MOOC	1	1
required skills	4	11
skillful facilitation	3	10
collaboration	17	86
common goals	1	1
design principles	5	5
discussions and feedback	2	6
diverse community	4	12
educational technology	13	58
borg complex	1	3
external reasons	0	0
save costs	1	1
social mode	2	11
pedagogical reasons	5	14
faculty support	4	5
flexible thinking structures	1	1
individual factors	1	1
institutional leaders	1	1
instructional quality	12	78
activation	1	6

Nodes	Source	Ref.
application	1	8
Authentic Resources	1	2
collaboration	12	27
collective knowledge	2	3
demonstration	1	3
differentiation	1	2
feedback	2	4
integration	2	5
problem centered	1	7
skill & background knowledge	1	1
investment	1	7
multiplicity of possibilities	1	1
open licensing	3	5
personalized guide or facilitator	6	14
educational recommender systems	1	20
architecture-centred solution	1	2
conduct empirical evaluations	1	4
foster users' active action	1	1
involving domain experts	1	3
involving learners	1	6
ISO 9241-210 Ergonomics of human-system interaction	1	1
repertory grid	1	1
eliciting and using educators' background	1	9
learning process improvement	6	7
quality of course material	5	7
ready learners	4	32
registration	3	6
repeated participation	1	1
shared outcomes	1	1
suggestions to students	1	1
Cluster	1	4
declare	1	4
focus	1	6
Network	5	13
orient	1	6
sustainable	3	11
taxonomies	9	30
bad MOOC	1	1
cMOOC	14	56
content-based	2	6
good MOOC	1	1

Nodes	Source	Ref.
network-based	5	18
oMOOC	1	3
task-based	1	4
xMOOC	11	43

Appendix O: The list of codes used before finalizing the thematic network

MOOC PHENOMENON
a MOOC model
examples of Legal OE
IS continuence model
Expectation-Confirmation Theory
consumer satisfaction
perceived usefulness
big data
business model
customer value proposition
finance
organisations' infrastructure
processors
resources
characteristics
ad hoc
course
formative assessment
skills training or refresher courses
summative assessment
heterogeneity
current applications of MOOCs
access
alumni development
cost reduction
lifelong networked learning
Potential credentials and awards
potential to international links
ecosystem roles
administrative
administrators
employers
politicians-governments
advertising channels
assistant coordinators
content facilitator
critical friend
graduate assistants
instructional designer
mentor

MOOC PHENOMENON
moderator
project managers
innovation supporters
grants
researchers-research
key players
faculty
frontiers
Andrew Ng
Bryan Alexander
Daphne Koller
Dave Cormier
George Siemens
Peter Norvig
Salman Khan
Sebastian Thrun
Stephen Downes
organisations
educause
National Research Council of Canada's Institute for IT
RTI International
SIPX Service
The American Council on Education
The Association of Research Libraries
The MOOC Research Initiative (MRI)
private companies-providers
ALISON
Canvas Network
Class2Go
Connexions
Coursera
CourseSites
CourseSmart
desire2learn
Digital Education
EdX
Eliademy
Ewant
FutureLearn
Google Course Builder
iVersity

MOOC PHENOMENON
JMOOC
Khan Academy Platform
Mechanical MOOC
MERLOT
MiriadaX
MIT OCW
MITx
Moodle
NovoEd
OERGlue
Open University
Open2study
OpenLearn
OpenStudy
OpenUpEd
P2PU
Peer-to-Peer University
Saylor Foundation
Schoo
Udacity
Udemy
UniMOOC
Veduca
WEU
Wikieducator
XuetangX
publishers
student-participant profiles
Active-Lurkers-Passive (PaMilligan et al.)
Consume-Connect-Create-Contribute (4C)
No-shows - observers - drop-ins - passive-active (Hills)
Participation in forums
three categories with seven pattern (MiriadaX-DEF)
Voyeur
to be successful
Universities
Harvard
MIT
MITx
Open Courseware Project

