Investigating the Pedagogical Impact of E-Learning Management Systems (System Design and User Interface): An Empirical Study of Two Third Level University Institutions

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Thesis presented to the University of Limerick for the Award of the Degree of Doctor of Philosophy

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Dedication

To my Mother and father, thank you for your love, patience, and support.

To my brothers and sisters, thank you for keeping me in your prayers.
ABSTRACT

The main problem this study addresses involves a lack of knowledge about precisely how much of an impact the design and user interface of learning management systems (LMSs) like Blackboard or Sulis may have on the pedagogical performance of staff members at two Third Level Institutions regarding teaching methods used. The independent variables in the study include the system design and user interface of the system while the dependent variable is the teaching methods used by instructors. The study aims to answer the following questions:

➢ How do lecturers critically view the LMS system design?
➢ How do lecturers critically view the LMS system user interface?
➢ How does the current LMS help lecturers to employ a variety of teaching methods?

Interviews are the most popular way to collect information about human-computer interactions. The researcher believed that interviews would not provide enough information to answer the research question and used Mixed Methodology Research techniques. The researcher conducted interviews with 15 teachers from the two targeted Institutions. The study also received 248 teacher responses to the questionnaires distributed online.

Using the data gathered from interviews and surveys, the study obtained enough evidence to properly discuss and analyse the strengths and weaknesses of the system design and user interface of each LMS on the teaching methods used. The findings show that LMS designs can greatly impact upon the effectiveness of the system. The data collected by the study provide significant evidence of how system differences can impact and leave a lasting influence upon the user experience. The final conclusions argue that the Blackboard system used at one Institutions – The University of Najran – contributed effectively to the education process of both learning and teaching, while the Sulis system – used at The University of Limerick – was significantly less effective in this domain.
Publication

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I would like to thank my supervisor, Dr. Liam Murray, for his support and advice throughout my journey. I would also like to thank all the lecturers at the University of Limerick and Najran University who participated in the study. Without their participation, this study would not have been possible. Finally, I would like to thank the Saudi Arabian Ministry of Education for their financial support and for providing me with this great opportunity.
Declaration

I hereby declare that the dissertation, submitted in fulfilment of the requirements for the degree of Doctorate of Philosophy, represents my own work.

Signed _________________________

Name Yasser Aljuhney

May 2017
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List of Abbreviated terms

ABET: Accreditation Board for Engineering and Technology
ALM: Application Lifecycle Management
CAI: Computer-Assisted Instruction
CMS: Course Management Systems
EU: European Union
HCI: Human-Computer Interaction
HEA: Higher Education Authority, Ireland
ICT: Information Communication Technology
KASP: King Abdullah Scholarship Program
LMS: Learning management systems
MMR: Mixed Methods Research
NCeL: national centre for E-Learning and Distance Education, Saudi Arabia
NU: Najran University
OSS: Open-Source Software
OECD: Organization for Economic Cooperation and Development
TAM: Technology Acceptance Model
UL: University of Limerick
VLE: Virtual Learning Environment
VLM: Virtual Learning Management
Chapter 1.0: Preface

1.1 Introduction
The many changes in science and technology are rapidly altering the way the world operates. There is currently a tremendous technological revolution in information, electronics, computers, and communications. These changes are reflected in areas such as the educational field which has undergone significant development, especially in universities which are currently updating their physical and technological infrastructures.

Because education and the teaching process have both changed greatly due to informatics and the scientific and technological revolution, it is important for educational professionals and curriculum makers to adapt and incorporate these methods appropriately. Education methods must reflect the latest scientific, educational, and psychological research results to ensure that students are being taught in the most effective manner. Ultimately, the changes to education will have an impact on future generations as current students become national and global leaders.

To improve the productivity of education, some researchers have tried to merge technology and education. The results of this merger include a growth in the methods that are available in the educational environment. Concepts such as distance learning have emerged from this union and provide educational opportunities to those who are not able to physically be present at a school (Allan, 2007, Bonk and Graham, 2012, Graham and Dziuban, 2008, Vaughan, 2007, Garrison, 2011, Moore et al., 2011).

Due to developments in the field of educational management systems, a set of Electronic Educational Systems have been created to manage digital content. The systems allow for the automatic exchange of knowledge between teachers and students. In addition, the accessibility of online resources and current technology allows E-Learning to be easily attainable and a viable option for many students around the world (Chanchary and Islam, 2011).

Recently, the way that educational concepts are communicated has evolved and has helped to greatly transform the education and educational training arena. As the world moves toward a 24/7, globalized culture, the increase in E-Learning methods has become more important. E-Learning can occur at any time because it does not require a live instructor and can incorporate some combination of blended, online, computer-assisted, and virtual learning (Allan, 2007).

The information technology revolution improved the following three main types of technology: computer, software, and communication or data transfer. E-Learning developed from the advancements in these areas and is an integration of the various technologies. The way that E-Learning integrated each area makes it more than just a sum of the technologies; it is a vast interactive ability in scientific production in terms of both quantity and quality (Saidi 2005). There are many different names for E-Learning including web-based learning, remote
learning, or computer-assisted learning. There are two main modes for E-Learning, remote learning and computer-assisted instruction (Ruiz et al., 2006)

According to the Organization for Economic Cooperation and Development (OECD), Saudi Arabia has one of the highest birth rates in the world. Furthermore, more than 50% of Saudi population is under 20 years old. This statistic means that Saudi universities are currently facing or will soon be facing significant challenges regarding enrolment. The Ministry of Education has to find a solution for this problem quickly. Since new buildings and infrastructure cannot be built as quickly as needed, E-Learning offers a viable solution for the enrolment issue (Chanchary and Islam, 2011).

Saudi Arabia has been able to stay relatively current with E-Learning and distance education capabilities. Most Saudi universities, both public and private, have centres which provide and manage their own electronic education programs. In addition, the Ministry of Education has opened a national centre for E-Learning and Distance Education (NCeL) with an ambitious “vision” that includes the “establishment of a holistic educational system based on the best applications and techniques of e-Learning, as well as the achievement of progress and excellence in both learning and teaching” (Ministry of Education Saudi Arabia, 2015)

Some Saudi universities have created programs that differ from the traditional E-Learning management system. Certain universities have decided to use more than one system to manage the electronic education environment. For example, King Saud University (KSU) uses the Blackboard system along with Bridges and Moodle. As will be reported in Chapter 4, our study reveals that the Blackboard system is used more than any other system in Saudi universities.

In November 2006, Najran University (NU) opened in Najran, Saudi Arabia. This university is one of the newest universities in Saudi Arabia and the Middle East. The university is home to the College of Medicine, College of Computer Science & Information Systems, College of Dentistry, College of Pharmacy, College of Applied Medical Science, College of Nursing, College of Engineering, College of Languages and Translation, College of Education, College of Administrative Science, College of Science and Arts, College of Sharia & Fundamentals of Religion, College of Community, and College of Science and Arts-Sharoura. There are 10 deanships located at the Najran campus which include the deanships for E-Learning, student affairs, preparatory year, postgraduate studies, scientific research, community service and continuing education, human resources, library affairs, and development and quality. NU provides distance learning, face-to-face learning, and technology-based learning.

