

**The Effectiveness and Application of the Moodle  
LMS (Learning Management System) According to  
the Students' and Instructors' Perceptions at the  
University of Sulaimani, School of Basic Education**

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## **ABSTRACT**

The importance of education is not covert for anyone and because of the globalization of the world, all the countries are forced to catch up with the changes needed for this field. Despite the effort of Kurdistan educational system for reducing the technology gap in this country, still many universities in this region are managed traditionally until now. E-learning and LMS are not popular teaching approach in Kurdistan Universities until now.

In this study thesis researcher first, develop an efficient and functional LMS system based on Moodle server for the University of Sulaimani in Kurdistan. Then test the proposed system by the instructors and students in that university. This system will be the first proposed LMS in University of Sulaimani, and the perception of instructors and students toward this LMS will be examined.

**Keywords:** ICT, E-learning, Higher education, Kurdistan.

## ÖZ

Globalleşen dünyada, eğitimin önemi herkes için gözle görülebilir, saklı değildir ve dünyada ki bütün ülkelerin bu değişimi yakalaması istenmektedir. Buna bir örnek verecek olursak, Kürdistan devletinin eğitim alanında göstermiş olduğu tüm çabalara rağmen halen birçok üniversite de eğitim ve öğretim geleneksel bir şekilde verilmektedir. E-öğrenme ve LMS bugüne değin Kürdistan üniversitelerinde kullanılan popüler yaklaşımlar arasında yer almıyor.

Bu çalışmada araştırmacı Kürdistan'da bulunan Süleymaniye'deki üniversite için verimli ve işlevsel bir LMS sistemini (moodle üzerinden) geliştirilmeye çalışmıştır. Bu Süleymaniye üniversitesine sunulan ilk LMS sistemidir ve aynı zaman da araştırmacı tarafından bu sistemle ilgili hem öğretim görevlilerinin hem de öğrencilerin algıları incelenmiştir.

**Anahtar Kelimeler:** BİT, E-Öğrenme, Yüksek Öğretim, Kürdistan.

## **DEDICATION**

First of all, dedicate to my **PARENT** for supporting me to finish my study. Moreover, I want to dedicate it to my lovely **WIFE**, who helped me by her kindly supports.

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## **ABBREVIATIONS**

E-learning	Electronic Learning
ICT	Information Communication Technology
LMS	Learning Management System

# Chapter 1

## INTRODUCTION

### 1.1 Background

In recent years' higher education mostly has focused so much on online learning management system, distance learning and blended learning. Therefore, information communication technology (ICT) has provided many opportunities in the education field. ICT has a huge effect on enhancing and reshaping the landscape of teaching and learning everywhere. One of the most important approaches of ICT in the industry of education is electronic learning (E-learning) (Bhuasiri et al., 2012). E-learning is delivering training and education through ICT to support individual learning (Maldonado et al., 2011). E-learning is an application which is used to deliver learning materials in many forms to the educators (Cohen & Nycz, 2006). E-learning is a new way of teaching and learning. E-learning can be through all electronic media devices like the internet, intranet, satellite, audio/video tape, interactive TV, CD-ROM, in fact, it is an automation of teaching and learning process using a software which is known as learning management system (LMS) (Govindasamy, 2001). Through e-learning, students can find the suitable material for learning to their need and their learning style. Moreover, e-learning improves their motivation for self-learning and individual research (Sife, Lwoga & Sanga, 2007); (Maldonado et al., 2011). There are many advantages of using e-learning in higher education institution which includes, better access to the information, easy to update the files and contents, customization in instruction materials and improvement in accountability (Ruiz et al., 2006).

E-learning has been identified as a significant solution for daily changes of economy and technology all over the world; it is a flexible and easy way to deliver teaching and learning materials without any distance and time limitation (Maldonado et al., 2011).

In most Europe countries, the majority of education market is familiar with LMS softwares such as Blackboard, Desire2Learn, Moodle, Canvas, and Sakai. Each of these LMS has a different approach to offer such as content-centric, activity-centric, and network-centric or liner (Wright et al., 2014). Each of these software gives different features and teaching approach, and universities choose any of these learning management systems according to the need of their institution and students. In developed countries, although e-learning is new and not fully functional but still growing rapidly in every sector, especially in higher education institutions. E-learning has provided a huge benefit for students who live in rural areas in the Middle East and increase the access of them to the learning and teaching materials online (Andersson & Grönlund, 2009).

Considering the poor perception on LMS in Kurdistan Universities, this thesis shows more focus on the need for such system in Kurdistan universities to ensure the world-class quality education easy and flexible access to teaching materials.

## **1.2 Problem Statement**

The importance of education has not reached everyone because of the globalization of the world. All countries are forced to catch up with the changes needed for this field. Today universities are not limited by distance, time, equipment shortage or few empty places available in the higher education institutes anymore. Many types of e-learning strategies made it easy for universities to give the opportunity to an unlimited number

of students to study regardless of obstacles that usually prevent to continue their education. Although Kurdistan is still an underdeveloped country but in the education sector, this region has developed significantly in recent years. In 2013, the KRG (Kurdistan Regional Government) increased the education system budgets up to 16% to keep up with the technological changes that happening in the world and developing the educational bases of the young generation of Kurdistan (Jamal, 2016). Despite the effort of Kurdistan educational system for reducing the technology gap in this country, still many universities in this region are managed traditionally. So far, e-learning and LMS are not popular approach of teaching in Kurdistan. In this study, an efficient and functional LMS system based on Moodle server install for the University of Sulaimani. To fulfill the academic staff needs for e-learning and LMS.

### **1.3 Aim of Study**

The main aim of this study is to investigate the perception of students and instructors in the School of Basic Education, University of Sulaimani. toward newly designed LMS based on Moodle. The researcher also studies the instructors' and students' satisfaction who use the proposed system and considers their suggestion for further studies.

### **1.4 Research Questions**

The researcher aims to investigate the following questions:

- 1) How to implement learning management system at the University of Sulaimani?
- 2) What is the instructors' and students' perceptions about the proposed LMS system?
- 3) To what extend this new LMS system fulfills students' and instructors' need for e-learning?



## **1.5 Significance of the Study**

E-learning and more specifically LMS is the newest educational approach in today's academic world. LMS can provide an environment for students to harmonize their traditional classroom learning system with their electronic learning. LMS can provide an enhanced, efficient and flexible environment for learning regardless of time and place for students and instructors. The shortage of such system in Kurdistan universities diverted the researcher to do the study on this area.

## **1.6 Methodology of the Study**

The researcher chooses mixed methods for this research. In qualitative research, the researcher collects data by using a semi-structured interview from instructors and students in University of Sulaimani. In quantitative research, the researcher gathers data by utilizing questionnaire that collected from those students who test the proposed system in University of Sulaimani.

## **1.7 Participants**

The researcher collected the data from 13 instructors and 92 students those volunteered Computer science Department of School of Basic Education of Faculty of Physical and Basic Education at University of Sulaimani During the 2016-2017 academic year.

## **1.8 Limitations**

There are many challenges in using LMS in Kurdistan; first of all, the most functions of this LMS might have not been properly tested because of some fuctions need long term testing. In addition, the LMS was only tested in one Department at University of Sulaimani, which does not completely provide its reliability and effectiveness.

## **1.9 Key Definition**

**E-learning:** learning conducted via electronic media, typically on the Internet.

**ICT:** Information and communications technology (ICT) is often used as an extended synonym or as an umbrella term for information technology (IT), but is a more specific term (i.e. more broad in scope) that stresses the role of unified communications and the integration of telecommunications.

**LMS:** learning management system is a software application for the administration, documentation, tracking, reporting and delivery of electronic educational technology courses or training programs.

## **Chapter 2**

### **LITERATURE REVIEW**

Over the past few years, a remarkable number of developed countries integrates their educational system with ICT. The majority of universities in Arab countries have already started to use Web 2.0 tools in their classroom, however using of LMS is only limited to top-ranked higher education institutions in these countries (Ssekakubo et al.,2012).

E-learning has changed the landscape of traditional teaching and learning technique completely and with the rapid growing that has already dominated a large number of educational institutions all over the world. A wide set of learning management systems have been already developed and designed to support the e-learning process (Jamal & Shanaah, 2011). However, we have to remember that LMS is not designed to replace the traditional learning and teaching system, but to integrate the course with technology so that students can access their course content anytime, anywhere through the internet (Landry et al., 2006). It is important to remember that LMS should be easy to use and easy to learn especially for the countries and institution which are new to this concept. LMS design which are not user-friendly or difficult to use can easily lose their popularity between instructors and students whom prefer to spend more time on their learning contents than learning new skill (Ardito et al. 2006). The researcher tried to design an easy-to-use LMS system for newborn country to such systems in University of Sulaimani in Kurdistan.

In this chapter the researcher first will define some of the basic concepts related to the e-learning, LMS, and their design, following that researcher will discuss the usage of these technologies in developing countries. Similar researches in this field are eventually reviewed and summarized.

## **2.1 Basic Concepts**

### **2.1.1 Definition of ICT and E-learning**

Though the definition of in ICT and E-learning, are not the same, but there are many details and factors that are related to each other. Both, ICT and E-learning are the reaction of education and training industry to the rapid growth of technology in past decade (Clarke & Luger, 2010). However, the definition of ICT is more focused on communication devices or applications, any digital technology which are being used for helping individuals, business and organizations to use information. On the other hand, e-learning is about using these devices and electronic technologies in teaching to access educational curriculum outside the traditional classroom (Warwick, 2016).

Today, it is obvious for everyone that technology can play a significant role in successful teaching and learning. E-learning is a tool which is used for education justice and growth (Omidinia et al., 2011). E-learning is an umbrella term that can contain all teaching and learning styles which are enhanced or developed by online communication technologies. E-learning can be used as a new powerful tool to increase the capability, efficiency, performance and competency to any educational institutions. The main features of e-learning technology are its interactivity and the encouraging to self-learning (Nagy, 2005). In fact, it can be said that e-learning is a technological response to the society's need for new learning styles through different electronic media (Cohen & Nycz, 2006).

All of the countries in the Middle East are designated as ‘developed countries’ because of their lower ranks in UNDP (United Nations Development Program). Although the technological, social and economic gaps between developed countries in the Middle East and developed countries were always wide, but in recent years some of the Middle Eastern countries significantly had tried their best to reduce these gaps (Gulati, 2008). Recently many higher education institutions in the Middle East had implement ICT for teaching and learning process in their universities, these universities are still facing many challenges in engaging such technologies, However with current perception of these institutions toward the usage of ICT in classroom, the future of these technologies seems hopeful and bright (Sife, Lwoga & Sanga, 2007).

In this thesis an LMS is designed and implemented for the University of Sulaimani in the regional government of Kurdistan in the federated state of Iraq. Although the technology development in Kurdistan of Iraq is far behind the developed countries, Kurdistan has a higher rank in using ICT technologies.

### **2.1.2 Learning Management System (LMS)**

Learning management system is a web-based system which enables instructors and students to share their teaching and learning materials, classroom announcements, assignment submissions and communications, online (Malikowski, Thompson, & Theis, 2007). In fact, the LMS is an online application that track, manage and deliver the training in the education field. According to the nature of their design and development, the development of LMS, can be called Course Management Systems (CMS), Virtual Learning Environments (VLE) or Collaborative Learning Environments (CLE). There are many different applications that are developed for representing such functionalities; the most popular products are Blackboard ([www.blackboard.com](http://www.blackboard.com)), Angel (<http://ais.its.psu.edu/angel>), Moodle

(<http://moodle.org>) and Sakai ([www.sakaiproject.org](http://www.sakaiproject.org)) (Salaway, Caruso, & Nelson, 2008), (Koszalka & Ganesan, 2004). The common feature of all these systems is their capability in distribution and management of learning materials.

In Iraq, the LMS is not widely used, most universities in Iraq do not have e-learning systems. However, Kurdistan leads the technology usage in Iraq more forward than the rest of Iraq. In Kurdistan, the University of Salahaddin in Erbil of Kurdistan has already offered few courses in their e-learning center and although their system is not complete or even fully functional, but it is the best one in Iraq. The researcher of this thesis aimed to design and develop a fully functional LMS for the University of Sulaimani. The researcher's aim by designing such system is to persuade university authorities to use proposed system for their offered courses and inform them about the advantages that such system can bring to their educational environment.

