

# Forming a Cloud Computing Based Lifelong Learning Platform: Integration of Basic Computer Courses as Mass Open Online Courses to University

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**ABSTRACT:** Today's formal educational institutions remain incapable of keeping people's knowledge up to date. Updating information in fields like general culture, information technology, language education and vocational education is needed. Online learning settings, certificate trainings, in service trainings and social network settings greatly contribute to updating information. The learning function is a lifelong process besides formal educational institutions.

**Lifelong learning** can be defined as individual's whole collaboration of events which aims to develop their knowledge, skills and talents individually, vocationally or socially in order to manage their lives.

It can be said that a web based learning settings has contributed to the learning processes the most these days. In this regard, people and especially universities grants free access to supply of information they have through Mass Open Online Courses (MOOC). In order for users to access MOOC, having an internet browser is enough. **MOOC** is also able to develop lifelong learning skills and brings the participants ways of self-learning and information gathering.

Strong hardware and software substructure is needed for an MOOC system which will be accessed by thousands. Rapid developments in information technology have decreased hardware costs significantly. By decreasing the costs, developed software and hardware platforms are formed and brought into mutual use of people. Bringing the hardware and software components (storage, data base, mail services and some private software) into people's mutual use form the basis of **cloud computing**. Cloud computing systems provide great advantages in terms of cost and workforce. Also, through cloud, many subunits can be managed at one origin.

In this study, processes of forming a cloud computing based MOOC platform where basic computer technology subjects are included are given place. Through the formed platform, individuals learn new information in the information technology field or keep their knowledge up to date. This will ease people's learning interest and provide lifelong learning opportunity.

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## **Introduction**

Computer and internet which became an indispensable part of people's and institutions' daily lives became more preferable in various areas by being affected positively by the recent and quick developments in information technologies. In addition to these developments, using a developed technology will be the future of all education steps for an efficient learning.

## **E-Learning**

When we consider the development of interpersonal data communication, we see that data transfer starts with writings and figures which are written on stones and leather in ancient times and replaced by paper, radio, television and information technologies with the help of new discoveries. Today, the quickest environment of data communication is known as internet. Learning function has also been affected by this quick development and has started to use technologic devices efficiently.

Gülbahar defines e-learning as “execution of teaching activities in electronic environments” or “transferring knowledge and capabilities through electronic technologies”.

E-learning can also be defined as the execution of learning in a web based format through internet or computer network systems”.

## **Life Long Learning**

Since people constantly need to renew their knowledge out of date, the concept of “lifelong learning” has emerged (Lambeir, 2005:350). The concept of lifelong learning (LLL) was firstly expressed by Basil Yeaxlee in 1929. LLL is included in the studies of many international organizations. European Commission (2000) defines lifelong learning as “learning activities which will help us survive in personal, social and economic life as well as knowledge and capabilities in every aspect of life”. Sönmez defines lifelong learning as “the expression of a concept which prescribes the acquaintance of knowledge, capability, attitude and habits by an individual who derives benefit from all learning environments in order to develop himself/herself” (Sönmez, 2007).

Candy defines lifelong learning as “equipping the individuals with skills and capabilities which are necessary for them to continue their own education”.

Researches for increasing and developing lifelong learning has been continuing for sustainable developments. For sustainability, knowledge is more efficient for redirection of values and academic curriculum, therefore, the development of general awareness and perception of sustainable development concept (Lozano, 2006; Læssøe et al., 2009; Wals, 2009). Sustainable science (having its own science, technical capabilities and methodologies although it is a unique area together with the capacity) has strong links with ESD which have been developing within pedagogy.

## **Massive Open Online Course (MOOC)**

Rate of participation in online courses in America has been increasing between 6 % and 36 % each year since 2002. Moreover; thousands of users can simultaneously be enrolled and they can follow the courses in worldwide known and prestigious universities (such as MIT, Stanford and Harvard) for massive online courses which are free of charge and open to everyone (MOOCs).

MOOCs are platforms which are generally prepared and presented by the universities virtually providing the opportunity of being enrolled and following all the course content for all the users.

The name of Massive Open Online Courses which were firstly used in 2008 comes from “massively multiplayer online role playing game”. George Siemens and Stephen Downes are the first to use this name.