Ireland has successfully incorporated technology into its educational and training fields. The majority of Irish Third Level Institutions – including universities and Institutes of Technology – use E-Learning management systems (LMSs), virtual learning management systems (VLMs), or course management systems (CMSs) which contribute to the teaching and learning processes. Some Irish universities built their own LMS while others purchased an LMS from a company such as Blackboard or use an open-source system such as Moodle.
One of the reasons that Irish universities worked to adopt E-Learning was in response to the educational aims of the European Union (EU) which wanted to explore the possibilities of E-Learning and encouraged countries to attain higher educational goals. In its Lisbon objectives, released in the year 2000, the EU stated that it wanted to “make Europe the most competitive and dynamic knowledge-based economy in the world, capable of sustained economic growth with more and better jobs and great social cohesion” (MacKeogh & Fox, 2009, p.148). Later in 2008, the European Council suggested that member states establish E-Learning and distance learning programs to encourage a culture of lifelong learning (MacKeogh & Fox, 2008).

The University of Limerick (UL) is considered Ireland’s first college since the country was established in 1922. The University was initially founded in 1972 under the name of “National Institute for Higher Education, Limerick”. In 1989, UL became official. Currently, UL has 17,000 students attending its 6 colleges. UL employs the Sulis system to help facilitate the teaching and learning processes (University of Limerick, 2017).

1.2 Study Problem

The main problem addressed within this study is the lack of knowledge regarding the impact of the design and user interface of LMSs like Blackboard or Sulis on pedagogical performance of staff members at NU and UL in terms of teaching methods used. By way of clarification, it should be noted that Sulis is the localised UL version of the LMS produced by the Sakai Project. The independent variables in the study are the system design and user interface while the dependent variable is the teaching methods used.

The recorded impact of both Blackboard and Sulis was, at the time of writing this thesis, still an unknown variable and provided the reason for initiating and conducting the study. Figure No. (1) below, created by this researcher shows the role that LMSs play in the universities and how their presence impacts upon the teaching methods used by staff members.

![Diagram of Learning Management Systems](image-url)
1.3 Study objectives
The primary goal of the research is to investigate the impact of the design and user interface of the E-Learning Management System (Blackboard and Sulis) on the pedagogical performance of academic staff regarding teaching methods used in NU and the UL in 2015.

The following sub-goals were established:

- Investigate the way that Blackboard design and user interface impact on the teaching methods used at NU
- Investigate the way that Sulis design and user interface impact on the teaching methods used at UL
- Investigate the way that past experience with LMSs impacts on the way that instructors view Sulis or Blackboard.

1.4 Study questions
To achieve the essential goal of this research, the study attempts to answer the following questions:

- How do lecturers critically view the LMS system design?
- How do lecturers critically view the LMS system user interface?
- How does the current LMS help lecturers employ a variety of teaching methods?

To answer these questions, the study evaluated two different LMSs, namely Blackboard and Sulis, from the lecturers’ point of view. The research addresses the following issues:

- How do lecturers at NU critically view the Blackboard system design?
- How do lecturers at NU critically view the Blackboard system user interface?
- How does the Blackboard system help lecturers at NU employ a variety of teaching methods?
- How do lecturers at UL critically view the Sulis system design?
- How do lecturers at UL critically view the Sulis system user interface?
- How does the Sulis system help lecturers at UL employ a variety of teaching methods?

1.5 Study hypothesis
To answer the major questions of this study, the research will examine the following assumptions:

- LMS design has an impact on the pedagogical performance of academic staff in terms of teaching methods.
- LMS user interface has an impact on the pedagogical performance of academic staff in terms of teaching methods.
1.5.1 Sub-hypotheses

- *Blackboard* design has an impact on the pedagogical performance of academic staff on the teaching methods used at NU.
- *Blackboard* user interface has an impact on the pedagogical performance of academic staff on the teaching methods used at NU.
- *Sulis* design has an impact on the pedagogical performance of academic staff on the teaching methods used at the UL.
- *Sulis* user interface has an impact on the pedagogical performance of academic staff on the teaching methods used at the UL.

1.6 Study Importance

There is significant research that has been performed about the impact of LMS in Saudi Arabia and the world as a whole. These studies have been designed to analyse the primary reasons for the significant gap between computer usage in educational establishments in the Arab world when compared to the computer usage in educational establishments in other developed countries. Compared to other developed countries, the Arab world uses computers very little in a classroom setting. The Saudi government has launched a domestic plan that is designed to integrate information and communication technologies into the curriculum of public education and higher education. Recently, there has been an increase in the number of studies which aim to determine the main impacts, advantages, and drawbacks of the use of information and communication technologies in E-Learning programs in Saudi Arabian universities (Naif Jabli, 2013).

This researcher will attempt to summarise the importance of the study by determining the following factors:

- Determine the relationship between the E-Learning management system and the pedagogical performance of academic staff in terms of teaching methods used
- Explore the current utilization of E-Learning management systems in educational institutions (universities and colleges) in the Republic of Ireland (Chapter 4)
- Explore the current utilization of E-Learning management systems in educational institutions (universities and colleges) in the Kingdom of Saudi Arabia (Chapter 4)
- Explain the positive and negative aspects of the current E-Learning management systems at NU and UL.
- Offer recommendations to help Saudi and Irish universities engage more effectively with their respective E-Learning management systems
- Provide results that can encourage further research regarding the relationship between E-Learning management system software and the end user (students, academic staff, and administration)
- Help developers build an E-Learning management system based on end-user needs.
1.7 Procedural Definitions
Based on the experience of prior research studies, the researchers will try to provide a precise
definition for many of the main variables in the study.

1.7.1 E-Learning system
An E-Learning system combines information and communication technologies with
traditional education methods to improve the learning process. E-Learning can be divided
into the following three phases: information, integrative, and transformer. The information
phase includes providing pertinent information for the program such as books, modules, and
other resources. The integrative phase includes higher dynamic interactions, including direct
interactions between the students and teachers. The final phase, the transformer phase, puts
resources into an online learning society that will allow students to learn at any time and from
any part of the world (Naif Jabli, 2013).

1.7.2 System Design
The design phase includes the outputs of the analysis phase. System design refers to the
arrangement of parts, components, and subsystems in an integrated structure that is intended
to contribute to the achievement of common goals. A successful system design will normally
be one in which all users are able to use the content effectively. For this reason, the designers
of the system need to be aware of who is using the system and what functions will or will not
be necessary for the system to be successful (Shackel and Richardson, 1991). According to
technology-based education system will pass through the following five stages shown in the
Figure No. (2) below.

![Figure 2. Phases of the Design and Development Process](image-url)
1.7.3 User Interface
The user interface refers to some of the smaller details of the system. These details could include colour, the distance between lines, the use of or lack of white space on each page, readability, icons, gradients, font types, and accuracy. The user interface is what allows a person to effectively interact with a software application or hardware device. A useful user interface is one which allows the user to interact with the software in a reasonable and efficient way while a poorly constructed user interface will be one which is not intuitive and does not allow a user to have an efficient interaction (Techterms, 2015).

The user interface design should focus on the expectations of users and ensure that a user is able to perform necessary tasks in an efficient manner. The user interface should be a combination of interaction design, information architecture, and visual design (Garrett, 2010, Morville, 2004). The figure No. (3) shows how a user interface should operate.

1.7.4 Teaching methods
Teaching methods are a branch of science that examines how to connect students to knowledge in an effective way. In addition, teaching methods help to develop the abilities and skills of students in a balanced manner (Nasser, 2009).