### **2.1.3 Importance of LMS in Higher Education of Developing Countries**

The value or existence of LMS in developed countries is highly underestimated or even ignored. According to Ssekakubo et al. (2011), this ignorance is mostly because of the flow that taken to introduce these systems. Usually, in universities, these systems are forced from top to bottom which produces conflict and resistance in small units. However, if the institutions learn that the best way is first to increase the awareness about advantages of using LMS in teaching and learning not just deceleration of existence of this system, then the users adoptability and compatibility with LMS are be increased.

In technology field, most of the regions of the world has already integrated it into their educational and training areas to maximize the positive effects and minimize the weaknesses. However, Arab world has used more conservative strategies in integrating

these technologies into their educational institutions which it causes to the wide digital gap between Arab region and rest of the world. According to Arab Human Development Report (Baroudi, 2004), there are many barriers for educational institutions to access technology in their institutions; these barriers are mostly the illiteracy in Arab World (especially in women population), economic and financial issues and lack of resources.

Since 1990, open and distance learning has gained increasing legitimacy, by the main international agencies (i.e., UNESCO, European Commission, World Bank) and various national policies (Perraton, 2000). Distance learning and e-learning in developed countries have provided the opportunity for many people in less technologically developed countries to access world class and latest education (Gulati, 2008). Therefore, E-learning can be a big change for this region by modernizing and rebuilding the structure of education in these countries.

Recently a small numbers of institutions in Kurdistan such as the University of Salahaddin, have tried to implement an E-Learning platform for their universities. Although these institutions were not successful in delivering a fully functional and correct design of such system but it was the first of many steps that Kurdish universities can take to reduce their technological gap with rest of the world.

#### **2.1.4 Advantages and Disadvantages of LMS**

Learning management systems are web-based applications which are part of e-learning process. By using LMS, instructors can easily create and deliver their teaching materials and monitor the student's participation and performance. These systems also let the instructors enhance their classroom teaching by adding new learning and teaching styles such as; video conferencing, group discussions, forums, online

documents and wider research capability. However, according to Parker (2016), these are not the only benefits of LMS, but there are so many more advantages for the higher education institution by integrating their classrooms with this technology:

- 1) Centralizing: the source of the learning is centralized and it is the same for all the students and instructors, also they can access this information at any time and any-place.
- 2) Analyzing features: with the use of LMS instructors can easily assess and evaluate students' performance and grading on the time for all the courses.
- 3) Easy maintenance: LMS can be easily maintained, updated and managed. Traditional updating or creating course was a difficult and time-consuming task, but with the use of LMS those updates can be done fast and exactly the same for everyone.
- 4) An easy way for all learning styles: one of the most important benefits of LMS is to simplify the learning process with different learning styles. The materials in LMS are provided in all forms of Audio, Video, Image and documents. Therefore students with any learning style can benefit from this system.
- 5) Reduction of the costs: LMS will reduce the cost of printing materials, online training rentals and instructors traveling.

The University of Sulaimani in Kurdistan never had a centralized and fully functional learning management system. The proposed system can make a real difference for



students and instructors in this university by giving them the variety of learning approaches and accessing to the teaching materials constantly. Moreover, University of Sulaimani suffers from a shortage of faculty members, but one of the greatest benefit of LMS for this university is the reduction of dependency on local teaching staff in Kurdistan.

From a different perspective, there are few disadvantages on changing the systems to online learning management system. For many students, the face-to-face class meeting is an important factor in learning and although there are online video class features in LMS but some senior students and instructors still prefer the traditional way (Brown & Green, 2003). Moreover, the E-learning and LMS application both need self-disciplined students who can solely manage their time and study. Therefore this kind of technology interests me more and it is more useful for higher education institutions only (Aybay & Dag, 2003).

For Kurdistan there could be another weakness in using such systems since LMS is highly technology reliant and the level of technology, computer equipment's and internet speed in the whole Middle East is not comparable with western and developed countries, therefore, the complete transfer of traditional classroom to the virtual one could be problematic for both students and instructors, but the combination of both traditional and electronic learning can be a possible solution to this problem (Hussein, 2011).

#### **2.1.4 Challenges of LMS Implementation**

Although there are many benefits in using LMS for higher education but like all other projects the implementation of LMS will be a failure if the institute lack from correct leadership, commitment to the changes, Awareness of what LMS can or cannot do,

Alignment with educational plan, congruency with instructors teaching methods, designing a user-friendly LMS for both instructors and students, organizational preparedness and training before changing to such systems, considering social and cultural situation of the country. However these factors are only in management level of the university, and there are many factors that should be considered in lower levels after implementing LMS in the classrooms such as: improving instructor and students computer literacy and training them for using this system correctly, emphasis on creating correct and high quality instructional materials and online courses and more interested in providing access to computers and internet for students and staff in the University (Lopes, Wright, Montgomerie, & Schmoller, 2016).

In the University of Sulaimani, almost all of these factors considered as a challenge since this system was never designed correctly before in the Kurdistan region. However, the motivation of both instructors and students are strong for changing their traditional educational ways to modern and up-to-date teaching ways. The ministry of education in Kurdistan is determined to provide a world-class education for their youth and therefore all of new policies and founds in this region is heavily focused in digitalization of their schools and universities. Therefore, by introducing fully functional and user-friendly LMS and support of the authority, it is possible to reduce the limitations and barriers in this way as much as possible and change the landscape of education in the country.

## **2.2 Similar Research**

Juma Shehab (2007), in her research, has focused on learner's perception of using distance education and e-learning using Arab Open University. In this research, the author has considered many factors such as age, gender, educational level and internet

experience of the learners and their effect on the satisfaction of the students from using e-learning. The researcher has used undergraduate students as a sample and applies MANOVA, ANOVA, and correlation for analyzing the data. The result of this research showed that the age and the sex of the learners were not important factors; however, the educational level and internet experience has a significant effect on the learners' satisfaction from their e-learning experience.

For this research, since the proposed LMS will be tested in the University of Sulaimani for the first time and therefore computer literacy of the students and staff will play an important role. For that, the researcher considers the computer literacy as one of the main characters for evaluating the perception of students and instructors about the LMS, since working with LMS does need a basic level of computer literacy and experience of working with such systems.

According to Tubaisha et al., (2006), the opportunity to reach higher education is not similar for men and women in the Middle East, more specifically in Arab countries. The social, cultural and religious reasons in these countries have limited women from perusing their education in higher levels. However, the introduction of E-learning and LMS has made a significant difference in the education level of women in these countries. According to the result of this research the adaptation of technology in these countries has improved the motivation and confidence level of students. Moreover, integration of technology in their classroom will give the students the opportunity to increase their computer literacy and encourage them to collaborate with other by using ICT tools. Finally, the researcher concludes that e-learning allows the students to be more independent and self-learner.

In Iraqi Kurdistan, the limitation of the women is not as strict as other Arab countries in the Middle East. However, the education sector of Kurdistan is inexperienced and dramatically growing every day, and that is the issue which results in the students and instructors with less computer literacy and e-learning knowledge.

Al-Hunaiyyan et al., (2008) in their research have discussed the educational and cultural issues of using e-learning in the classroom. According to this research most of the time the language can be a barrier for learners because most of the computer-related materials such as manuals, keyboards and software are designed in English. Moreover, the traditions, political, economic and religion are all sensitive issues that the instructional designers should consider. In Arab countries, the cultural and religious beliefs can be offended because of the cultural interference. Therefore, the author believes that the educational resources should be localized and the e-learning system should be designed by the native designer of those countries to be familiar with the culture.

However, with the globalization of the world, the argue of this researcher is not valid anymore. The isolation of the religion and the culture was never a logical way to keep the core values of the country, and it only results to the radicalization of minds. Whether we want it or not the world is changing and digitalization of this era force all countries to match their systems with the standard quality of the world. Integration of the technology in the educational system is critical requirement for any country that wants to have literate and professional youth, therefore in time Kurdistan or any other Middle Eastern countries have to adapt to the world class standard.

Al-Fadhli (2008), has done research about e-learning system of Kuwait University in Kuwait. According to Al-Fadhli (2008), the base of the education in the Middle East for many years was traditional and face to face lectures. However, this way has been a change for higher education institutions in past few years. Al-Fadhli (2008), Believe that the only way for having successful e-learning courses is to consider the perception of faculty members and students about this system. For both educators and students, computer literacy and familiarity with E-learning and LMS application are the necessity of using these systems in the university. In his research, Al-Fadhli (2008) has found that e-learning has a positive effect on students; more importantly in female students, these effects were significantly higher.

The important point is that, despite the fact that culture and religion in Arab countries limit the women from having an equal opportunity in higher education level, but the birth of e-learning system in these countries have improved the learning experience for female students. E-learning and LMS are both new concepts in Kurdistan and need more time to be adjusted in the mind of students and instructors. Therefore the perception of instructors and students about these systems needs more time and more in-depth research.

## Chapter 3

### RESEARCH METHODOLOGY

In this chapter, the research methods that used for this study are be discussed. The research design, data collection instrument, population, data collection procedure, data collection period, validity and reliability and finally data analysis are presented.

#### 3.1 Philosophical Stance of the Research

In this research, interpretive theory or paradigm is followed. At the beginning of this research in order to gather data from the participants, the used questionnaire and semi-structured interviews for both students and instructors before the application of LMS system. The idea behind this is to uncover the perceptions of instructors and students on the proposed LMS system. Likewise according to the interpretive theory, to understand other people, understanding of others are needes interpretations. That is to say; they needed to understand their intentions.

However, the difficulty we might have is to interpret their actions because observable behaviours on their own can not be interpreted hundred percent correctly. Therefore as Pring (2004) said: “We need to know human beings’ intentions and their motives. We need to know how they understand interpret the situation. For this reason, researchers talk a bout the “subjective meanings” of those whom they are researching – that is, the different understandings and interpretations which the participants bring with them to the situation.” In this research in line with Pring (2004), as researcher, this was also intended to apply to the participants regarding the effective of using LMS

system. For instance, each participant was given a user name and password to log on the LMS system and then the researcher asked them to reflect upon the content of the LMS such as uploading lecture notes, assignments, sharing multiple files (video, pdf, word) and announcements. The purpose here as Pring (2004) emphasized, is to see how participants understand or interpret the situation.

In this research tried to understand people's stance on a particular subject or agent through the application of the LMS system and receiving feedback afterward regarding their experiences. In short, attempted to grasp the participant's intentions, understandings on the proposed LMS system.

## **3.2 Research Methods**

In this research mixed approach' which mean both qualitative and quantitative are used together. In the following part, briefly qualitative and quantitative approaches will be presented.

### **3.2.1 Quantitative Research**

Quantitative research methods attempt to maximize objectivity, replicability, and generalizability of findings and they are typically interested in prediction. Integral to this approach is the expectation that a researcher will set aside his or her experiences, perceptions, and biases to ensure objectivity in the conduct of the study and the conclusions that are drawn. In many quantitative researchs , instruments like tests and surveys are being used to collect data, by its nature quantitative methods are deductive which mean it inference from tests of hypoheseis to general inferences about the population characteristics and features (Harwell, 2011). Jones (2016) mentioned the advantages of this type of research according to her: quantitative research is a method of measuring and exploring data and its dependence with different variables.

Therefore, the research is more objective and analyzed data can be used in testing the hypothesis. For this study, the researcher used a questionnaire as a well-known kind of instrument for doing quantitative research.

### **3.2.2 Qualitative Research**

Qualitative research is a broad methodological approach that encompasses many research methods. The aim of qualitative research may vary with the disciplinary background, such as a psychologist seeking to gather an in-depth understanding of human behavior and the reasons that govern such behavior qualitative method is being used for examining why and how decisions are taking place. Qualitative research is popular among political science, social work, and special education and educational researchers (Wikipedia, April 2010). The most strengths of using qualitative method are giving information about what you want to investigate in. According to Griffin (2004), qualitative method is more focused on social process and getting information about the system usage.

Researcher used semi-structure interviews, which is used widely in qualitative researches, to gather information about social effect of using such system in University of Sulaimani.

### **3.3 Research Design**

Research methodology is taught as a supporting subject in several ways from many academic disciplines at various levels by people committed to a variety of research paradigms. Though paradigms vary in their contents and substance, their broad approach to inquiry, in the author's opinion, is similar. Therefore, the model developed here is based upon a practical and step-by-step approach to a research inquiry, and each step provides a combination of methods, models and procedures (Kumar, 2005).



The research method used in this research is experimental method as a methodology. The student and instructors used the proposed system and contributed to our research by questionnaires and Semi-structured interview.