Massive Open Online Courses is an experience of lifelong learning and provides the opportunities, which are presented to us by digital age, to the learners by gathering them through BYTES. Lifelong learning is important in digital age in which information constantly changes and is renewed in terms of enabling global world citizens to renew themselves and fulfill their learning needs. The only precondition which is expected by the environments of Massive Open Online Courses is the desire for learning. By using different approaches, Massive Open Online Courses both provide the opportunity of lifelong learning to the individuals and also teach the learners how to research, how to earn and how to analyze and reflect the lessons which are learnt.

2325 students (25 of them paid for the lesson and calculated it as a credit while 2300 of them didn't pay any Money for the lesson and took it without any credit) were enrolled online to “Connectivism and Connected Knowledge” course, which was opened in Manitoba University in Canada in 2008 and lasted for 12 weeks (Downes, 2011). When Stanford University opened the course named artificial intelligent in 2011, it was announced that 160 thousand students were enrolled in this course from 190 different countries and so that this type of courses succeeded to attract the attention of many people. However; since these two courses were structurally different in pedagogical terms, a differentiation was used as “cMOOC” and “xMOOC” in order to differentiate them. C abbreviation stands for the word “connectivism” while x abbreviation stands for the word “exponential” and these are used in order to express “massive participation” or “extension”. For example, courses with the extension of MITx or HarvardX represent for the courses which are delivered off the campus, not the courses which are delivered in those universities' campuses (for example online courses).

## **Cloud Computing**

The origin of the term “cloud computing” inexplicitly dates back to 1950s. Since computers are expensive, the concept which is recently known as time sharing was applied as hardware and processor sharing in that era. In time, costs started to decrease in information sector and the number of computer and internet users increased. So, the concept of cloud computing started to develop.

Concept of cloud computing, which became popular with the sharing of computers physically, provides such services as storage, mail services, common usage of software and access to simultaneous knowledge today and provides the facilities of easy management of costs, labour force, security and knowledge to its users.

Cloud systems can be used with infrastructure, platform and software presentation models.

Cloud computing is put into service with distribution models of special cloud, public cloud, mixed cloud and community cloud. In this study, community cloud model was addressed.

### **Cloud Applications in Education**

It has been observed for the last 15 years that developments occurring in technology especially after 2000 are quickly applied in the field of education and add innovative applications to educational strategy and methods. When we consider the learning needs of an information society, it can be said that information can quickly be accessed from everywhere at any time and learning becomes important when there is a need. Learning needs which emerge independently from time and space reveal the education model of "mobile learning". Today, this new learning model gives a new dimension and acceleration to education. In case of a need and movement, it facilitates access to information and adds innovative strategies, methods and learning approaches to educational programs.

Infrastructures of information technologies of private or state institutions lose their validity after a while and so new infrastructures are needed. However; cloud computing based systems decrease the information infrastructure costs of the institutions and provide more flexible software and hardware options. In other words, the obligation of investment in education is removed with the help of cloud computing infrastructures and so it provides access to less expensive software licenses and quicker hardware sources.

Google Apps has many applications while such applications as Gmail, Calendar, Google Drive, Google Documents, Google E-tables, Google Slides, Google Sites and Google Translation can also be used for education purposes.

### **METHOD and APPLICATION**

In this part of study, characteristics of Turkish TUBITAK ULAKBİM cloud system and integration of MOOC application with Hitit University through this infrastructure were addressed.

### **Cloud Infrastructure and Its Usage in University**

TÜBİTAK ULAKBİM has been carrying out leading studies in cloud computing as well as many services and technology and closely following the developments and innovations in this field. Within TÜBİTAK ULAKBİM, which provides important services such as national academic network and high performance computing center, there is an important speciality in the field of high speed network management, large scale processor, memory and storage technologies. Acquisition from both large scale national projects and projects which are carried

out with European Union and other international partners has made ULAKBİM one of the most important players in the sector in terms of developing and applying new technologies. TÜBİTAK ULAKBİM makes contribution to country's economy by transferring its knowledge and experience to the relevant stakeholders about cloud computing as in every other subject.