As stated in *Advanced Teaching Method for the Technology Classroom*, by Petrina (2006), it is important to be aware of the difference between teaching about technology and using technology to provide an educational experience. Teachers who convey information about
technology have to make sure that the content is correct while students who learn using technology must first learn the proper processes and skills to operate the technology correctly.

The revolution of technology has changed the way that teachers and students operate. Teaching only using the direct instruction method is no longer enough. As a result of the changes in education, Blackboard is one of the educational programs which provide many different options for teachers including electronic quizzes and debate boards (Adcock, 2008). There are many benefits that can be derived from integrating technology like Blackboard into education. Using technology in the classroom may make a teacher’s job easier and allow the education system to be more relevant to students by incorporating familiar elements (Adcock, 2008).

1.8 Personal Statement of Interest
The idea to conduct this research came from several sources. The researcher had a bachelor’s degree in Computer Science and an MBA. This educational background shows the researcher’s interest in analysing and evaluating software systems from different angles, including the way that users interact with systems. The researcher used to work as a senior admission specialist and also worked to develop a student information system (SIS) at Yanbu Industrial College (YIC) located in the western part of Saudi Arabia. As a result of this experience, the researcher was critical of putative educational information technology and noticed that not all LMS users at YIC used the system efficiently. This observation made the researcher contemplate the role of the LMS and why different users were eager to use the system while others were not.

The researcher also worked as a system developer for the Ministry of Social Affairs in Riyadh, the capital of Saudi Arabia. In this position, the researcher and his team were responsible for developing an information system for the Ministry to allow an old system to be moved to a new system. The old system’s user interface operated in black and white and had very limited functions. The process of moving from using the old system to the new one was not easy and was full of challenges. During this process, the researcher learned about issues that related to new systems including the difficulties associated with training users to use a new system and the obstacles that the trainers and the users faced. The researcher wanted to determine if other software would be able to meet the needs of users effectively with relatively limited or no training process.

1.9 Thesis Organization
The thesis will contain seven chapters as outlined below:

The first chapter of the study contains background information on this issue from an administrative and research standpoint. The study objectives and sub-objectives that will guide the research are presented along with the hypothesis. In addition, the importance of the study and the definitions for the study variables are explained.
The second chapter contains the theoretical framework and the literature review. The chapter is divided into three sections. The first section contains information including the concept of E-Learning and the design of E-Learning management systems. The section also provides information about why LMSs have been adopted by educational organizations and the benefits and drawbacks of using these types of systems as well as a description of open- and closed-source LMSs. The second section explores the culture of teaching and the teaching methods used, including online teaching, face-to-face teaching, and blended learning. For each method, the chapter explored the benefits and drawbacks. The final section of this chapter explored different studies which related to the research in direct and relevant ways.

The third chapter provides details about the methodology that was followed during the actual conduct of the study. It also explored the higher education systems present in Ireland and Saudi Arabia overall, especially at UL and NU.

The fourth chapter discussed the scope of using an LMS in Irish and Saudi Arabian educational institutions. The chapter also discussed the most widely used learning management systems used at Saudi and Irish universities.

The fifth chapter illustrates the survey results and analyses the data collected. The chapter begins by providing the demographic results for both fields and then examining the research hypotheses. The study hypotheses are examined with a study model which relies on the personal characteristics of the study participants.

The sixth chapter provides an analysis and discussion of the data collected from the interview stage. The results of this study were then connected with the results of other studies and previous chapters.

The last chapter of the thesis provides some answers for the study issues and recommendations for future research. The chapter also provides additional insights and reflections from the researcher about the study issues as a whole.
Chapter 2.0: Theoretical Framework and Literature Review

2.1 Introduction

This study was designed to achieve the objectives explained in Chapter 1 entitled “Investigating the Pedagogical Impact of E-Learning Management Systems (System Design and User Interface): An Empirical Study of Two Third Level University Institutions.” The study accounted for and incorporated previous studies that analysed similar issues. According to Atilano (2015), a literature review could provide some or all of the following benefits:

- Provide information about the theoretical framework to form the foundation for this research
- Provide background including prior research that relates to this study’s main objective(s)
- Provide the researcher with relevant information compiled by experts in the field
- Identify topics which need further investigation
- Help the researcher select the most suitable methods to conduct the study
- Connect the results of this study to previous studies.

This chapter contains multiple sections covering a variety of topics. The first section provides information about E-Learning and the researcher discusses the various definitions for this term along with how E-Learning was created and how LMSs work to enhance the E-Learning experience. In addition, the research provides a brief overview of the most popular LMSs and the market for E-Learning systems.

In the second section of the chapter, the researcher discusses the concept of LMSs in detail and provides information about the history of LMSs, the most accepted definitions for LMSs, and the functions and features of these systems.

In the third section of the chapter, LMS design is investigated in detail including a discussion of the individual stages of software construction and the relationships between each stage. Collectively, this process is known as the “software development life.”

The reasons that educational organizations choose to use LMSs are discussed in the fourth section of the chapter. The research relies on the study conducted by Welsh et al. (2003) which examined five reasons why educational institutions adopt an E-Learning management system to solve educational challenges.

In the fifth section of the chapter, the study highlights the benefits and challenges of using LMSs in educational institutes. This section utilizes the viewpoints of many researchers. At the end of the chapter, the researcher provides a list of the most important functions that any LMS should possess, according to various specialists in this domain.

In the sixth section of the chapter, the study discusses two different types of LMSs, namely open-source and commercial systems. The chapter uses the Moodle system as an example of an open-source system and the Blackboard system as an example of a commercial system.
The researcher discusses many elements of each type of system including the services provided and system features. In addition, benefits and drawbacks are also analysed.

In the seventh section of the chapter, the study discusses the dependent variable of the study, namely the teaching methods used by teachers. The study surveyed many topics including the culture of teaching and teaching methods. In addition, teaching methods such as face-to-face teaching, online education, and blended learning are defined and analysed.

Finally, the study discusses several articles which excogitate the issue of integrating information communication technology (ICT) into the education process. These studies worked to examine and evaluate the way that lectures viewed LMS in their teaching. All of the above represent an attempt to situate and provide deeper answers to this researcher’s main research questions.

2.2 E-Learning

The European E-Learning action plan (2001) defined E-Learning as: “the use of new multimedia technologies and the internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration.” (Cited by Holmes and Gardner, 2006, P.14) E-Learning occurs entirely in virtual education environments, as part of a blend of virtual learning environments, or in face-to-face situations. Education systems that blend teaching strategies should have an E-Learning system to manage the teaching process. When face-to-face and online learning are combined, it is called “blended learning.” This type of learning offers an excellent option for both teachers and students to enrich their informative experiences (Holmes and Gardner, 2006, Al-Harbi, 2011).

E-Learning is part of a learning revolution that can be considered as significant as the invention of the chalkboard or even the alphabet. Computers and other communication technologies have helped to remove distance and time barriers. Knowledge can now be obtained or sent anywhere around the world at any time (Horton, 2000).

E-Learning is a significant development that has resulted from the integration of computers, communication technology, and information to create new ways to teach and learn. In addition, E-Learning has become a way to provide direct and indirect types of training. This method can allow teachers to have more positive experiences, enrich the learning process, and convey information more effectively. The current results of E-Learning have shown that it has helped the education process and increased the quality of education provided (Hussein, 2011).