### 3.3.1 Experimental Method

The experimental method often regarded as the “scientific” approach to research. (Verma & Mallick, 1999). Also, Verma and Mallick (1999) argued that the experimental method is used basically in the natural science and utilized in the social sciences. Through the previous century, Thorndike (1924) is a first researcher was integrated the experimental method into education filed. It is the only type of research that directly attempts to influence a particular variable, and when properly applied, it is the best type for testing hypotheses about cause-and-effect relationships (Fraenkel, Wallen, & Hyun, 2011). Furthermore, in the experimental method has the capability to give the researcher to design and see the result whatever the outcome is effective or not.

According to Occuptytheory (2014) experimental method has some advantages:

- Control Over Variables.
- Easy Determination of Cause and Effect Relationship.
- Better Results.

For this research, the researcher uses the One-Shot Case Design which is a kind of experimental method as shown in table below:

Table 1. The "One-shot Case Design."

Treatment	Post-test
X	O

Symbol X is as a group and symbol O is a result (Fraenkel et al., 2011). Based on Fraenkel et al. (2011) which defined the One-Shot Case Design as “ a single group which is exposed to a treatment or event, and a dependent variable is subsequently observed (measured) in order to assess the effect of the treatment.” The main strength of experimental method is that the procedure can be done in shorter time and more efficiently (Isenberg, 2015). In this case, only one outcome was founded as a post-test.

### **3.4 Data Collection Instrument**

Gathering data is an essential part of the investigation in the education field. For the research instrument, the researcher has used questionnaire and semi-structured interview to collect data from students and instructors. In the procedure of collecting data using questionnaire, the researcher has given students' and instructors' pen and paper in order to be able to answer the questionnaire. The random number of students and instructors in computer science major did test on the proposed system first and then answer the survey. In the interview process, asked question to the instructors and students at the University of Sulaimani on a voluntary basis to collaborate on this research those interviews were recorded. The result was collected from participants who accepted to test the proposed system and answer the interview questions.

#### **3.4.1 Questionnaire**

A questionnaire is an instrument of collecting data on specific topic, in this way we can also gather information about experience, opinion and attitude of individuals about particular subjects. (Abubakar, 2016). The questionnaire that was used for this research adapted, then revised from (Rhema & Miliszewska, 2014). In the questionnaire, the researcher has started the questionnaire by explaining the purpose of this study and gave some information about the proposed LMS system. Moreover, the first part of the survey concentrated on gathering demographic information. In the second part, the

survey is more about the policies and strategies of participants' towards LMS and technology. The third part of the questionnaire is more about the attitude of the students toward e-learning systems and ICT. In the last part, participants after testing the proposed system reflected their idea about the design of LMS and its functionality.

### **3.4.2 Semi-structured Interviews**

Semi-structured interview is deep and flexible way of collecting data for qualitative research (Robson, 2002). According to Harrell and Bradley (2009, p. 27) "Semi-structured interviews are often used when the investigator wants to delve deeply into a topic and to understand thoroughly the answers provided, in semi-structured interviewing, a guide is used, with questions and topics that must be covered". For the qualitative method, the researcher has chosen the semi-structures interview which gives more opportunity to the interviewee to give his/her idea about your research. The interview was carried with students and instructors in Computer department whom voluntarily participated at the School of Basic Education, University of Sulaimani. In the first part of the interview the researcher asked the participants to introduce themselves and explain their computer literacy degree, and then the necessity of LMS in the University of Sulaimani in Kurdistan was questioned. Then, the researcher by using open-ended questions asked from participants about their experience of using proposed LMS and their suggestions for making the system easier and user-friendly. The interview was collected through online both (Skype and Facebook video call) and offline recorded by mobile phone recorder.

### **3.5 Population**

The data sample in this research was collected from a population of Computer Science students from School of Basic Education at the University of Sulaimani in Kurdistan. Out of 175 questionnaires distributed to users, 105 responds were received by the

researcher. According to the Table 2, results show that 71.4% of the participants were in (18-22) age range. 19% of them were in (23-29) years, around 6% in (30-37) year's age range and finally only less than 2% in (37-49) and (50-59) year's old range. Students whom ages between (18-22) are mostly second and third-year undergraduate and almost one-fifth are between (23-29). Others whom ages between (30-37) and (37-49) are master's level they are an instructor. In the Computer Department has only one Ph.D. instructor was age between (50-57) years old.

Table 2. Users' Demographic

Age N		F	%
	18-22	75	71.4
	23-29	20	19.0
	30-37	7	6.7
	37-49	2	1.9
	50-59	1	1.0
	Total	105	100.0
Gender N		F	%
	Male	60	57.1
	Female	45	42.9
	Total	105	100.0
Education Level N		F	%
	Bachelor	92	87.6
	Master	12	11.4
	PHD	1	1.0
	Total	105	100.0

Moreover, in Table 2, the demographic gender of the participants is presented. According to the results, 57.1% of the population sample were male, and 42.9% were female. The frequency of males and females are nearly the same between all users which included both students and instructors to reflect on the questionnaire for the proposed LMS system.

In the education level Table 2, shows that 87.6% of participants hold a bachelor degree and 11.4% master and only 1% was Ph.D. This result shows that the bachelor's degree was a vast majority that participated in this research. In contrary, the Master's degree was one-tenth from all population, and only one Ph.D. participated since the Computer Department has only one Ph.D. instructor.

### **3.6 Data Collection Procedure**

There are two main methods that can be used in conducting a research; qualitative and quantitative. Both of these methods have their own advantages and disadvantages, therefore for maximum efficiency and accuracy, in this research both of these methods were used (Creswell, 2013). Therefore, in this research mixture of qualitative and quantitative methods was used. At the very beginning, gave the users a link to the LMS system which is (<http://www.sulimoodle.online>) with user name and password. Each user's, see (Appendices F, G and H) screen shots of the system, courses, and users were added to the LMS.

In the first step of the quantitative method, the data was provided through pen and paper survey from the population of 175 computer science students and instructors at the University of Sulaimani, School of Basic Education, Computer Science Department. For the qualitative method, the researcher has chosen the semi-structured

interview. Instructors and students at the University of Sulaimani on a voluntary basis answered the semi-structured interview questions, and they reflected their ideas about the LMS system through online and recorded conversations.

### **3.7 Data Collection Period**

The researcher in order to carry out this research study has written a formal letter (see appendix F) to the head of the Computer Science Department at School of Basic Education, the University of Sulaimani with the sample of the questionnaire and semi-structured interviews attached for the department's attention. After three days the permission request was approved by the head of the department (see appendix G) in order to apply the research in the department. Within one and half month time (from the second week of August 2016 till beginning October 2016) the data was collected.

### **3.8 Validity and Reliability**

The process validity testing includes collecting and analyzing data and evaluating the accuracy of information and instruments. There are different forms of research validity and the main ones are specified by Cohen et al (2007) as content validity, criterion-related validity, construct validity, internal validity, external validity, concurrent validity and face validity. For ensuring about the validity the questionnaire was given to three expertise in the educational technology field then applied. Although there are many ways and test that enable us to measure the validity and reliability of the instruments, the researcher chooses piloting test both questionnaire and interview questions and the alpha value of reliability was analyzed by SPSS it was (0.78). After analyzing and correcting the questions, the final draft of questions given to students and instructor sample population.

### **3.9 Data Analysis**

After data collection, data were analyzed using SPSS version 22. A number of different statistical tests such as ANOVA was used for analyzing this data see the (appendix A), and the relation and correlation of them with variables were tested. SPSS is a software with high functionality in examining data and providing accurate statistics in descriptive and graphical format (Flynn, 2003). Consequently for Semi-structured interview content analyses was used, according to Fraenkel et al. (2011) “Content analysis is a technique that enables researchers to study human behavior in an indirect way, through an analysis of their communications.” From the past three decades content analysis became a crucial technique for evaluating public relations like (media). Hansen ( 2012) criticized that the propose of content analysis is to examine how contents reflect on social and cultural issues. The researcher based on the research questions see table (12) deducted codes and based on these coding’s, analyzed the perceptions of instructors on the proposed LMS system. At the end of both quantitative and qualitative analysis, the researcher put forward the outcomes founded in this study.

## **Chapter 4**

### **RESULTS AND FINDINGS**

#### **4.1 Quantitative Results**

The aim of this research was to gather information regarding attitudes of students and instructors of University of Sulaimani toward e-learning system. This research was applied in two phases. In the first phase 175 users in University of Sulaimani were chosen for quantitative data collection, 105 users from this population agreed to test the proposed system and answer the survey. In phase two, 14 users, which includes 9 students and 5 instructors in University of Sulaimani were chosen randomly and interviewed after testing the proposed system. All bachelor users are students, and the rest are instructors.

In this chapter the researcher discusses the data analysis results gathered through using both qualitative and quantitative methodology. This analysis starts with descriptive statistics of questions about current e-learning usage and then the computer literacy level of students and instructors. In the second part of this study the researcher investigates the student attitudes towards E-learning technology and proposed system regarding to the student's demographic variables.

##### **4.1.1 Current E-learning Usage, the Computer Literacy Level and Computer Literate**

With regard to the learning management which is being used at the University of Sulaimani, the result indicates that according to 91.4% of users, there isn't any LMS



system being used in their classrooms and only 8.6% said that Moodle platform was used in their academic curriculum. According to this finding, it can be said that the usage of LMS is not compulsory or even common in University of Sulaimani.

Table 3. Current E-learning Usage, the Computer Literacy Level and Computer Literate

Learning Management System which is Used in your University		F	%
	Moodle	9	8.6
	We don't use LMS	96	91.4
	Total	105	100.0
Instruction Pedagogy Method in the Classroom		F	%
	Traditional Face-to-Face Instruction - Little or no online component	41	39.0
	Traditional Face-to-Face Instruction - Heavy online component	61	58.1
	Hybrid (50% online, 50% face-to-face)	3	2.9
	Total	105	100.0
Do you Consider yourself Computer Literate		F	%
	Yes	54	51.4
	No	51	48.6
	Total	105	100.0

The result about the method of instruction shows that according to the users 58.1.% of instruction is applied in traditional face-to-face instruction with heavy depend on the online components, while 39.0 percent of users believed that in their classroom the instruction is done traditional face-to-face pedagogy with less or without online component, finally 2.9% said that in their classes they use hybrid method which is 50 % online and 50% face-to-face instructions.

According to this result, it is possible to say that higher percentage of instructors do prefer using online components in their classroom, therefore having a central learning management system in the university can imperatively help both students and instructors.

With regard to user's computer literacy skill, Table 5 shows that 51.4% of users believe that they have the computer literacy skills and 48.6% do not view themselves as computer literate.

#### 4.1.4 Users Attitudes Towards E-learning Technology

The result from Table 4 indicates that users' attitudes toward e-learning technology were high (Mean=4.10). More specifically, "I feel confident in using computers" (Mean=4.20, SD=0.75), E-learning increases the quality of learning because it integrates all forms of media (Mean=4.28, SD=0.75), Adopting ICT and E-learning allow for increased students' satisfaction (Mean=4.15, SD=0.87), I believe that e-learning will give me the opportunity to acquire new knowledge (Mean=4.11, SD=0.65). However, users' perception in "I believe that convenience is an important feature of e-learning" has only (Mean=3.79, SD=1.07) which shows their lack of interest towards e-learning.

Table 4. Users' Attitude towards E-learning Technology

	N	Mean	Std. Deviation
I feel confident in using computers	105	4.20	.752
I believe that e-learning will give me the opportunity to acquire new knowledge.	105	4.11	.655
I believe that convenience is an important feature of e-learning	105	3.79	1.071

E-learning increases the quality of learning because it integrates all forms of media	105	4.28	.753
Adopting ICT and E-learning allows for increased student satisfaction	105	4.15	.875
Valid N (listwise)	105	4.10	

#### 4.1.4.1 Users' Attitudes Towards E-learning Technology According to their Age

According to the Table 5 results, the population of group age of (18-22) is much higher than others (N=75). As it is shown in the first question "I feel confident in using computers" the age range of (30-37) with (Mean=4.57, SD=0.535, SE=0.202) has the highest confidence in using computers. On the contrary to that, the age range of (37-49) and (50-59) with (Mean=4.00) has the lowest confidence in using such systems which can be justified by the fact that both these groups have more experience in using old systems and it is hard for them to switch to the new systems. In the second part "I believe that e-learning will give me the opportunity to acquire new knowledge" all age groups of (18-22), (23-29), (30-37) have a higher mean than the average mean (Mean=4.11). This shows that these age groups support the benefits of e-learning for gaining new knowledge.