MOOC PHENOMENON
Stanford
legislators
libraries
technical
enrollment professional
software agents
technologists
videographers
futuristic possibilities of MOOCs
mlearning
mobiMOOC
OCW
OER
opportunities
general
cost effectiveness
filling gap
influences
massive
online
phenomenon
removal of constraints
institutional
distributed
marketing potential
media outlets
reputation building
revolutionizing
personal
affordability
fixed cost
variable cost minimization
asynchronous
customize workload
open - free
access
specified start and end date
source
recognitions
badges
certificate

MOOC PHENOMENON
sage on stage
self-organized
try before buy
social
cross-cultural
interaction with professionals
networking and profile building
participatory
peer to peer interaction
pedagogical tools
assessment
assignments
exercises
learning portfolios
projects
quiz and exams
fill in the blank
multiple choice test
collaboration tools
blogs
chat groups
constructed web sites
discussion forums
emails
Google group
google spreadsheets
local study groups
meet up groups
message boards
open translation
social media network
wiki
content design
audio sessions
course policies
daily newspaper
multimedia
office hours
readings
recorded in a soundstage
simulations and games

MOOC PHENOMENON
slides
syllbus
textbook
video lectures
grading
peer grading
robo-grading
self-assessment
technical tools
interactive whiteboard
ipad
Learning analytics
Learning Management System
Mobile Phone
remote monitoring
RSS
software systems
video - web conferencing
virtual labs
virtualization
quasi_MOOCs
research gap
few empirical studies
roadblocks
institutional
accreditation issues
assessment
automated scoring
cheating and fraudulent
copyrights and licensing
credits_degree
academically adrift
college credit
disability regulations
financial
cost (community investment)
financial problems
variable cost minimization
gap bw literature demands & literature outcomes
e-learning life cycle of personalised educational systems
the layered evaluation of adaptation features

MOOC PHENOMENON
User centered design
infrastructure
adoption of mobile
drop-out rates
participant autonomy
participation funnel
effectiveness
1_eff. of students with peers
2_eff. of students with instructors
3_eff. of students with contents
assumptions
PES
greater modularity
limited research
localization
lurkers
no standard
pitfalls of peer grading
models of peer evaluation
Bayesian Models
Calibrated Peer Review (CPR)
Credibility Index
technical difficulties
personal
ambiguous assignments
ambiguous expectations
experience
future of the professoriate
knowledge assumption
lack of familiarity
evaluation
feedback and testing
skills and technology
lack of feedback
lack of incentive
lack of interactivity
lack of time
language
no one for help
not to see
time zone

MOOC PHENOMENON
social
collaboration anxiety
cultural diversity
digital divide
disruptive innovation
set up a MOOC
assisting information system
assumptions
automated assessment
communication and collaboration tools
digital tutors
introductory guide
standards of citation
SPOC
free or fee
private
small
successful implementation
assigned roles
clear statements
How to participate
nature of the MOOC
required skills
skillful facilitation
collaboration
common goals
design principles
discussions and feedback
diverse community
educational technology
borg complex
external reasons
save costs
social mode
pedagogical reasons
faculty support
flexible thinking structures
individual factors
institutional leaders
instructional quality
activation

MOOC PHENOMENON
application
authentic resources
collaboration
collective knowledge
demonstration
differentiation
feedback
integration
problem centered
skill & background knowledge
investment
multiplicity of possibilities
open licensing
personalized guide or facilitator
educational recommender systems
architecture-centred solution
conduct empirical evaluations
foster users' active action
involving domain experts
involving learners
ISO 9241-210 Ergonomics of human-system interaction
repertory grid
eliciting and using educators' background
learning process improvement
quality of course material
ready learners
registration
repeated participation
shared outcomes
suggestions to students
cluster
declare
focus
network
orient
sustainable
taxonomies
bad-good
bad MOOC
good MOOC
based

MOOC PHENOMENON
content-based
network-based
task-based
cMOOC
oMOOC
xMOOC
teaching approaches
NEW ONLINE TECHNOLOGIES
access
adaptivity
agility
analytics
assessment
flexibility
learner-centered technologies
PEDAGOGICAL MODELS
connectivist approach to learning
constructivist theory
constructivist-group approaches
objectivist-individual approach
POLICIES
cultural
economic
employee-employment
HRD initiatives
social learning tools
technology-delivered instruction
cloud computing
Demand for LLL
interactive distance learning
mobile computing
simulation games
retension
talent
folkways
governmental
ideological
instutional
social
TEACHING - LEARNING
Distance Education