Enhancements and developments in technology have allowed new learning processes to be developed to properly utilize these changes. Lecturers can use E-Learning to stay informed about new developments in their fields and can also use this technology to communicate with other experts in their field (Hussein, 2011).
LMS is a great innovation in the E-Learning arena. These systems are the result of an urgent need to regulate E-Learning content. An LMS monitors the progress of student learning using E-Learning processes. There are many LMS programs that work with the education process. Despite the many programs available, there are only five major companies that provide the software. These five companies are Moodle, Edmodo, Blackboard, SumTotal, and SkillSoft. In 2014, E-Learning industry investment amounted to an estimated $56.2 billion. At the time of writing this thesis, the available figures showed that this figure was expected to double in 2015 as many companies begin to use education systems to instruct and train employees during working hours. Some estimates suggest that, by 2019, half of all classes will be held online (eLearning, 2015).

As stated in a Decebo report entitled, “E-Learning market trends and forecast 2014-2016,” the E-Learning management system has grown significantly in the last year. The global E-Learning market was approximately $35.6 billion in 2011. The market is predicted to grow to $51.5 billion by 2016, with the highest growth rate occurring in Asia followed by Europe, Africa, and South America.

2.2.1 The concept of E-Learning management systems

Terms such as LMS, computer-assisted instruction (CAI), and learning using the Internet have re-defined many educational organisations. The most prevalent and accepted definition for E-Learning is the transfer of course content to students using the Internet or other electronic methods (McCall, 2003).

Some researchers believe that E-Learning has its roots in CAI. According to Zinn, CAI involves using a computer to illustrate drills, exercises, and subject matter to students and engage learners in a dialogue about core educational values (Zinn, 2000). This method of teaching was first seen in 1955 as part of a program to solve educational issues. Researchers provided many definitions for CAI such as focusing on communication and technology (Aparicio and Bacao, 2013).

Watson and Watson conducted research about LMSs and believe that there is confusion between computer education and LMS terms. The term LMS is currently used to describe many educational computer applications. The LMS should be used to create the framework that handles all aspects of the learning process including creating an infrastructure that delivers courses, controls class registration, supports administrative tasks, and provides tracking and reporting on training issues (Watson and Watson, 2007).

According to Paulsen, an LMS is a learning platform and a concept that is used for a broad range of systems that supply access to online services for students, lecturers, administrators, and employees. A well-crafted LMS should possess access control, the ability to upload and edit of content, communication tools, and regulation of student groups. Two examples of well-known LMSs are Moodle and Blackboard (Paulsen, 2002).

Kaplan-Leierson, (2002) defined LMS as a software that has the ability to automate training events. The program registers teachers, students, and administrators and provides a way to manage courses while recording important dates for system users. An LMS is able to manage
According to Paulsen, LMS software can be used to supply businesses, companies, and teaching institutions with the ability to manage online training and learning process for their staff. By enabling harmonious learning experiences, LMS can help an organization meet its strategic goals (Paulsen, 2002).

As reported by Ellis (2009), the basic description for LMS is a software application that has the ability to automate administration and run training events. The system should also be able to perform the following tasks:

- automate education system
- involve self-guided services
- collect and carry learning content rapidly
- conduct a training initiative on a scalable online platform
- support portability and standards
- personalise the content as well as enable knowledge reuse.

LMS software and technology require, of course, the Internet. Researchers have worked to create applications to help the education process by using LMS to plan, implement, and evaluate various parts of the learning process in a way that helps a teacher create and deliver content to students while also monitoring and evaluating student performance. In addition, an LMS possesses capabilities such as allowing students to discuss topics online, something which can assist and enhance the educational process. Lecturers can use an LMS to store educational materials and exams as well as create online environments for student portfolios, in various physical locations.

2.2.2 E-Learning management systems design

E-Learning software provides a learning alternative that can aid or hurt learning depending on the system design (Sears and Jacko, 2009). Software developers must focus on design and development to create effective E-Learning software. Design refers to the finished software product while development refers to the building of the software. The design involves the organization of the software while development involves the way that the software is made useable, accessible, and easy to use. Oftentimes, an effective design requires judgement, negotiation, trade-offs, and creativity (Horton, 2006).

Software applications usually pass through the six stages of the software lifecycle. Each phase creates deliverables that are used by the next stage of the lifecycle. The Application Lifecycle Management (ALM) of an application contains the following stages (Practitest.com, 2015): Requirements and Analysis, Design, Testing, Deployment, Implementation, Maintenance.

Requirements and analysis phase: developers collect commercial requirements during this phase. Typically, the focus of this phase is on those who will be the administrators and
stakeholders. Developers should communicate with executives, stakeholders, and end-users to find answers for the following key issues:

- Who will use the system?
- What is the input for the system?
- What data would be output from the system?

These questions are later discussed in Chapters 5 and 6 dealing with the main analyses of the thesis.

In their book, *Human-Computer Interaction Development Process*, Sears and Jacko (2009) state that no user interface can possibly suit all users since users have various preferences and demands based on their personal characteristics and prior experiences with technology. For example, an expert user may need a flexible user interface that is powerful and efficient, while a casual user may want an easier, less flexible interface to allow for easier system navigation (Sears and Jacko, 2009). As a result, software must contain tradeoffs to make it suitable for as many users as possible.

Based on the varying demands, system designers must know the general characteristics of those who will be using the system to create the most effective system. By knowing the needs and requirements of the users, system designers will be able to create a system that will be effective and easy to use (Sears and Jacko, 2009).

The figure No. (4) shows how the developers should think before start to build any system:

![Figure 4. “Triangulating information about users, tasks, and user environments” (Sears and Jacko, 2009, P.35)](image)

**Design:** In this level, the system and software design laid out in the previous phase are often rearranged. System design helps to identify hardware and system requirements and also helps to define the overall system design. The design specifications created in this stage will function as the input for the next level.

In the design stage, the process moves from the “what” questions of the analysis stage to the “how” questions and the model shifts to create a material design and a detailed description of what is needed to solve central issues such as system input, output, databases, and application forms. In addition, the programming language and the hardware and software platform in
which the new system will operate occurs at this time. Developers must work with many factors in this level including the type(s) of data structure, control processes, limitations of the system and how these limitations impact current tasks, user interface, documentation, preparation, use of the system, data backups, and employment requirements. Some of the tools and techniques used to define system design include Flowchart, Data Flow Diagram, Decision Table, and Decision Tree (Schooling, 2015).

Implementation and coding: System design involves creating and implementing a workable system. This stage is also referred to as the programming level since it is when the program writer converts program specifications into actual code. System design is a primary stage where defined procedures are transformed into control specifications using computer language. The program writer organizes the data movements and controls the input process in a system. The written code should lower the testing and maintenance exertion of the application. Most programs will use languages such as C, C++, and Java for coding depending on the type of application that is being developed (Schooling, 2015).

Testing phase: Once the coding stage has been completed, the program is tested to ensure that the product functions properly and fully addresses the demands of the client. During this stage, unit, integration, system, and acceptance testing are performed. The tests are often conducted in two steps, a program test and a system test. In the program test, the developers check all functions individually to remove errors from the program. When the errors have been removed and all functions have been tested, the program testing stage is complete. The system test involves having the developers run the program with actual data to ensure that the program is working effectively (Schooling, 2015).

Implementation: Once testing has been completed and the employer has accepted the system that has been created, the implementation stage begins. Implementation is the part of a project during which the model is turned into a usable program. This stage involves the following major steps:

- Decide on and install hardware and software
- Transformation
- User teaching
- Documentation.