However, the age range of (37-49) with (Mean=3.50, SD=0.70, SE=0.500) and age range of (50-59) with (Mean=2.00) has the lowest mean which means unlike the other age groups stated above; they do not support e-learning. Moreover for the third part related to the idea of "I believe that convenience is an important feature of e-learning" the average mean of the table is (Mean=3.79) and all age ranges except (50-59) has higher mean than the average mean which shows that everyone believes

“convenience” is an important feature in e-learning system. In the following question emphasized that “E-learning increases the quality of learning because it integrates all forms of media.” Again the younger age range of (18-22), (23-29), (30-37) have a higher mean than the average (Mean=4.28) compared to the (37-49) and (50-59) age range. They have less interest and attention towards the whole e-learning system because of the younger generation are more interested to use technology especially as an integration with education.

In the last question which is about “Adopting ICT and E-learning allows for increased student satisfaction”, the age range of (18-22) with (Mean=4.20, SD=0.85) demonstrates the highest tendency of using e-learning in students satisfaction while the age range between (37-49) and (50-59) have the least interest in the satisfaction of e-learning, they have same reflection with the previous question.

Table 5. Users’ Attitudes towards E-learning Technology According to their Age

		N	Mean	SD
Q1.I feel confident in using computers	18-22	75	4.13	.794
	23-29	20	4.35	.671
	30-37	7	4.57	.535
	37-49	2	4.00	.000
	50-59	1	4.00	.
	Total	105	4.20	.752
Q2.I believe that e-learning will give me the opportunity to acquire new knowledge.	18-22	75	4.12	.592
	23-29	20	4.15	.745
	30-37	7	4.43	.535
	37-49	2	3.50	.707
	50-59	1	2.00	.
	Total	105	4.11	.655
Q3.I believe that convenience is an important feature of e-learning	18-22	75	3.76	1.063
	23-29	20	3.80	1.281
	30-37	7	4.00	.577
	37-49	2	4.50	.707

	50-59	1	3.00	.
	Total	105	3.79	1.071
Q4.E-learning increases the quality of learning because it integrates all forms of media	18-22	75	4.27	.759
	23-29	20	4.25	.786
	30-37	7	4.57	.787
	37-49	2	4.00	.000
	50-59	1	4.00	.
	Total	105	4.28	.753
Q5.Adopting ICT and E-learning allows for increased student satisfaction	18-22	75	4.20	.854
	23-29	20	4.05	1.050
	30-37	7	4.14	.690
	37-49	2	4.00	.000
	50-59	1	3.00	.
	Total	105	4.15	.875

#### 4.1.4.2 Users' Attitudes Towards E-learning Technology According to their Gender

According to Table 6, overall the population of the male users (N=60) were more than females (N=45). While male population replied with the highest mean for the last question "Adopting ICT and E-learning allow for increased student satisfaction" (M=4.43, SD=0.831) for another question "I believe that convenience is an important feature of e-learning" the female population replied with the lowest mean (M=3.69, SD=1.145). They have the lowest belief to the convenience of e-learning system. Overall it can be concluded that according to these results, the sample of the male population have positive attitudes toward e-learning technology whereas female users were less interested.

Table 6. Users' Attitudes towards E-learning Technology According to their Gender

		N	Mean	SD
Q1.I feel confident in using computers	Male	60	4.27	.710
	Female	45	4.11	.804

	Total	105	4.20	.752
Q2.I believe that e-learning will give me the opportunity to acquire new knowledge.	Male	60	4.13	.650
	Female	45	4.09	.668
	Total	105	4.11	.655
Q3.I believe that convenience is an important feature of e-learning	Male	60	3.87	1.016
	Female	45	3.69	1.145
	Total	105	3.79	1.071
Q4.E-learning increases the quality of learning because it integrates all forms of media	Male	60	4.35	.777
	Female	45	4.18	.716
	Total	105	4.28	.753
Q5.Adopting ICT and E-learning allows for increased student satisfaction	Male	60	4.43	.831
	Female	45	3.78	.795
	Total	105	4.15	.875

#### **4.1.4.3 Users' Attitudes Towards E-learning Technology According to their Education**

According to Table 7, the majority of the population sample had Bachelor degree (N=92). The population of Master degree instructors were (N=12), and only one instructor had a Ph.D. degree. Therefore, the result for Ph.D. instructor cannot be accurate enough to be considered in this analysis. Owing to the results in all questions, the instructors whom hold Master degree had higher mean than others, for instance in the first question "I feel confident in using computers" the average of instructors who hold master degree (M=4.58, SD=0.515) while students who hold bachelor degrees was only (4.15, SD=0.769). This can be interpreted as; the more experienced one can get in education like carrying out M.A or Ph.D., the better you are aware of the user of new advanced technologies such as e-learning. However, considering the students who hold bachelor's degree as they have less experience in this field, they found it difficult to use and apply. For the question "E-learning increases the quality of learning because it integrates all forms of media" the result shows that the average of masters and

bachelor degrees are nearly the same is (Mean=4.50,4.25, SD=0.674,0.765) respectively, by this result it can have said that the all students and instructors believe that the e-learning can increase quality of learning. Because, learning through online it gives the more opportunity to any academic person nowadays as internet is everywhere and easy to access by this any academicians can gain new knowledge compare the tradition way without use of technology.

Table 7. Users' Attitudes towards E-learning Technology According to their Education

		N	Mean	SD
Q1.I feel confident in using computers	Bachelor	92	4.15	.769
	Master	12	4.58	.515
	PHD	1	4.00	.
	Total	105	4.20	.752
Q2.I believe that e-learning will give me the opportunity to acquire new knowledge.	Bachelor	92	4.10	.612
	Master	12	4.42	.669
	PHD	1	2.00	.
	Total	105	4.11	.655
Q3.I believe that convenience is an important feature of e-learning	Bachelor	92	3.75	1.116
	Master	12	4.17	.577
	PHD	1	3.00	.
	Total	105	3.79	1.071
Q4.E-learning increases the quality of learning because it integrates all forms of media	Bachelor	92	4.25	.765
	Master	12	4.50	.674
	PHD	1	4.00	.
	Total	105	4.28	.753
Q5.Adopting ICT and E-learning allows for increased student satisfaction	Bachelor	92	4.16	.905
	Master	12	4.17	.577
	PHD	1	3.00	.
	Total	105	4.15	.875

#### 4.1.5 Perception of Users' Toward Proposed LMS Application

The results from the following Table indicates the perception of users toward proposed LMS application were moderate. The mean is (Mean=4.09). Moreover, "The language

used in the proposed system is easy to understand” (Mean=4.17, SD=0.740), “The overall design of the learning management system is welcoming (Mean=4.16, SD=0.867), “I like using proposed system because I am computer literate.” (Mean=4.08, SD=0.756), Design of the proposed system is user-friendly (Mean=4.05, SD=0.726). However, “The links between the pages are clear and easy to follow” (Mean=4.00, SD=0.665) was the only section in the survey with a lower mean compared to the other questions but also they satisfied that the link between pages are clear and easy to follow.

Table 8. Perception of Users’ toward Proposed LMS Application

	N	Sum	Mean	Std. Deviation
The language used in proposed system is easy to understand.	105	438	4.17	.740
The links between the pages are clear and easy to follow.	105	420	4.00	.665
Design of the proposed system is user-friendly.	105	425	4.05	.726
I like using proposed system because I am computer literate.	105	428	4.08	.756
The overall design of the learning management system is welcoming.	105	437	4.16	.867
Valid N (likewise)	105		4.09	

#### 4.1.5.1 Perception of Users Toward Proposed LMS Application According to their Age

As it shown in Table 9, in the first question “The language used in proposed system is easy to understand” for the whole users the average mean (M=4.17), Considering the age ranges (18-22) and (50-59) with (M=4.08, SD=0.749, SE=0.086) and (M=3.00) have the least understanding of the proposed LMS system. On the other hand, the age



range of (23-29), (30-37) and (37-49) with (Mean=4.50), (Mean=4.29, SD=0.756) and (Mean=4.50, SD=0.707) have higher understanding and ease in use of the proposed system. For the second and third questions the same users ages ranging between (18-22), (37-49) and (50-59) have the least interest about proposed system. The mean in the age range of (50-59) is low as (M=3.00) because this stands for the population of only one Ph.D. instructor which is insignificant to consider in this research. The fourth question is “I like using proposed system because I am computer literate.” Although the mean in the first group (18-22) range is as low as (M=3.97, SD=0.716) but the age range of (23-29) and (30-37) with have a higher mean (M=4.25, SD=0.851), (M=4.71, SD=0.488). This shows that they believe there is a relation between their successes in using LMS because of their knowledge about computer skills.

The finding in the last question shows that the age range of (50-59) was completely satisfied with the design of the system and believed it was user-friendly and satisfying the mean of this age range is (N=1) mean (M=5.00). For the whole group, the high average mean is (Mean=4.16). However, since the population of last age range (50-59) is only one, the result is not accurate enough. The age range (30-37) with (Mean=4.43, SD=0.535) has the highest interest and belief in the system being user-friendly.

Table 9. Perception of Users’ toward Proposed LMS Application According to their Age

		N	Mean	SD
Q1.The language used in proposed system is easy to understand.	18-22	75	4.08	.749
	23-29	20	4.50	.607
	30-37	7	4.29	.756
	37-49	2	4.50	.707
	50-59	1	3.00	.

	Total	105	4.17	.740
Q2.The links between the pages are clear and easy to follow.	18-22	75	3.97	.716
	23-29	20	4.10	.447
	30-37	7	4.29	.488
	37-49	2	3.50	.707
	50-59	1	3.00	.
	Total	105	4.00	.665
Q3.Design of the proposed system is user friendly.	18-22	75	3.96	.743
	23-29	20	4.15	.671
	30-37	7	4.43	.535
	37-49	2	4.50	.707
	50-59	1	5.00	.
	Total	105	4.05	.726
Q4.I like using proposed system because I am computer literate.	18-22	75	3.97	.716
	23-29	20	4.25	.851
	30-37	7	4.71	.488
	37-49	2	4.00	1.414
	50-59	1	4.00	.
	Total	105	4.08	.756
Q5.The overall design of the learning management system is welcoming.	18-22	75	4.12	.900
	23-29	20	4.20	.894
	30-37	7	4.43	.535
	37-49	2	4.00	.000
	50-59	1	5.00	.
	Total	105	4.16	.867

#### **4.1.5.2 Perception of Users' Toward Proposed LMS Application According to their Gender**

As it is shown in Table 10, the population of male students are more than females. In the first question “The language used in the proposed system is easy to understand” the mean (M=4.30 SD=0.76) shows that male users can understand the proposed system better than the female users. Moreover, for the second question the male population (Mean=4.10, SD=0.63) believes that “The links between the pages are clear and easy to follow” compared to the female population (Mean=3.87, SD=0.694). Both males and females responses for the third question “Design of the proposed system is

user-friendly” for male population (M=4.08, SD=0.69) and females (M=4.00, SD=0.76) is nearly the same. In the fourth question both males and females average mean is above the standard (Mean=4.08) which shows that for both groups the design of the LMS system is friendly. In the fifth question “The overall design of the learning management system is welcoming.” Once again the mean of the male population (Mean=4.23, SD=0.810) is higher than females (Mean=4.07, SD=0.939). This shows the interest of male population in LMS is more than females.