MOOC PHENOMENON
challenges
feedback
correspondence courses
online ducation
attributes
cost
trend
emerging frameworks
Community of Inquiry framework
Fisher's Framework
pedagogical framework
teaching approach framework
flipped classroom
virtual classroom
TRADITIONAL HIGHER EDUCATION
assessment
availability
classroom
cost
customer value preposition
face-to-face
inequalities
innovate
liberal education
Quality
societal mission
student-centered approach

Appendix P: Description of experts

Expert 1 earned her MBA degree from Gazi University in 1998 and she has 22 years of teaching experience in Bilkent University. When she joined the expert meetings, she was a PhD student in the Graduate School of Education, Department of Curriculum and Instruction.

Expert 2 graduated from Middle East Technical University, Department of Foreign Language Education in 1991. She initially worked in the private sector but she has been teaching in Bilkent University since 1995. She is working on a master's thesis as a student of the Graduate School of Education, Department of Curriculum and Instruction.

Expert 3 graduated from Sir George Williams University, Department of Economy in Canada, in 1968. He worked for IBM for many years. He has 23 years of teaching experience in Bilkent University.

Expert 4 retired from METU Department of Basic English and Bilkent University Faculty Academic English. She has a PhD. in Linguistics and English Literature.

Appendix Q: The list of finalized themes

Benefits		
<i>Individual</i>	<i>Institutional</i>	<i>Social</i>
Openness	Reputation building	Cross-cultural networking
Customizability	Marketing potential	Interaction with professionals
Certiifiability	Big data source	Peer Participation
Gap filling		

Challenges		
<i>Individual</i>	<i>Institutional</i>	<i>Social</i>
<i>Ineffective assessments</i>	<i>Participation factor</i>	<i>Cultural diversity</i>
<i>Indefinite expectations</i>	<i>Awareness factor</i>	<i>Collaboration anxiety</i>
<i>Insufficient motivation</i>	<i>Technological inadequacies</i>	<i>Digital inequity</i>
<i>Inconvenient time zone</i>	<i>Sustainability</i>	

Stakeholders	
<i>Individual</i>	<i>Institutional</i>
<i>Academics</i>	<i>Universities</i>
<i>Administrators & Administrative Personnel</i>	<i>Organizations</i>
<i>Learners</i>	<i>Govenments</i>
<i>IT staff</i>	<i>Publishers</i>
	<i>Libraries</i>
	<i>Legislators</i>

Policies		
<i>Institutional</i>	<i>Governmental</i>	<i>Sociocultural</i>
<i>Retention</i>	<i>Political</i>	<i>Ideological</i>
<i>Skill development</i>	<i>Economic</i>	<i>Social</i>
		<i>Cultural</i>

Collaboration structure	
<i>Technical tools</i>	<i>Practices</i>
<i>Hardware</i>	<i>Content design</i>
<i>Software</i>	<i>Assessment</i>

Teaching and learning theories		
<i>Objectivist theory</i>	<i>Constructivist theory</i>	<i>Connectivist approach</i>
<i>Objectivist individual approach</i>	<i>Constructivist individual approach</i>	<i>Aggregation</i>
<i>Objectivist group approach</i>	<i>Constructivist group approach</i>	<i>Relation</i>
		<i>Creation</i>
		<i>Sharing</i>

Classifications		
<i>Implementational</i>	<i>Structural</i>	<i>Pedagogical</i>
<i>Bad MOOCs</i>	<i>Network-based</i>	<i>oMOOCs</i>
<i>Good MOOCs</i>	<i>Task-based</i>	<i>xMOOCs</i>
<i>Quasi MOOCs</i>	<i>Content-based</i>	<i>cMOOCs</i>
<i>SPOCs</i>		

Success factors		
<i>Individual</i>	<i>Institutional</i>	<i>Social</i>
<i>Flexible thinking</i>	<i>Institutional roles and goals</i>	<i>Collaboration</i>
<i>Personalized guide or facilitator</i>	<i>Instructional expectations</i>	<i>Diverse Community</i>
<i>Repeated participation</i>	<i>Technical infrastructure</i>	<i>Peer Participation</i>
<i>Ready learners</i>		