The hardware and the related software necessary for running the system properly are made fully operational. Transformations of this sort are some of the most dangerous and expensive actions in the system development life cycle. The data from the old system should convert to operate in the new system.

During this stage, all the programs of the LMS are installed on a worker’s computer. Once the software is loaded, training begins. Some of the core topics of the training include the following:

- How to run the package
- How to input data
• How to print reports.

Once an employee has been properly trained on the new system, work that used to be done on different systems, including on paper, must be moved into the new system (Schooling, 2015).

Maintenance: Maintenance is essential to remove errors in the system that are uncovered when the system is used in a traditional working environment. Maintenance and review must be conducted to ensure that future updates are installed and implemented properly. Maintenance involves the following items:

• Knowing the abilities of the system
• Identifying necessary changes or extra requirements
• Studying the performance of the system.

If a primary change to a system is requested, a new project may be established to enact the change. The new project will continue through each life cycle stage (Schooling, 2015).

The figure No. (5) shows how the various stages of the software development cycle interact with one another:

![Software Development Life Cycle](image)

2.2.3 The reasons for using E-Learning management systems

From discussing system design, we now move to the various reasons for universities and companies to adopt an E-Learning management system. These reasons include:

- Providing consistent education and training for students around the world

When educational organizations or companies have multiple campuses, they need to deliver courses at the same time and in the same way. An E-Learning system allows information to
be uniform and learners will not be at an advantage or disadvantage because of the skill of the individual(s) conducting the training (Welsh et al., 2003).

- Increased student convenience

Technology provides students with a way to access resources at any time. For example, when users need to take a course about interview skills, they can take this course in a short time and at a time when it will be most beneficial (Welsh et al., 2003).

- Decreased information overload

The world has gone through a revolution in the way information is transmitted and all organizations should adopt some type of software to handle the way that information is spread to others. An E-Learning system is a good solution for universities to handle the significant amount of student and staff data (Welsh et al., 2003).

- Learner tracking

Another reason for universities to use an E-Learning system is that the system can automatically monitor student progress and provide an easy access point for course materials. The program’s ability to automate these processes allows staff time and school resources to be devoted elsewhere (Welsh et al., 2003).

- Reduce expenses

Organizations constantly try to reduce expenses. Many companies resort to an E-Learning management system as a method to reduce training costs for employees. Using this system, trainings can be given virtually instead of a company having to pay travel expenses and classroom fees for in-person trainers (Welsh et al., 2003).

2.2.4 The benefits and challenges of E-Learning management systems

E-Learning is one of the most modern methods used in teaching today and students and staff should work to understand its capabilities. E-Learning systems are based on the scientific method and require continuous communication between all parties involved in the educational process. These systems can increase student effort and activity and provide opportunities for learners to be more aware of what is currently happening in courses and what will occur in the course’s future. E-Learning has given users the ability to think more critically and not rely heavily on memorization. However, educational institutions and staff members must keep up with E-Learning technology to ensure that they are using the most effective software and teaching methods. Bury (2012) summarizes the benefits of an E-Learning management system in the following bullet points:

- Everything in one place

LMS can be considered “good” if it has many tools and services that allow users to build and manage their account. The LMS should also provide a wide range of services for users such
as administering tests and exams, hosting presentations and brainstorming sessions, and working as a file storage and submission system.

- Organised courses

A good LMS should allow end users to create courses with certain events, evaluation systems, and other classroom related activities. The system must be organized, accessible, and easy to follow. Course content should be easily updated and users should be able to navigate the system and access necessary project materials with few problems, if any. An example of how a system can be organized is placing past work and future assignments in one place so a student can easily reference past and current materials when working on current assignments.

- Distribution of power

The LMS must have explicit control over what user groups and single users are and are not allowed to do. Authority can be given to teachers and staff to edit events and resources, but this same authority should not be given to users and user groups. Certain student accounts may be given the power to manage and lead groups of students in some activities using the E-Learning management system. Parents can also be given the right to view their children’s grades and attendance, but may not be allowed to view other parts of the system that pertain to their child’s work.

- Record maintenance and management

The LMS should have an environment containing centralized records. Teachers should be allowed to view each student’s profile and see student activities and learning progress. In addition, students should be able to view their most current grades and progress on activities and projects.

- Communication channels

The LMS should provide communication channels for users at all levels. For example, these channels will allow teachers to send messages or make announcements to groups of students. In addition, the administration can use these channels to communicate with teachers and students simultaneously. Increased and improved communication will benefit all involved in the educational process.

- Administrative tools

The LMS can decrease work for teachers, students, and administrators. For example, when students take tests or exams, they can receive their results using the system far faster than if they had to wait to receive their grade on the physical paper test. In this way, a student who took a test on Friday could receive a grade over the weekend instead of waiting until the following week. The posting of grades on the system can be useful for administrators who gather statistics regarding the staff, students, or both. The data can be easily gathered in an electronic format and manipulated as needed (Bury, 2012).
According to Nagy (2005), using E-Learning can include some or all of the following benefits:

- Self-paced learning process
- Reduced travel expenses
- Interactive multimedia learning environment
- Learner focused study and more active participation
- Easier content ruling, simpler information management, and readiness of updates
- Ability to link content with other educational resources
- Use of spread libraries using an inexpensive global delivery
- Combined evaluation and testing facilities
- Range of measuring methods of learning achievement.

Bouhnik and Marcus (2006) believe that E-Learning has four benefits:

- Freedom to decide when online lessons will occur
- Asking questions without typical classroom limitations
- Access to online course materials at any time
- Ability to learn without time constraints.

Some researchers including Capper (2001), Liaw (2008) believe that an E-Learning system can provide educational institutes with some or all of the following benefits:

- Students and teachers can access the system at any time
- Students and teachers do not have to meet in person for lectures
- Students can work with one another through electronic rooms
- Teachers can share their work immediately through the E-Learning system.

When implementing an E-Learning system, an educational institution must be aware of the following challenges (Johnson, 2003):

- Using the Internet for learning can provide a barrier for learners who have very limited or no technical skills
- Not all students have computers and a university may not be able to provide computers for all students
- Not all students can afford to purchase a computer for learning.

However, the use of new technology can be intimidating, confusing, and frustrating compared to traditional, face-to-face learning methods. E-Learning places more responsibility on students and demands self-discipline since students are given great freedom about when and where they can attend classes (Cantoni et al., 2004).

As mentioned in the study entitled, “Interaction in Distance E-Learning Courses,” Bouhnik and Marcus (2006) state that students who use an E-Learning system may be dissatisfied with their educational experience for the following reasons (also reported later by Liaw, 2008):

- The electronic education environment does not encourage students to learn effectively
The electronic education environment requests a high level of self-discipline from students. The electronic education environment eliminates the traditional learning atmosphere. The electronic education environment minimizes the level of interaction between teachers and students.

There are many LMS platforms, each with its own advantages and disadvantages. However, more effective systems should have the following capabilities, based on a summative reading of the most salient and relevant literature:

- Registering: inputting and managing student data
- Scheduling: developing and programming courses
- Delivering: providing content to students
- Tracking: following-up on student performance and issuing reports as needed
- Contacting: communication between students and staff through online chats, discussion forums, e-mail, and file sharing
- Testing: performing means testing for students and providing assessments.

Again, these capabilities are later investigated in Chapters 5 and 6.