Table 10. Perception of Users’ toward Proposed LMS Application Regarded to their Gender

		N	Mean	SD
Q1.The language used in proposed system is easy to understand.	Male	60	4.30	.766
	Female	45	4.00	.674
	Total	105	4.17	.740
Q2.The links between the pages are clear and easy to follow.	Male	60	4.10	.630
	Female	45	3.87	.694
	Total	105	4.00	.665
Q3.Design of the proposed system is user-friendly.	Male	60	4.08	.696
	Female	45	4.00	.769
	Total	105	4.05	.726
Q4.I like using proposed system because I am computer literate.	Male	60	4.17	.717
	Female	45	3.96	.796
	Total	105	4.08	.756
Q5.The overall design of the learning management system is welcoming.	Male	60	4.23	.810
	Female	45	4.07	.939
	Total	105	4.16	.867

#### 4.1.5.3 Perception of Users’ Toward Proposed LMS Application According to their Education Level

As it shown in Table 11, the population of bachelor degree (N=92) users is almost eight times more than master degree users (N=12). Ph.D. user with only (N=1) population has the lowest population which because of this low population their result

cannot be fully trusted. In first question “The language used in proposed system is easy to understand” the total mean is (M=4.17), this result shows that only master degree users (Mean=4.42, SD=0.669) found the proposed systems language totally understandable. However, in the second question “The links between the pages are clear and easy to follow.” The average mean was (M=4.00) and regarded to that again master degree users with (Mean=4.17, SD=0.740) has found the linking in the pages clear. In the third question “Design of the proposed system is user friendly” the average mean is (M=4.05) which makes the master degree users (Mean=4.42, SD=0.515) again in higher mean than average however the PhD user with (Mean=5.00) has the highest mean in this table but since this group has only (N=1) population this result could be ignored. In fourth question “like using proposed system because I am computer literate” the average mean of the table was (M=4.08) which again make the master degree users (Mean=4.67, SD=0.651) the highest mean and the most computer literate group.

Finally, in the last question “The overall design of the learning management system is welcoming” the average mean is (M=4.16), in this group only bachelor degree users with (Mean=4.13, SD=0.904) has the mean lower than average mean and the only group whom believe the overall design of system was not welcoming enough.

Table 11. Perception of Users’ toward Proposed LMS Application According to their Education Level

		N	Mean	SD
Q1.The language used in proposed system is easy to understand.	Bachelor	92	4.15	.740
	Master	12	4.42	.669
	PHD	1	3.00	.
	Total	105	4.17	.740
	Bachelor	92	3.99	.671

Q2.The links between the pages are clear and easy to follow.	Master	12	4.17	.577
	PHD	1	3.00	.
	Total	105	4.00	.665
Q3.Design of the proposed system is user-friendly.	Bachelor	92	3.99	.734
	Master	12	4.42	.515
	PHD	1	5.00	.
	Total	105	4.05	.726
Q4.I like using proposed system because I am computer literate.	Bachelor	92	4.00	.741
	Master	12	4.67	.651
	PHD	1	4.00	.
	Total	105	4.08	.756
Q5.The overall design of the learning management system is welcoming.	Bachelor	92	4.13	.904
	Master	12	4.33	.492
	PHD	1	5.00	.
	Total	105	4.16	.867

## 4.2 Qualitative Results

Having gone through the questionnaire on the proposed system of LMS, the researcher interviewed 5 out of 13 instructors and 9 out of 92 students at the University of Sulaimani and asked their opinion about proposed system according to the interview questions.

Table 12. Emergent Coding According to the Research Questions

Research questions	Codes derived from the research questions
How to implement learning management system at the University of Sulaimani?	Pros and Cons imp. learn. system
What is the instructors and student's perceptions about the proposed LMS system?	Percept T's and S's
To what extend this new LMS system will fulfill students and instructors need for e-learning?	T's and S's need for E-learning

### **4.2.3 Instructors Interview Analysis:**

Having gone through the semi-structured interview analysis with instructors' and students' from the University of Sulaimani, Faculty of Physical and Basic Education, School of Basic Education, Computer Science Department see (appendix D). Five out five agreed upon equally on the issues that all through using the LMS (learning management system) is a new idea for them, and easier to use, to implement and practice. Additionally, instructors believe that it is user-friendly and beneficial to keep in touch with students. For instance, T4 said:

overall I can say that LMS has a great and effective design and it's colorful, and its user-friendly and flexible.

Instructors also supported the idea of the necessity of e-learning in University of Sulaimani T1 said:

The most important thing is putting assignments on time which makes students prepare their homework and send them back on time, so it teaches them how to manage time.

As well as T4 said:

LMS fulfills the requirements of instructors, till now all the instructors use paper for assignments and exams, but on Moodle, the students can use whenever they need online.

According to Pollock & Wayne (2009), LMS can positively effect on attitude of instructors toward students with special needs. There are teaching techniques in LMS and by using them faculty members are able to support different students, with different level of knowledge background and different learning styles. Also, T2 mentioned another need for e-learning for exams and said that:

LMS can be used as an easy step in Practicing Exams in the laboratory.

LMS has an ability to manage all teaching and learning procedure, students registration, scheduling, tracking the performance of students, big collection of online resources, providing ability of 24 hour communication between students and instructors through chat, email and transferring files (Hussein, 2011).

What is more, three out of five instructors underlined the fact that rather than using paper based traditional system, the online system is much better in order to prevent any possible upcoming problems. For instance, T2 said:

In Kurdistan the system is paperback so by using LMS the papers will not be lost, and students do not have more complain about it, students can see the results Online.

To support T2's argument T4 emphasized the importance of students centered education and Constructivism 'learning by doing' for example he stated that:

LMS encourages the students to be active all the time, and try to find almost all information by themselves. In other words, it encourages students to be at the center of learning.

Also, T5 expressed that:

Nowadays every student uses the internet a lot, and they spent a lot of time on internet, so this system would make everything really easy for connecting instructors to their students.

On the contrary to these findings, only two instructors mentioned the disadvantage of using the proposed LMS system. According to one of them internet services should be of a high quality in order to be able to use LMS in Kurdistan and the other one T3 said:

this system has been applied just for Computer Department it should be applied to all other departments.

#### **4.2.4 Students Interview Analysis**

In order to get more in depth information regarding the proposed LMS system, among the students the researcher randomly selected nine students see (appendix E). According to the analysis of the semi-structured interviews, overall, nine out of nine of the students were equally agreed on the using the LMS. They believe that it is a quite new and easy to use the system as it includes all the requirements for students. The design was perfect, and they have never used such a system before. For example, S6 said:

The system was interesting and did not use such as system before.

Likewise, S1 said:

E-learning is quite new, and from my point of view, this system is easy to use only with some clicks you can log in to your account and see all courses.

In addition to these, S3 mentioned an important and unique feature of the LMS system which is it can be used both in Kurdish and English. LMS systems use of the Internet and computer information technology to disseminate and exchange information systems to facilitate learning and courses (Seale and Mence, 2001). Students also advocated the idea of the need for e-learning in their university, especially for Computer Department.

S1 underlined the importance of integrating technology with learning process and said:



LMS is very important for Kurdish learners as other parts of the world we have to blend technology with learning.

For our Computer Department this program is new and reason to get away from the traditional way, instead of using USB Flash memory or printed handout, students and instructors can use LMS to exchange information. S2 also supported this idea and said:

It is not modern now to use USB flash for instructors to give us the lectures and printed out because it is wasting time and energy.

Ozdamli (2007) Stressed that the LMS is an essential tool for the development of project design and management of student learning and their motivation to learn. Furthermore, seven out of nine of the students declared the benefits of the LMS which is significant for both instructors and students to keep in touch like S4 said:

In the implementation and practicing LMS was interesting because this kind of system makes instructors and learners to keep in touch all the time as well as it helps students to be active and search for information by themselves.

S8 supported similar view to strengthening this argument and said:

In terms of implementation and practicing helps learners to get sources whenever they want and LMS can save time and cost for students.

The instructors can upload multimedia files rather than just texts, and this is a use of visual literacy. Finally, this system can be used on multiple platforms it is responsive as S3 said:

I checked on my mobile phone it was very responsive.

On the contrary, just two of the students stated the drawbacks of this LMS system. That most of the students do not have adequate knowledge about using LMS S6 said:

Most of the students do not have experience in LMS and its works, that is why sometimes it becomes a barrier.

Tim Hunt (2013) emphasized the drawbacks of using Moodle as a learning management system. If you do not have an experience of using it said:

Moodle is a tool for teaching and learning. Actually, it is a toolbox containing many different tools. Used appropriately, it is a powerful set of tools. I suppose that is the down-side, you have to learn how to use each tool most appropriately to get the best results. However, many of the tools are quite common, so you may already have the right knowledge. Not trying to use the tools at all would probably be a bigger disadvantage.

Likewise, to Hunt's (2013) explanation of the pros and cons of the learning management systems, S7 said:

Sometimes in terms of security, it may face a problem because those who work in hacking are not working ethically so it may face some threats by them.

To sum up owing to the semi-structured interviews, it can be concluded that from the perceptions of both instructors and students LMS system has got advantages and disadvantages to being used at universities. It can be said that the most students and instructors were selected to participating in this research, they liked the proposed system and mentioned the advantages of proposed system, in term of design, implementation and performance, and labeled that this LMS system is totally a new idea for Kurdistan. On the contrary, a few portion of students and instructors argued that this LMS has a little limitation, it can apply for a long term, and for other Departments of the University of Sulaimani rather than just one Department, in addition some obstacles are available in Kurdistan for implementing LMS systems such as a shortage of electricity, a low quality of internet services and sometime security issues might be a problem.

## Chapter 5

### CONCLUSION AND FUTURE WORKS

#### 5.1 Conclusion

- E-learning is a digital tool for teaching and learning to motivate the student to access their teaching and learning materials anywhere anytime.
- The communication and relationships with E-learning will improve, and it provides a rich environment for both students and instructors to access online materials and collaborate worldwide (Arkorful, & Abaidoo, 2015).
- E-learning in developing countries like Kurdistan is designed to provide equal and extended educational opportunity for everyone. However, lack of computer literacy, technological infrastructures, training for both students and instructors result to the negative attitude toward LMS and overall integration of technology in the classrooms (Gulati, 2008).
- E-learning is still unfamiliar for many people in the Arab region for many reasons. In this research researcher design a whole new learning management system to improve the quality of teaching and to learn at the University of Sulaimani. However, the lack of infrastructure and proper education made the effectivity of proposed system lower than research assumption.

- The results showed that newer generation of Kurdish students and instructors are more interested in integrating technology in their classroom while elder generation are still less interested in adapting to the new technologies.
- Finally, the lack of familiarity with the e-learning techniques and more importantly computer itself was the biggest step back for most of university academic staff and students, therefore it is necessary for university management and higher education administrators to include computer literacy in their student's curriculum and make their generation equipped with the most important skill of 21<sup>st</sup> century.

## **5.2 Reflections of the Researcher**

According to the results of this investigation, the researcher's reflection shows that the perceptions of both instructors and students in Computer Science Department, School of Basic Education at the University of Sulaimani were positive and they liked the proposed system because it was a new idea for integrating technology with learning process as blended learning.

As a researcher discussed with the head of the computer department about the usefulness of LMS, which they have never used such a system, and for future, they want to apply for a long-term rather than only a few weeks. Moreover, it was a good experience for the researcher to implement the proposed LMS to this department as he graduated from the same department and wanted to introduce this system to his friends and instructors.

### **5.3 Future Works**

- LMS is a fully functional learning management system. However, for the lack of time and resources, this system was not designed on a cloud-based platform which is the best infrastructure for LMS.
- Moodle has many plugins, for the shortage of the time in the proposed LMS just tested some plugins, for future it can test more functions like (plagiarism checker, Team Builder, Lesson Objectives, etc.
- Moreover, LMS it can be as a Mobile Application for both (Android and IOS) operating system because new Moodle themes are responsive and easy to convert to mobile application.
- It suggested that to apply the Moodle (LMS) for the whole departments in University of Sulaimani for a long term.
- Furthermore, doing the workshops or a training course before implementing any LMS, to deeper explanations for the LMS users.