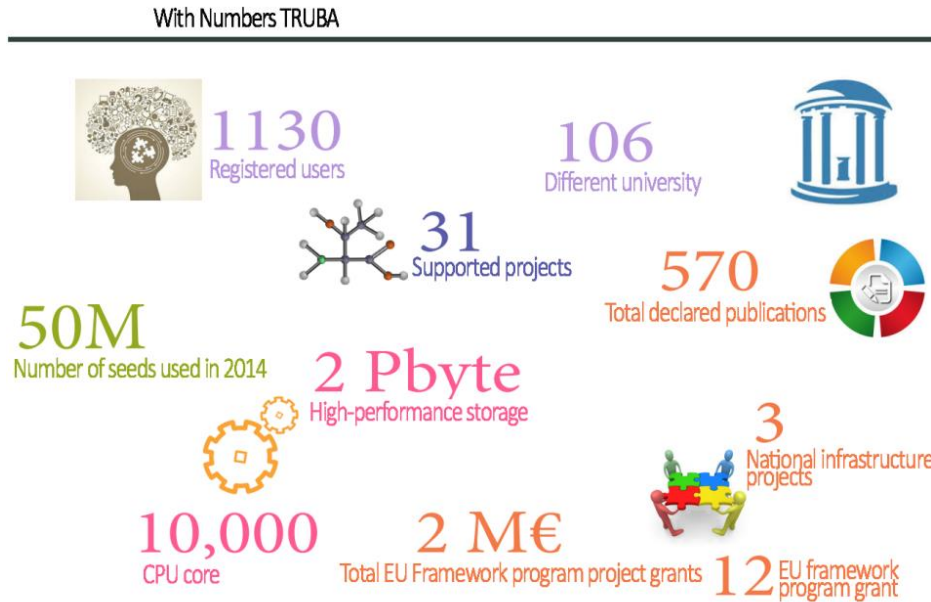


Figure 1. TRUBA with Figures (TUBITAK, 2015)

In Figure 1, infrastructure of Turkish national science is displayed with figures. It is seen in the figure that there is a high performance infrastructure as storage (Pbyte) and processor core (10.000), it provides service to many projects, it has a strong budget (2 million Euros), it makes lots of publications and this infrastructure serves for 106 different universities.

Many government entities and education institutions in our country don't know that we have such a big national infrastructure. In this study, we took the student opinions by developing an application regarding how to use this high performance infrastructure in the universities. As an application, our university's distance learning center integrated basic computer courses which are available in this huge platform having a cloud computing infrastructure into its website and put into service for the usage of the students and other individuals.



Figure 2. Hitit University Distance Learning Center (HUZEM) Web Site

In Figure 2, basic computer courses which are available in TUBITAK ULAKBIM were integrated to HUZEM web site. People who are not enrolled in the university can follow this course or people who formally study this course can derive benefit from it as a source. In other words, this course which is provided to the groups free of charge provides the opportunity of both following a course having a credit and passing grade and basic computer knowledge to other individuals.

Note: This lesson infrastructure by TUBTAK ULAKBIM is provided by cloud-based infrastructure.  
 Not: Bu kursun altyapısı TUBITAK ULAKBIM bulut tabanlı altyapısı ile sağlanmaktadır.

Bilişim Teknolojilerine Giriş
Temel Bilgisayar Dersleri
Microsoft MS Office 2010 Dersleri
Word 2010
Word İleri Seviye
Excel 2010
Excel İleri Seviye
PowerPoint 2010
PowerPoint İleri Seviye
Access 2010
Outlook 2010
Publisher 2010
OneNote 2010

Figure 3. Cloud Based Open Access Basic Computer Courses

In Figure 3, there are basic computer courses which are added to university's HUZEM web site. These courses include basic operation system functions and the usage of such Office programs as word processor, spreadsheet and presentation program.

## **Conclusion and Discussion**

In this study, information about Turkey's information infrastructure was provided and it was explained how to use this huge infrastructure in education in a cloud based manner. This infrastructure which is available in our country is shared with universities and private institutions in a way that it will provide benefit for the public when needed. Also, few institutions have knowledge about it.

It can be defined as a huge warehouse and data processing environment especially for small universities which have difficulty in establishing their own infrastructures. Through this system, course materials which are kept in normal web domains (video, audio file, PDF, animation, simulation) are preserved in cloud domain. Cloud systems can keep much more data and provide a quicker access. Moreover; it is easier to manage the sources, to process data and to analyze the results. With the help of cloud software, progress periods of the students who follow these courses can be reported. When these reported data are processed, it becomes easier to manage the students in their learning process.

Cloud based systems have also some disadvantages. For example: Their first installation process is expensive and qualified information staff is required for the management of cloud based systems. Also, a computer with an internet connection is required in order to be able to use cloud based system. Technical problems in the Internet may also negatively affect the access to sources.

For the next phase of the study, it is aimed at determining motivations and successes of students in two student groups that are supported and not supported by MOOC for one course.

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