2.2.5 Types of E-Learning management systems

E-Learning management systems are divided into two main types, open source and closed source. Within these two types, the LMSs can be classified as either a commercial learning management system or a private learning management system.

The following sections discuss the open- and closed-source systems and use one system from each classification as an example. The Sakai system is a well-known open source system and the Blackboard system is an example of a commercial system. Sakai and Blackboard have unique systems, markets, benefits, drawbacks, and challenges.

2.2.5.1 Open source learning management systems

Open-source LMSs are free to use. Only 13% of open-source users use the LMS to make money. Additionally, 70% to 78% of users are using systems for social principles (Ibrahim et al., 2012). Typically, systems can be developed and modified, as needed, by users. Several systems including Moodle, Sakai, and Author are examples of user-modified open-source systems that have become very successful.

Open-source software (OSS) does not have any licensing costs and is supplied with its own computer program source code. In universities, the discussion about using open-source software for teaching involves CMS and LMS. The primary OSS LMS product is Moodle, a program that was originally established in Australia and has a current global user base that contains approximately 30,000 registered sites and 1 million courses. The program can be downloaded by anyone which indicates that the user base will continue to grow. Claroline is another popular OSS that supports 35 languages and is used in 80 countries (Rooij, 2012).
The OSS is becoming an essential part of the software landscape and its use is increasing much faster than the use of other proprietary software. Much of the popularity and growth is due to the ability to access, use, change, share, and reform the OSS source code (Itmazi et al., 2005).

An OSS is a good solution for universities for the following reasons:

- Developers can customize software to meet university needs.
- The cost of obtaining the software is very low.
- Many large organizations are adopting OSS because it provides good solutions. For example, NASA has converted from Oracle to My SQL to meet its needs (Itmazi et al., 2005).

**Sakai System**

*Sakai* is a type of OSS. *Sakai* can be downloaded, installed, used, modified, and distributed by anyone for free. *Sakai* is available at [www.Sakaiproject.org](http://www.Sakaiproject.org) and includes various activities and resources such as forums, testing, and tasks.

Based on the *Sakai* official website, the system is an “Online collaboration and learning environment.” According to Martin et al. (2008) *Sakai* system is usually referred to as a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE).

Services provided by the *Sakai* system include the following:

Different universities will use *Sakai* system variations since the system is open and can be developed or modified as needed. The UL system calls its variation *Sulis*, the system which is being examined in this research. The services that all *Sakai* system variations provide for educational activities include tests, exams, homework, and course content review; publishing and creating educational resources including text files, downloadable audio, video files, and photographs; and communication and collaboration with staff and students using discussions, chats, messages, Wikis, and blogs. The system also provides site management capabilities for files, reports, and statistics and user management capabilities that include downloading, editing, and uploading files.

**Sakai system features:**

Based on the official website, *Sakai* has features that allow it to be used on a very large scale by a wide range of organizations ranging from schools to companies. Recently, the *Sakai* system has been updated to “*Sakai 11.*” In this new version, the system has been completely redesigned to modernize the system. The new system enhancement includes system tools that allow feedback from users to be applied quickly and easily. Users can also read the helpdesk with a single click. The system has many tools that have functions which include: Announcements, Assignments, Calendar, Chat, Helpdesk, Course Sites, Email, Email Archives, Forums, Gradebook, lessons, Messages, News, Podcasts, Polls, Profile, Resources,
Text Editor, Roster, Search, Sign-Up, Site Info, Statistics, Syllabus, Test and Quizzes, Web Content, and Wikis.

Sakai system statistics and history:

The Sakai system is one of the best-known LMSs in the world. It is used in various countries by more than 4 million students, 1.25 million of whom are in the United States. The system is available in more than 20 languages in 350 worldwide institutions and has been published by four American universities (University of Michigan, MIT, Indiana University and Stanford University) in 2004. The primary goal for the system was to “Improve teaching, learning and research by providing a compelling alternative to proprietary learning system; an innovative platform for learning and collaboration that is produced by and for the higher education community.” Any organization could use the system either on its own or with the help of a commercial partner if the organization is unable to deploy the system without outside help (Sakai, 2017).

2.2.5.2 Learning management systems versus commercial systems

Unlike OSS LMS which are free to use and develop, commercial systems are systems owned by a for-profit company. Customers are not allowed to use these systems without a license from a company and are not allowed to develop the system independently. In addition, Blackboard is one of the largest suppliers of systems that help to manage the educational process and therefore due to its popularity and very common features, it will be described in detail below.

Blackboard system

Blackboard is one of the principal commercial LMS or CMS software packages used by American and European universities (Beatty and Ulasewicz, 2006). The Blackboard system is used to manage the education or training of individuals in companies or educational institutions. The system is capable of monitoring students and tracking educational process efficiency in an educational enterprise while offering excellent opportunities for students to communicate with the course instructor(s) outside of the traditional classroom learning environment. The Blackboard system offers a variety of tools that allows learners to interact with course content. It also provides faculty members with tools that allow them to build dynamic and interactive subject matter. The system also allows the instructor to build integrated electronic decisions, develop notes, outline material, and manage everyday tasks in a simple and effective manner. System users can see quarterly tasks, examinations, and examination results immediately. In addition, the system allows users to communicate with one another through pre-established communication channels. Finally, Blackboard can be linked with other E-Learning systems which allows organizations to add Blackboard to their networks without having to completely eliminate prior systems.

According to Al-Badowi (2010), Blackboard is a web-based course management system that allows students and faculty to take part in online classes and use online materials and activities to supplement face-to-face education. The Blackboard system allows instructors to provide students with course materials and discussion topics. The use of Blackboard in a
course will vary depending on the instructor, but the instructors may supplement an on-campus class with materials provided on Blackboard or could conduct the class completely online. The system is compatible with many applications such as Microsoft’s PowerPoint and Word, Captivate, and other video, audio, or animation programs that can help enhance teaching and promote learning.

Benefits of using the Blackboard system:

Colleges and students could greatly benefit from a system like Blackboard as it offers services and capabilities such as enhanced communication between system users, the ability to track the educational process for individuals and groups, and faster feedback (Bradford et al., 2007). Blackboard’s web-based tools allow users to communicate, develop material, manage, track statistics, and create assessments for students. These capabilities allow instructors to spend less time performing administrative duties and more time creating new content (Jefferies et al., 2003).

One of the greatest advantages of the Blackboard system is that it allows users to access the system at any time and from any device. As a result, students, teachers, and administrators have greater flexibility. Students are able to download or upload materials at any time and faculty can update the system at their convenience. In 2004, students at Duke University identified easy access to Blackboard as the number one useful function provided by the system (Bradford et al., 2007). The following are some of the features of the Blackboard system:

- Faster feedback: According to Bradford et al. (2007), Blackboard provides two types of feedback to students: (A) faculty-initiated feedback and (B) automated feedback. For example, Blackboard has a function called “Test Manager” for quizzes and exams. This feature allows students to take tests or quizzes online and see their results immediately. As a result, students and teachers save a lot of time since there is immediate feedback and grading is automated. In addition, the system allows students to submit online feedback about their teachers which allows staff to receive and implement feedback very quickly.

- Better communication: Traditional education is based on face-to-face communication between students and teachers. Innovations such as the Blackboard system contain many features that allow students and teachers to communicate in different ways. For example, Blackboard allows teachers to make announcements, create virtual brainstorm rooms, establish virtual classrooms, and engage in email correspondence. Each feature has its own benefits and drawbacks, but, if used properly, can make the education process much more efficient and effective (Bradford et al., 2007).