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## **APPENDICES**

## Appendix A: ANOVA Results

### ✓ User Attitudes Towards E-learning Technology According to their Age

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
I feel confident in using computers	Between Groups	1.869	4	.467	.821	.515
	Within Groups	56.931	100	.569		
	Total	58.800	104			
I believe that e-learning will give me the opportunity to acquire new knowledge.	Between Groups	5.944	4	1.486	3.842	.006
	Within Groups	38.684	100	.387		
	Total	44.629	104			
I believe that convenience is an important feature of e-learning	Between Groups	2.010	4	.503	.428	.788
	Within Groups	117.380	100	1.174		
	Total	119.390	104			
E-learning increases the quality of learning because it integrates all forms of media	Between Groups	.860	4	.215	.370	.830
	Within Groups	58.131	100	.581		
	Total	58.990	104			
Adopting ICT and E-learning allows for increased student satisfaction	Between Groups	1.755	4	.439	.564	.689
	Within Groups	77.807	100	.778		
	Total	79.562	104			

✓ **User attitudes towards e-learning technology according to their gender**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Q1.I feel confident in using computers	Between Groups	.622	1	.622	1.102	.296
	Within Groups	58.178	103	.565		
	Total	58.800	104			
Q2.I believe that e-learning will give me the opportunity to acquire new knowledge.	Between Groups	.051	1	.051	.117	.733
	Within Groups	44.578	103	.433		
	Total	44.629	104			
Q3.I believe that convenience is an important feature of e-learning	Between Groups	.813	1	.813	.706	.403
	Within Groups	118.578	103	1.151		
	Total	119.390	104			
Q4.E-learning increases the quality of learning because it integrates all forms of media	Between Groups	.763	1	.763	1.349	.248
	Within Groups	58.228	103	.565		
	Total	58.990	104			
Q5.Adopting ICT and E-learning allows for increased student satisfaction	Between Groups	11.051	1	11.051	16.614	.000
	Within Groups	68.511	103	.665		
	Total	79.562	104			



✓ **User attitudes towards e-learning technology according to their education level**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Q1.I feel confident in using computers	Between Groups	2.014	2	1.007	1.809	.169
	Within Groups	56.786	102	.557		
	Total	58.800	104			
Q2.I believe that e-learning will give me the opportunity to acquire new knowledge.	Between Groups	5.592	2	2.796	7.306	.001
	Within Groups	39.036	102	.383		
	Total	44.629	104			
Q3.I believe that convenience is an important feature of e-learning	Between Groups	2.474	2	1.237	1.079	.344
	Within Groups	116.917	102	1.146		
	Total	119.390	104			
Q4.E-learning increases the quality of learning because it integrates all forms of media	Between Groups	.740	2	.370	.648	.525
	Within Groups	58.250	102	.571		
	Total	58.990	104			
Q5.Adopting ICT and E-learning allows for increased student satisfaction	Between Groups	1.341	2	.670	.874	.420
	Within Groups	78.221	102	.767		
	Total	79.562	104			

✓ **Perception of Users toward proposed LMS application according to their age**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Q1.The language used in proposed system is easy to understand.	Between Groups	4.466	4	1.116	2.129	.083
	Within Groups	52.449	100	.524		
	Total	56.914	104			
Q2.The links between the pages are clear and easy to follow.	Between Groups	2.325	4	.581	1.331	.264
	Within Groups	43.675	100	.437		
	Total	46.000	104			
Q3.Design of the proposed system is user friendly.	Between Groups	3.118	4	.779	1.509	.205
	Within Groups	51.644	100	.516		
	Total	54.762	104			
Q4.I like using proposed system because I am computer literate.	Between Groups	4.265	4	1.066	1.934	.111
	Within Groups	55.125	100	.551		
	Total	59.390	104			
Q5.The overall design of the learning management system is welcoming.	Between Groups	1.413	4	.353	.460	.765
	Within Groups	76.834	100	.768		
	Total	78.248	104			

✓ **Perception of Users toward proposed LMS application according to their gender**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Q1.The language used in	Between Groups	2.314	1	2.314	4.366	.039

proposed system is easy to understand.	Within Groups	54.600	103	.530		
	Total	56.914	104			
Q2.The links between the pages are clear and easy to follow.	Between Groups	1.400	1	1.400	3.233	.075
	Within Groups	44.600	103	.433		
	Total	46.000	104			
Q3.Design of the proposed system is user friendly.	Between Groups	.179	1	.179	.337	.563
	Within Groups	54.583	103	.530		
	Total	54.762	104			
Q4.I like using proposed system because I am computer literate.	Between Groups	1.146	1	1.146	2.027	.158
	Within Groups	58.244	103	.565		
	Total	59.390	104			
Q5.The overall design of the learning management system is welcoming.	Between Groups	.714	1	.714	.949	.332
	Within Groups	77.533	103	.753		
	Total	78.248	104			

✓ **Perception of Users toward proposed LMS application according to their education level**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Q1.The language used in proposed system is easy to understand.	Between Groups	2.128	2	1.064	1.981	.143
	Within Groups	54.786	102	.537		
	Total	56.914	104			

Q2.The links between the pages are clear and easy to follow.	Between Groups	1.344	2	.672	1.535	.220
	Within Groups	44.656	102	.438		
	Total	46.000	104			
Q3.Design of the proposed system is user friendly.	Between Groups	2.856	2	1.428	2.806	.065
	Within Groups	51.906	102	.509		
	Total	54.762	104			
Q4.I like using proposed system because I am computer literate.	Between Groups	4.724	2	2.362	4.407	.015
	Within Groups	54.667	102	.536		
	Total	59.390	104			
Q5.The overall design of the learning management system is welcoming.	Between Groups	1.146	2	.573	.758	.471
	Within Groups	77.101	102	.756		
	Total	78.248	104			

## **Appendix B1: Questionnaire Guide and Consent forms for Students**

Honar Hamah Amen  
M.Sc. Computer and Instructional  
Technology in Teacher Education  
05428752263  
Honar.ict@gmail.com

### **Questionnaire**

Dear Students,

The purpose of this questionnaire is to collect data about students' **The Effectiveness and Application of the Moodle LMS (Learning Management System) According to the Students' and Instructors' Perceptions at the University of Sulaimani, School of Basic Education**

The purpose of research can be listed as follows:

- To reveal the student's perception about the Effectiveness and Application of Learning Management System LMS at university of Sulaimani.
- To assess students' needs and their preferences regarding to use LMS based on Moodle Server at University of Sulaimani.
- To reveal students' perception about the implementation of Proposed LMS.
- To determine the pros and cons of E-learning from students' perception. `

As a researcher, I would appreciate if you could fill in the questionnaire, which will only take 15 minutes. This is completely confidential and will not be used for any other purpose except this research.

Student  
Honar Hamah Amen  
M.Sc. Computer and Instructional  
Technology in Teacher Education  
05428752263  
Honar.ict@gmail.com

Supervisor  
Assist. Prof. Dr. Bengi Sonyel  
Educational sciences  
03926302390  
bengi.sonyel@emu.edu.tr

## Consent form for Students

Dear Students,

If you have any inquiry about any aspect of the questionnaire, please don't hesitate to contact with me or with my supervisor. If you will into participate please fill your name and surname in the given blank space and sign.

Name and Surname.....

Sign.....

Date.....

### **Part A.**

**1.Institution:** .....

**2.Age:** 18-22 ( ) 23-29 ( ) 30-37 ( ) 37-49 ( ) 50-59 ( ) 60+ ( )

**3.Gender:** Female ( ) Male ( )

**5.Education Level:**

Diploma ( ) Bachelor ( ) Master ( ) PHD ( )

**6. What is your LMS role? (if you have LMS in your university)**

Learner / Student ( ) Facilitator / Instructor / Professor ( )

Administrator ( ) Other ( )

### **Part B.**

Please answer the following questions according to your university policies toward LMS.

**7. Which Learning Management System Do You Currently Use In Your University?**

Blackboard ( ) Moodle ( ) Desire2Learn ( ) Sakai ( ) Firstclass ( )

We don't use LMS ( ) Other ( )

**8. The majority of the courses I take at my institution are:**

Traditional Face-to-Face Instruction - Little or no online component ( )

Traditional Face-to-Face Instruction - Heavy online component ( )

Hybrid (50% online, 50% face-to-face) ( )

Online Only/Distance Learning ( )

**9. Do you consider yourself computer literate and comfortable with using online applications and software's?**

Yes ( ) No ( )

**Part C.**

10. Please answer the following question by selecting the appropriate level of agreement on the following statements. Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree =

1.

Q	Users attitude towards E-learning technology	Strongly agree	Agree	Neutral	Strongly Disagree	Disagree
1	I feel confident in using computers					
2	I believe that e-learning will give me the opportunity to acquire new knowledge					
3	I believe that convenience is an important feature of e-learning					
4	E-learning increases the quality of learning because it integrates all forms of media					

5	Adopting ICT and E-learning allows for increased student satisfaction					
---	---	--	--	--	--	--

**Part D.**

11. Please answer the following question by selecting the appropriate level of agreement on the following statements. Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1.

Q	Perception of users toward proposed LMS application	Strongly agree	Agree	Neutral	Strongly Disagree	Disagree
1	The language used in proposed system is easy to understand					
2	The links between the pages are clear and easy to follow					
3	Design of the proposed system is user-friendly					
4	I like using proposed system because I am computer Literate					
5	The overall design of the learning management system is welcoming?					



## **Appendix B2: Questionnaire Guide and Consent forms for**

### **Instructors**

Honar Hamah Amen  
M.Sc. Computer and Instructional  
Technology in Teacher Education  
05428752263  
Honar.ict@gmail.com

### **Questionnaire**

Dear Instructors,

The purpose of this questionnaire is to collect data about The **Effectiveness and Application of the Moodle LMS (Learning Management System) According to the Students' and Instructors' Perceptions at the University of Sulaimani, School of Basic Education**

The purpose of research can be listed as follows:

- To reveal the Instructors' perception about the Effectiveness and Application of Learning Management System LMS at university of Sulaimani.
- To assess Instructors' needs and their preferences regarding to use LMS based on Moodle Server at University of Sulaimani.
- To reveal Instructors' perception about the implementation of Proposed LMS.
- To determine the pros and cons of E-learning from Instructors' perception. `

As a researcher, I would appreciate if you could fill in the questionnaire, which will only take 15 minutes. This is completely confidential and will not be used for any other purpose except this research.

Student

Honar Hamah Amen  
M.Sc. Computer and Instructional  
Technology in Teacher Education  
05428752263  
Honar.ict@gmail.com

Supervisor

Assist. Prof. Dr. Bengi Sonyel  
Educational sciences  
03926302390  
bengi.sonyel@emu.edu.tr

## Consent form for Instructors

Dear Instructors,

If you have any inquiry about any aspect of the questionnaire, please don't hesitate to contact with me or with my supervisor. If you will into participate please fill your name and surname in the given blank space and sign.

Name and Surname.....

Sign.....

Date.....

### **Part A.**

**1.Institution:** .....

**2.Age:** 18-22 ( ) 23-29 ( ) 30-37 ( ) 37-49 ( ) 50-59 ( ) 60+ ( )

**3.Gender:** Female ( ) Male ( )

**5.Education Level:**

Diploma ( ) Bachelor ( ) Master ( ) PHD ( )

**6. What is your LMS role? (if you have LMS in your university)**

Learner / Student ( ) Facilitator / Instructor / Professor ( )

Administrator ( ) Other ( )

### **Part B.**

Please answer the following questions according to your university policies toward LMS.

**7. Which Learning Management System Do You Currently Use In Your University?**

Blackboard ( ) Moodle ( ) Desire2Learn ( ) Sakai ( ) Firstclass ( )

We don't use LMS ( ) Other ( )

**8. The majority of the courses I take at my institution are:**

Traditional Face-to-Face Instruction - Little or no online component ( )

Traditional Face-to-Face Instruction - Heavy online component ( )

Hybrid (50% online, 50% face-to-face) ( )

Online Only/Distance Learning ( )

**9. Do you consider yourself computer literate and comfortable with using online applications and software's?**

Yes ( ) No ( )

**Part C.**

10. Please answer the following question by selecting the appropriate level of agreement on the following statements. Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree =

1.

Q	Users attitude towards E-learning technology	Strongly agree	Agree	Neutral	Strongly Disagree	Disagree
1	I feel confident in using computers					
2	I believe that e-learning will give me the opportunity to acquire new knowledge					
3	I believe that convenience is an important feature of e-learning					
4	E-learning increases the quality of learning because it integrates all forms of media					

5	Adopting ICT and E-learning allows for increased student satisfaction					
---	---	--	--	--	--	--

**Part D.**

11. Please answer the following question by selecting the appropriate level of agreement on the following statements. Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree =

1.

Q	Perception of users toward proposed LMS application	Strongly agree	Agree	Neutral	Strongly Disagree	Disagree
1	The language used in proposed system is easy to understand					
2	The links between the pages are clear and easy to follow					
3	Design of the proposed system is user-friendly					
4	I like using proposed system because I am computer Literate					
5	The overall design of the learning management system is welcoming?					