- Tracking education process: Most LMSs have functions that allow them to monitor student or teacher progress. Blackboard has a feature that allows students to see their progress starting from their first day on campus to graduation. This feature also allows teachers and administrators to gather statistics about students (Bradford et al., 2007).
Drawbacks of the *Blackboard* system:

All systems have benefits and drawbacks. When looking at the *Blackboard* system, it is important to account for the fact that the system was created with profit as the main priority. According to Bradford *et al.* (2007), cost is one of the major drawbacks. *Blackboard* licenses cost between $200,000 and $400,000 per year. This cost can be a significant part of an educational institute’s total budget (Olsen, 2001). It should be noted here that it is extremely difficult to obtain a more recent costing for *Blackboard*. For this PhD, the researcher conducted a survey about the most used E-Learning system in Saudi Arabia and Ireland found that most small- and medium-sized institutes currently open-source systems and this may be due to the high cost of commercial systems. In addition, *Blackboard* is one of the harder systems to work with and use. Research that looked at 730 teachers and students in the University of Wisconsin system (USA) found that the course management system provided by *Blackboard* system is hard to learn due to being “time-consuming and inflexible.” Moreover, the research also found that most students were not proficient with this type of technology and a separate research study about the *Blackboard* evaluation system at Hampton University found that students who returned to school later in life to continue their graduate studies stated that the Internet is a new learning environment. Many of these students were older and, compared with the younger generation, had little experience with technology. This fact makes working with *Blackboard* more difficult (Servonsky *et al.*, 2005, Bradford *et al.*, 2007).

Recently, *Blackboard* has adopted an open-source system, a huge change in the company’s strategy. One of the reasons for the shift is that *Blackboard* wants to avoid system inefficiencies. According to Chris Thomas, chief strategist for Intel, the “reasons to mobilize to open-source technology in which it is noted that there are significant costs and technological impact of wasting bandwidth with portal-based system like *Blackboard*, particularly when materials must be downloaded in order to view them” (Culatta, 2004, Bradford *et al.*, 2007, P.306).

Thomas’ statement may provide some of the reasons why many colleges and universities around the world have not adopted *Blackboard* as a platform for their education system. When the cost of *Blackboard* is combined with the availability of free, open-source management systems, there is a substantial reason for educational institutions to choose a cheaper LMS alternative.

### 2.3 LMS tools

Both systems in the study provided users with tools that could manage and support the education process. The systems which have the ability to control the most class activities have tools that perform various tasks including chats, emails, announcements, messages, podcasts, and text editors which are considered fundamental to any LMS as they help teachers and students to communicate easier and faster than traditional methods. The availability of these tools allows online or blended learning to occur. Both systems allow teachers to publish course materials for students to view and download, if they choose.
Students can also upload their work into the system and teachers can access it using various tools. The statistics tool allows teachers to view student activity in the system and provide users with important information. Each user has a workspace in the system which is different from the workspace provided to other users. For example, teachers could see tasks and subjects that students have been assigned.

Lonn and Teasley (2009) performed a study about the perceived benefits that can be gained from using an LMS to support teaching and learning. The study examined the Sakai system at Midwestern University from 2006 to 2007. The study found that most LMS users believed that IT played a positive role in teaching and learning. Teachers felt that IT helped to improve communication and this feature was the greatest advantage provided by IT. When questions were asked about the perceived benefits of LMS tools, teachers considered tools such as the ability to send announcements or assignments as more available than interactive tools such as the chat feature.

As discussed in this chapter, the main role of the LMS improves teaching and learning. The study found that the design of the system was more important than the tools that the system offered to the users, even if the tools were very useful. As presented in Chapter 5 and Chapter 6, the survey data provided significant results about these issues.

This researcher’s study also looks at the pedagogical impact of LMSs, therefore we need to explore and describe the teaching cultures in which the LMSs operate.

2.4 Culture of teaching

According to Wiske (2001), only teachers can shape the impact of the technology in the education process. Without their skills and effort, the role of technology would be limited and have a very small, insignificant impact on teaching culture. Wiske also believed that technology can be used to improve education, but should only be implemented after examining and fully understanding the components that contribute to the culture of teaching.

Reforming education to fit the needs of the modern world involves creating a new definition for what “good” teaching means and what tools are needed to aid the learning process. To accomplish these goals, help is required from all parties, especially teachers since these are the individuals who must embrace the new definition of “good” teaching (Ertmer and Ottenbreit-Leftwich, 2010).

Wiske (2001, P.70) believed that if technology plays a significant role in changing the culture of teaching, it needs to meet the following three conditions:

- “The technology must afford significant education advantage”
- “The technology must be readily affordable, networked, and portable”
- “Technology alone does not change school practice”

Fu (2013) conducted a critical literature view about the usage of ICT in the education field and found that there are several factors which influence the use of technology in the learning
process. These factors could be divided into internal and external factors and are connected to one another and to the ICT usage level (see also, Tezci, 2011).

Articles written by Tezci (2011), Chen (2008), Sang et al. (2011), Al-Ruz and Khasawneh (2011), and Lin et al. (2012) found that there are external factors that could impact the way that ICT is part of the teaching process. These factors include the availability and accessibility of technology, the time that teachers are allowed to plan for each class, curriculum, institutional culture, and technical and administrative support. The lack of access to technology and support as well as the limited time allotted for course planning were common factors which hindered teachers. For Fu (2013) internal factors refer to ICT experience, knowledge, and experience or skill using technology.

Another factor which plays a significant role in the success of integrating technology into the classroom is “school culture.” This term refers to the school’s vision, plans, values, and goals that all staff share (Chai et al., 2009).

The researcher believes that all of these factors are connected and influence one another when working to employ technology in education. The variety of technology that could aid teachers today makes the process of choosing the proper program for an educational institute challenging and complicated.

An increasing number of students have had access to higher education in recent decades. This trend has created a dilemma for many universities in terms of how they must work with the new learning styles and needs while expanding enrolment to meet increased student demand (Lai, 2011). The differences in the way that students learn are a significant challenge and impact full-time, part-time, and distance learners. These groups all have unique expectations which require an institution to have a flexible teaching program that caters to all learning styles (Lai, 2011).

The role of E-Learning and ICT in higher education is still limited and has not led to the change that many researchers expected. For example, Ehlers and Schneckenberg (2010, P.6-7) wrote the following:

“The promises of ICT and E-Learning have not effectively innovated universities. Little progress has been made, and resources invested into ICT adoption are frequently spent without a clear definition of objectives and change strategies. The future of learning is taking place now – and yet courses in universities are stalled in a pedagogical model of transmitting knowledge rather than constructing solutions, following educational approaches that have been put into place centuries ago and still largely dominate teaching and learning in academia.”

Guri-Rosenblit (2006) believe that the gap between the promise and the reality of using ICT in higher education is significant. Universities face many barriers when working to involve ICT in the curricula due to institutional culture or teacher beliefs. Lai (2011, P.1268) believes that many lecturers in higher education believe that the use of ICT should “increase the teaching efficiency, without any need for fundamental change in pedagogies.” Education companies which build software for use in educational institutions may be focusing more on
their own economic benefits and interests instead of pedagogical principles. This very important point in later discussed in the final concluding Chapter. Selwyn (2007) suggested that looking at the social, political, and economic ramifications of using technology in the teaching process would help to provide valuable information about how technology can best be implemented.