## **Appendix C1: Interview Questions with Instructors consent form**

Honar Hamah Amen  
M.Sc. Computer and Instructional  
Technology in Teacher Education  
05428752263  
[Honar.ict@gmail.com](mailto:Honar.ict@gmail.com)

### **Semi-Structured Interviews with Instructors**

Dear Instructors,

The purpose of this Semi-Structured Interviews is to collect data about “**The Effectiveness and Application of the Moodle LMS (Learning Management System) According to the Students’ and Instructors’ Perceptions at the University of Sulaimani, School of Basic Education**”. This research aims to answer the following as listed:

- To get the Instructors’ perception about the Effectiveness and Application of Learning Management System LMS at university of Sulaimani.
- 
- To assess Instructors’ needs and their preferences regarding to use LMS based on Moodle Server at University of Sulaimani.
- To reveal Instructors’ perception about the implementation of Proposed LMS.
- To determine the pros and cons of E-learning from Instructors’ perception. `

As a researcher, I would appreciate if you participate into this research. This is completely confidential and will not be used for any other purposes.  
Thank you very much for your contributions.

Student

Honar Hamah Amen  
M.Sc. Computer and Instructional  
Technology in Teacher Education  
05428752263

[Honar.ict@gmail.com](mailto:Honar.ict@gmail.com)

Supervisor

Assist.Prof.Dr.Bengi Sonyel  
Educational sciences  
03926302390  
[bengi.sonyel@emu.edu.tr](mailto:bengi.sonyel@emu.edu.tr)

## Consent form for Instructors

If you have any inquiry about any aspect of the interview, please don't hesitate to contact with me or with my supervisor. If you will into participate please fill your name and surname in the given blank space and sign.

Name and Surname.....

Sign.....

Date.....

### Demographic features:

- 1) Could you please introduce yourself? (Gender, Age, position in university and teaching experience)
- 2) How would you describe your computer skill?
- 3) Overall, what are your impressions of the new LMS?
- 4) What is your opinion on the system performance of the new LMS this term?
- 5) Does new LMS platform comply with your requirements as an instructor?
- 6) Do you believe in the usefulness of LMS instruction for Kurdish students?  
Why?
- 7) What are the obstacles to the implementation of LMS instruction in Kurdistan?

## **Appendix C2: Interview Questions with Students consent form**

Honar Hamah Amen  
M.Sc. Computer and Instructional  
Technology in Teacher Education  
05428752263  
[Honar.ict@gmail.com](mailto:Honar.ict@gmail.com)

### **Semi-Structured Interviews with Students**

Dear Students,

The purpose of this Semi-Structured Interviews is to collect data about **“The Effectiveness and Application of the Moodle LMS (Learning Management System) According to the Students’ and Instructors’ Perceptions at the University of Sulaimani, School of Basic Education”**. This research aims to answer the following as listed:

- To get the Students’ perception about the Effectiveness and Application of Learning Management System LMS at university of Sulaimani.
- To assess Students’ needs and their preferences regarding to use LMS based on Moodle Server at University of Sulaimani.
- To reveal Students’ perception about the implementation of Proposed LMS.
- To determine the pros and cons of E-learning from Students’ perception. `

As a researcher, I would appreciate if you participate into this research. This is completely confidential and will not be used for any other purposes.  
Thank you very much for your contributions.

Student  
Honar Hamah Amen  
M.Sc. Computer and Instructional  
Technology in Teacher Education  
05428752263  
[Honar.ict@gmail.com](mailto:Honar.ict@gmail.com)

Supervisor  
Assist.Prof.Dr.Bengi Sonyel  
Educational sciences  
03926302390  
[bengi.sonyel@emu.edu.tr](mailto:bengi.sonyel@emu.edu.tr)

## Consent form for Students

If you have any inquiry about any aspect of the interview, please don't hesitate to contact with me or with my supervisor. If you will into participate please fill your name and surname in the given blank space and sign.

Name and Surname.....

Sign.....

Date.....

### Demographic features:

- 8) Could you please introduce yourself? (Gender, Age, position in university and teaching experience)
- 9) How would you describe your computer skill?
- 10) Overall, what are your impressions of the new LMS?
- 11) What is your opinion on the system performance of the new LMS this term?
- 12) Does new LMS platform comply with your requirements as an instructor?
- 13) Do you believe in the usefulness of LMS instruction for Kurdish students?  
Why?
- 14) What are the obstacles to the implementation of LMS instruction in Kurdistan?



## Appendix D: Instructors Interview Tables

Table 13. Instructor 1 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
In Kurdistan, till now the systems are not related online, and internet services are not so good their quality	Cons imp. learn. system
LMS was a good system in terms of design and easily the user can see their own pages and courses.	Percept T's and S's
The most important thing is putting assignments on time which makes students prepare their homework and send them back on time, so it teach them how to manage time.	T's and S's need for E-learning

Table 14. Instructor 2 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
In Kurdistan the system is paperback, so the By using LMS the papers will not be lost and students do not have more complain about it, students can see the results Online.	Pros imp. learn. system
LMS is so useful in terms of being keep in touch between instructors and learners, and in terms of implementation and practicing is user-friendly.	Percept T's and S's
LMS can be used as an easy step in Practicing Exams in the laboratory.	T's and S's need for E-learning

Table 15. Instructor 3 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
this system has been applied just for computer department it should be applied for all other departments	Cons imp. learn. system
in terms of colour and design is attractive and in practicing and implementation is clear and easy	Percept T's and S's

LMS fulfills the requirements of instructors and sometimes there are lots to tell your students but you cannot so you can announce it on the portal	T's and S's need for E-learning
---	---------------------------------

Table 16. Instructor 4 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
LMS encourages the students to be active all the time, and try to find almost all information by themselves. In other words, it makes students-centered learning.	Pros imp. learn. system
overall I can say that LMS has a great and effective design and it's colourful, and its user-friendly and flexible	Percept T's and S's
LMS fulfills the requirements of instructors, till now all the instructors use paper for assignments and exams, but on Moodle, the students can use whenever they need online.	T's and S's need for E-learning

Table 17. Instructor 5 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
Nowadays every student use internet a lot, and they spent a lot of time on internet, so this system would make everything really easy for connecting instructors to their students.	Pros imp. learn. system
LMS is a new idea for University of Sulaimani, and I think it would be really great if we can use it.	Percept T's and S's
In Kurdistan, we can apply this kind of systems, but we may face some problems, some of our students live in dormitory they do not have access to the internet and sometimes such kind of systems are not totally secure.	T's and S's need for E-learning

## Appendix E: Students Interview Tables

Table 18. Student 1 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
By using LMS and implementation was easy because the language which was used was clear and easy, and what is interesting for me is we can use this as a website for publishing academic news and announcement	Pros imp. learn. system
LMS or e-learning is quite new and from my point of view this system is easy to use only with some clicks you can log in to your account and see all courses.	Percept T's and S's
LMS is very important for Kurdish learners as other parts of the world we have to blend technology with learning. For our computer department, this program is new.	T's and S's need for E-learning

Table 19. Student 2 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
In implementation stage it was so responsive, the interesting point for me was including Kurdish language because most of students are now knowledgeable in English language.	Pros imp. learn. system
It is an advanced LMS system, includes all requirements of students.	Percept T's and S's
It is not modern now to use USB flash for instructors to give us the lectures and printed out because it is wasting time and energy.	T's and S's need for E-learning

Table 20. Student 3 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
I checked on my mobile phone it was very responsive.	Pros imp. learn. system
LMS is a new system, from designing section the users feel relaxed to use it.	Percept T's and S's

International universities use this system or its equivalence. So as a Kurdish learner I think it is necessary to use such programs.	T's and S's need for E-learning
--	---------------------------------

Table 21. Student 4 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
In implementation and practicing LMS was interesting because this kind of system makes instructors and learners to keep in touch all the time.	Pros imp. learn. system
As a designing part, it was good and was clear and simple for using.	Percept T's and S's
By this system, the learner can get all sources of the lecture, and it is opposite the old fashion which I mean face to face.	T's and S's need for E-learning

Table 22. Student 5 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
In practicing it was easy, specifically the links between pages the instructions were clear	Pros imp. learn. system
Generally, it was a positive and new system for me because it is the first time to use it.	Percept T's and S's
LMS is useful. Because till now we did not have any electronic systems for the purpose of learning.	T's and S's need for E-learning

Table 23. Student 6 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
Most Students do not have experience in LMS and how it works, that is why sometimes it becomes a barrier.	Cons imp. learn. system
The system was interesting and did not use such system before	Percept T's and S's

LMS introduce us to new technologies and studying in 21st century, thus, means studying information and communication technology in learning.	T's and S's need for E-learning
---	---------------------------------

Table 24. Student 7 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
Sometimes in terms of security, it may face a problem because those who work in hacking are not working ethical so it cause some threats.	Cons imp. learn. system
Generally, LMS was user-friendly and in terms of graphics and colours it was suitable	Percept T's and S's
I believe LMS has a major role in progressing educating system, specifically for Kurdish learners because it is almost ten years we use Internet.	T's and S's need for E-learning

Table 25. Student 8 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
In terms of implementation and practicing helps learners to get sources whenever they want and LMS can save time and cost for students.	Pros imp. learn. system
Generally, it is the 1st time to use Moodle and try it. To some extent it was interesting.	Percept T's and S's
As it is clear in Kurdish universities, it is new to use e-learning.	T's and S's need for E-learning

Table 26. Student 9 Interview

<b>Abstracted quotations from the interviews</b>	<b>Codes derived from the research questions</b>
One of the good points of LMS was uploading and sharing videos by instructors beside of the texts.	Pros imp. learn. system

Generally, it was a great Moodle. In terms of the designing graphic was simple and the most interesting point is using Kurdish language.	Percept T's and S's
I think LMS is important for all Kurdish universities because we use online rarely.	T's and S's need for E-learning

## Appendix F: Request Letter for the Application of the Research

07/08/2016

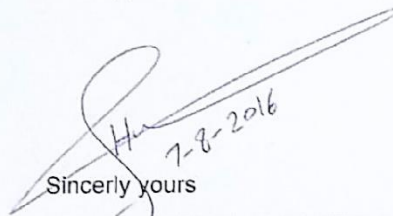
To: The Head of the Computer Science Department  
At School of Basic Education, University of Sulaimani.  
Assist. lecturer **Sherko Hassan Abdulrahman**

From: **Honar Omer Hamah Amen**  
Master Student at EMU University, ICTE Department, North Cyprus

Subject: Request a permission for the application of research

I would like to inform you that due to my research studies I need to apply questionnaire and semi-structured interviews with students' and instructors' at University of Sulaimani, School of Basic Education, Computer Science Department in (Summer 2016). The questionnaire and semi-structured interviews are attached for your consideration. If you consider my application at your earliest convenience.

I will appreciate it.



Sincerely yours

HONAR OMER HAMAH AMEN

009647702212421

00905428752263

Email: [Honar.ict@gmail.com](mailto:Honar.ict@gmail.com)

## Appendix G: Confirmation Letter for the Application of the Research.

University of Sulaimani  
Faculty of Physical and Basic Education  
School of Basic Education  
Computer Science Department



To whom it may concern

Subject: Confirmation Letter

This is to certify that ( Honar Omer Hamah Amen ) is a Master Student at Eastern Mediterranean University, Nother Cyprus. Asked about getting permission to implement his master's project to our department, Faculty of Physical and Basic Education, School of Basic Education, Computer Science Department, and gathering data form our both instructors and students in (Summer 2016).

For more information, please do not hesitate to contact me.

A blue circular official stamp from the University of Sulaimani, Faculty of Physical and Basic Education, School of Basic Education, Computer Science Department, dated 2010-2011. The stamp is signed with a blue ink signature and the date 10-8-2016.

10-8-2016  
Yours Sincerely,

Sherko Hassan Abdulrahman

Head of Computer Science Department

School of Basic Education

University of Sulaimani

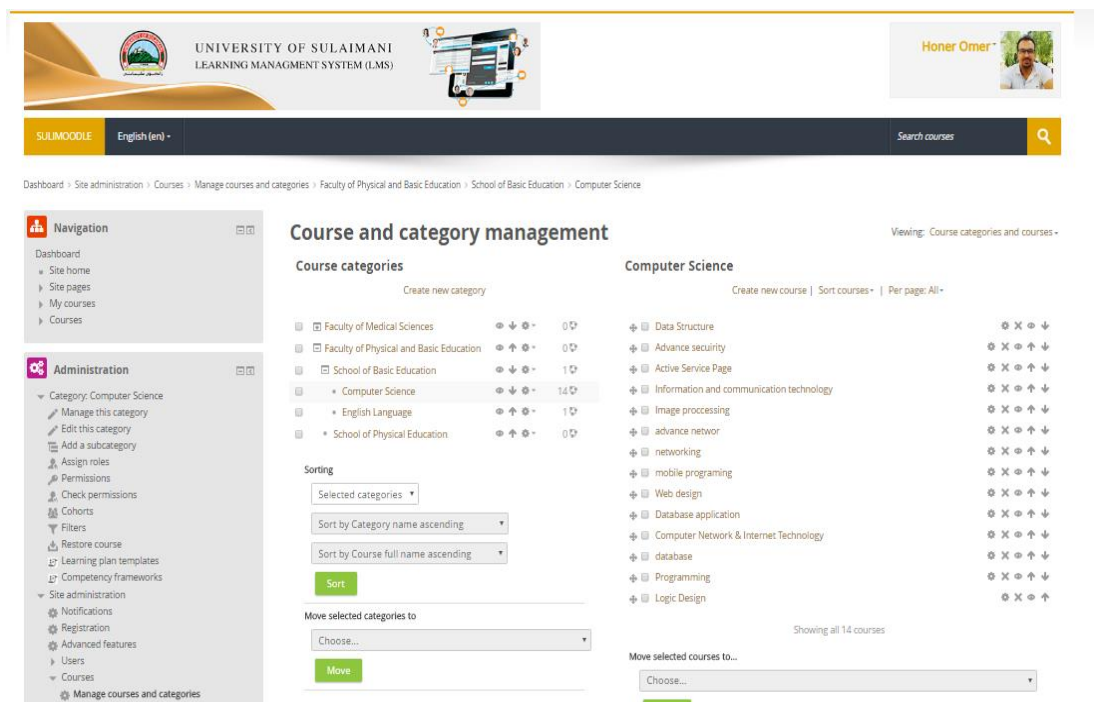
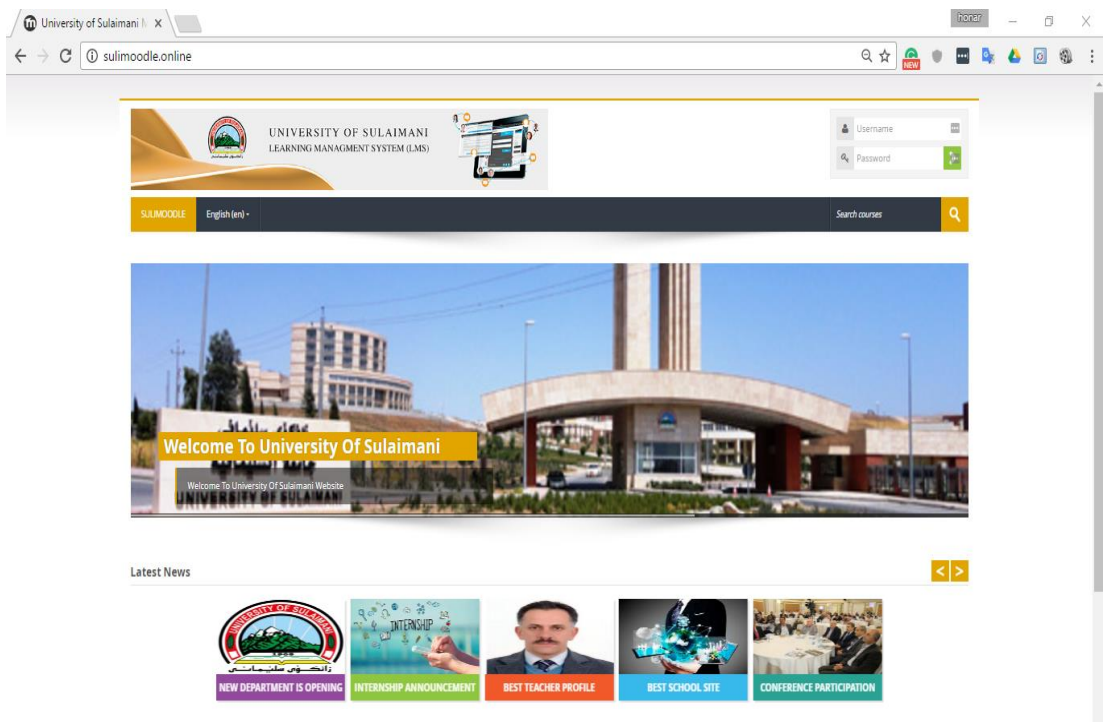
E-mail: [sherko.abdulrahman@univsul.edu.iq](mailto:sherko.abdulrahman@univsul.edu.iq)

Mobile: +964(0)7701520694

10-AUGUST-2016 WEDNESDAY | Confirmation Letter



# Appendix H: LMS Main Page and Courses



# Appendix I: Admin, Instructor, Student Screen-shoots

This screenshot shows the Moodle LMS dashboard for user Honer Omer. The header includes the University of Sulaimani logo and the text 'UNIVERSITY OF SULAIMANI LEARNING MANAGEMENT SYSTEM (LMS)'. The user's name 'Honer Omer' and profile picture are in the top right. Below the header, there is a navigation bar with 'SULIMOODLE' and 'English (en)'. A search bar is located on the right. The main dashboard area is titled 'Dashboard' and includes a 'Customise this page' button. The dashboard is divided into several sections:
 

- Navigation:** A sidebar menu with 'Dashboard', 'Site home', 'Site pages', 'My courses', 'Faculty of Physical and Basic Education', 'Online users', and 'Administration'.
- Course overview:** A central section for the 'networking' course, showing 'You have assignments that need attention' and 'Database application'.
- Latest badges:** A section stating 'You have no badges to display'.
- Latest announcements:** A section with 'Add a new topic...' and '(No news has been posted yet)'.
- Online users:** A section showing '(last 5 minutes)' and 'Honer Omer'.
- Administration:** A section with 'Site administration'.

This screenshot shows the Moodle LMS course page for user Ako Mohammad. The header is identical to the previous screenshot. The user's name 'Ako Mohammad' and profile picture are in the top right. Below the header, there is a navigation bar with 'SULIMOODLE' and 'English (en)'. A search bar is located on the right. The main dashboard area is titled 'Dashboard' and includes a 'Customise this page' button. The breadcrumb trail is 'Dashboard > Faculty of Physical and Basic Education > School of Basic Education > Computer Science > ADNET'. The dashboard is divided into several sections:
 

- Navigation:** A sidebar menu with 'Dashboard', 'Site home', 'Site pages', 'Current course', 'ADNET', 'Participants', 'Badges', 'General', '30 September - 6 October', '7 October - 13 October', '14 October - 20 October', '21 October - 27 October', '28 October - 3 November', '4 November - 10 November', '11 November - 17 November', and '18 November - 24 November'.
- Announcements:** A section with 'chapter 1 networkin', 'chapter 1 pdf book', and 'video ccnp'.
- Search forums:** A section with a search bar and a 'Go' button.
- Latest announcements:** A section with 'Add a new topic...', 'Tkaya agadarbn', '29 Sep, 05:01 Ako Mohammad', 'any', '29 Sep, 04:59 Ako Mohammad', and 'Older topics ...'.
- Upcoming events:** A section with a calendar icon.
- Course overview:** A central section showing course dates: '30 September - 6 October', '7 October - 13 October', and '14 October - 20 October', along with 'assignment 1'.

This screenshot shows the Moodle LMS course page for user Awat Abdul. The header is identical to the previous screenshots. The user's name 'Awat Abdul' and profile picture are in the top right. Below the header, there is a navigation bar with 'SULIMOODLE' and 'English (en)'. A search bar is located on the right. The main dashboard area is titled 'Dashboard' and includes a 'Customise this page' button. The dashboard is divided into several sections:
 

- Navigation:** A sidebar menu with 'Dashboard', 'Site home', 'Site pages', 'Current course', 'ADNET', 'Participants', 'Badges', 'General', '30 September - 6 October', '7 October - 13 October', '14 October - 20 October', '21 October - 27 October', '28 October - 3 November', '4 November - 10 November', '11 November - 17 November', and '18 November - 24 November'.
- Online users:** A section showing '(last 5 minutes)' and 'Awat Abdul', 'Ako Mohammad', and 'Honer Omer'.
- Messages:** A section with 'No messages waiting' and 'Messages'.
- Course overview:** A central section showing course topics: 'Networking Fundamentals', 'Data Structure', 'Advance security', and 'Active Service Page'.
- Latest announcements:** A section with 'Add a new topic...' and '(No news has been posted yet)'.

# Appendix J: The Users' List which was Used in the Proposed LMS

UNIVERSITY OF SULAIMANI  
LEARNING MANAGEMENT SYSTEM (LMS)

SULIMOODLE English (en) Search courses

Dashboard > Site administration > Users > Accounts > Browse list of users

### 116 Users

Page: 1 2 3 4 (Next)

New filter

User full name: contains  Add filter

Show more...

First name / Surname	Email address	City/town	Country	Last access	Edit
Ako Mohammad	ako.mohammad@univsul.edu.iq		Iraq	6 days 4 hours	X @
Aras Ibrahim	135000@univsul.edu.iq		Iraq	146 days 23 hours	X @
arazoo salih	arazoo@yahoo.com	sulaimani		Never	X @
Ari Sabir	ari.sabir@univsul.edu.iq		Iraq	16 days 5 hours	X @
Ari Mohamad	13500@univsul.edu.iq		Iraq	Never	X @
Arman Ali	135002@univsul.edu.iq		Iraq	3 days 10 hours	X @
ary omer	ari.omer@yahoo.com	sulaimani		3 days 10 hours	X @
avan xasraw	avan@yahoo.com	sulaimani		16 days 5 hours	X @
Awat Abdul	135003@univsul.edu.iq		Iraq	6 days 4 hours	X @
azad hassan	azad.hasan@gmail.com	sulaimani	Iraq	16 days 5 hours	X @
azhee wria	azhee.wria@gmail.com	sulaimani	Iraq	60 days 4 hours	X @
azhen xalid	azhen1990@gmail.com	sulaimani		16 days 5 hours	X @
Azhee Wria muhamad	azhee.muhamad@univsul.edu.iq		Iraq	3 days 10 hours	X @
bafren haidar	bafren@gmail.com	sulaimani		Never	X @
bahman mohamad	nahman@gmail.com	sulaimani		16 days 5 hours	X @
bahroz marf	bahroz.marf@gmail.com	sulaimani		16 days 5 hours	X @
baida xalil	baida@yahoo.com	sulaimani		16 days 5 hours	X @
banan abdulamad	banan@yahoo.com	sulaimani		16 days 5 hours	X @
Barham Omer	135004@univsul.edu.iq		Iraq	Never	X @
barzan star	barzan@yahoo.com	sulaimani		16 days 5 hours	X @
basst mohamad	basst@yahoo.com	sulaimani		16 days 5 hours	X @
baxan salih	baxan@gmail.com	sulaimani		16 days 5 hours	X @
baxyar ahmad	baxyar@yahoo.com	sulaimani		16 days 5 hours	X @
bilal mohamad	bilal.mo@yahoo.com	sulaimani		16 days 5 hours	X @
bilal mohamah	bilal2@yahoo.com	sulaimani		16 days 5 hours	X @

Navigation: Dashboard, Site home, Site pages, My courses

Administration: Site administration, Notifications, Registration, Advanced features, Users, Accounts, Browse list of users, Bulk user actions, Add a new user

Admin bookmarks: Bookmark this page

## Appendix K: Uploaded Videos Tutorials to YouTube

The image shows a YouTube video player interface. The video being watched is titled "how to use LMS (moodle)part1". The video content is a screen recording of a desktop environment. At the top of the desktop, the "Camtasia 2" application menu is visible, including options like "File", "Edit", "Text", "View", "Share", "Window", and "Help". The desktop background features a scenic mountain landscape with a prominent red rock formation. Several desktop icons are visible, including folders for "Documents", "Music", "Videos", and "Xilisoft HD Video Converter". A taskbar at the bottom of the desktop shows various application icons and the system clock, which reads "Wed 9:17 PM".

Below the video player, there are controls for the video, including a progress bar showing "0:17 / 11:53", and buttons for "Analytics" and "Video Manager".

To the right of the video player, the "Up next" section is visible, featuring two recommended videos:

- "how to use LMS (moodle)part2" by Honar omer, with 27 views and a duration of 8:56.
- "How to use LMS(moodle)part3" by Honar omer, with 21 views and a duration of 3:10.

The YouTube logo and search bar are visible at the top of the page, with the search term "how to use lms part1" entered. The browser address bar shows the URL "https://www.youtube.com/watch?v=urEi7ALPwic&t=16s".