More controversially Benini, (2015), Prensky (2001, P.2) has written that “Our students have change radically. Today’s students are no longer the people our educational system was designed to teach.” Prensky named the new generation of students “digital natives” as they grew up with technology and use technology tools often. The author states that a typical college student would spend approximately 5,000 hours receiving formal education, but would spend far more time, approximately 10,000 hours, playing video games. He noticed that many people spend a lot of time using technology and Rideout et al. (2010) wrote that Americans aged 8 to 18 years old spend 4.5 hours per day using technology including mobile phones and computers to engage in activities such as text messaging, visiting social networking sites, watching videos, and playing games. Lai (2011) believes that using technology can impact people based on their educational experience and socialization. As a result, higher education has the responsibility of creating a new culture of teaching that is effective for the new generation of “digital natives” and preparing these individuals to be “lifelong learners” by effectively integrating technology into the learning process. The shift in the culture of teaching should adopt a system that students can benefit from greatly (Lai, 2011).

2.5 National culture influence on teaching practice
The term culture is complicated and could refer to various factors. According to Hofstede (2003, P.9), culture is defined as “the collective programming of the human mind that distinguishes the members of one human group or category of people from another.”

According to Jung (2014), to determine the impact of the culture on learners, three layers of culture that influence behaviour and perception must be identified. First, there is a level of national culture or, as Jung calls it, “culture traditions.” This layer includes several components including language, traditions, and beliefs. These components have the ability to distinguish a specific society and make that particular society unique when compared to another society. In addition, Jung believes that each culture has a “subculture” and the members of the subculture typically have their own traits that differentiate them from others. Third, there are certain “culture universals” which are present in all societies and are shared by humanity. These issues are general categories such as age, gender, kinship, language, and family organization.

Jung believed that knowing the layer that applied to and influenced the learner is a challenge that is often difficult to understand. Prensky (2001) claimed that the new generation is “digital natives” and are familiar with computers. Assuming Prensky’s claims are true for most societies around the world would be an error. It should not be assumed that most societies are ready for e-Learning.
Swierczek and Bechter (2010) conducted a study about the role of culture on E-Learning behaviours. The authors found that there is a significant difference between the learners based on cultural differences. For example, European learners are generally more individualistic and achievement oriented than Asian learners. European learners are considered as a group that will emphasize learning. The study divided Asian students into two groups, the south group and the east group. The east group included people from countries including China, Japan, and Vietnam while the south group included those from India. The study found that both groups showed high power distance, but the south group also showed achievement orientation. The study observed that the east group was more dynamic in E-Learning than other groups. Ibid suggests that an LMS should be flexible to suit most cultures and that LMS users have different expectations for the educational leaders based on their cultural background and upbringing.

Ireland and Saudi Arabia are two countries with completely different cultures. According to Hofstede’s culture dimensions. Irish culture is considered a low power distance with high individualism whereas Saudi culture involves collectivism and high power distance. Individuals who are from a high power distance cultural background tend to be more willing to accept the principles associated with uneven power distribution (Hofstede, 2017). Downey et al. (2005) performed a study and found “the relationship between the National culture and the Usability of an E-Learning system.” Twenty-four people from 13 countries in Asia, Africa, Europe, and North America participated in his study. The diversity of the participants allowed the study to determine how national culture impacted E-Learning usability. The study relied on Hofstede’s cultural dimensions and Nielsen’s usability attributes. The results are detailed below:

- “individuals from cultures with high power distance indicators rated the overall usability higher than individuals from low power distance indicators”
- “individuals from collectivist societies found the system more satisfying to use versus those from individualistic societies”

Downey et al. (2005) stated that it is important to know that users from the same culture do not necessarily have the same opinions about E-Learning and that some users would have opinions that are completely opposed to the rest of their culture.

The researcher believes that cultural dimensions and elements are very broad and that each dimension could impact the way that teachers evaluate an LMS. The researcher emphasizes the most important issues which relate to national culture and evaluation of the LMS in Chapters 6. In this chapter, the researcher will show the significant results uncovered from survey data.

2.6 Teaching methods

Teaching methods have changed and have provided teachers with the option to deliver educational content to students in a variety of ways. In addition, online teaching and blended
learning have become accepted methods of teaching that can accompany traditional face-to-face teaching.

2.6.1 Face-to-face teaching

Traditional ways of learning are based on teachers and students meeting at a certain time in a certain place so that teachers can deliver educational content and begin a discussion with students about the content. The majority of schools and universities still use this method for teaching. This type of learning provides many advantages for those in the educational process. According to Kathy (2006), face-to-face interaction incorporates facial expressions, body language, tone of voice, and eye contact. The brain has been programmed to want and expect these inputs. In contrast, electronic communications cannot be considered direct communication because it is coming through a medium. In this way, direct face-to-face communication has been shown to be more influential than initially thought (Tayebi and Puteh, 2013).

However, traditional learning also has its drawbacks. Azizan (2010, P.457) wrote an article entitled “Blended learning in Higher Education Institution in Malaysia” which details some of the drawbacks of traditional learning. The following list provides some of the weaknesses that he identified:

- “The conversation can move along more and more time”.
- “Limited access to the source of learning”.
- “Information is delivered only to the learners in the classroom in the meantime”.
- “Lack of teaching and learning equipment to support the group discussion”.
- “The discussion must be held in the physical classroom”.
- “Instructor needs to put more attention and responsibility to monitor the teaching and learning progress”

2.6.2 Online teaching

There are many definitions for online courses and other forms of distance learning. One of these definitions is provided by Berge and Collins (1995) and defines online learning as any class that offers all curriculum to students using the Internet. This definition outlines a way in which students and teachers can communicate and exchange information only using the Internet. Harasim (1995) provides a more precise definition for online courses as he writes that online courses are any class that offers the entire curriculum in an online environment which allows students to participate and learn regardless of geographic location, time, or place. Using Harasim’s definition, online education has advanced to the point where students do not need to attend traditional classes and physically meet with teachers (Richardson and Swan, 2003). Based on a summative reading of the most salient and relevant literature, online learning can provide some or all of the following benefits:

- Students and teachers have access to courses materials at all times
- Students and teachers can access courses and course material from any location
- Students have the freedom to work at their own pace
- All students, regardless of age, sex, or disability, are treated equally
Students and teachers have the ability to store and review materials more without the same limitations as having traditional educational materials such as textbooks.

Online courses provide a forum where students and teachers can be more active and involved with a class.

Despite the many benefits, online courses have some disadvantages when compared to traditional teaching methods. Some of the drawbacks outlined by Haugen et al. (2001) are provided in the following list:

- Course proceedings can be very intense for teachers and administrators
- Faculty requires continuous training
- Students and teachers may encounter many technical problems or difficulties
- Students may feel isolated
- The setup lacks a traditional classroom social environment.

Stodel et al. (2006, P.1) stated that “what is missing from online learning: Interpretations through the community of Inquiry framework.” Social, cognitive, and teacher presence may not always be part of online learning.

Ni (2013) compared students in the MBA program at California State University-San Bernardino who attended the course entitled “Teaching Research Methods.” The study was conducted from 2010 to 2012 and found that the students who took the course online thought that it was more challenging than the students who attended the course in a physical classroom. However, the students who took the course online reported it being “less intimidating” when asked about participation. The increase in interaction in the online course could be used to enhance learning especially for those students who were reserved in the classroom setting.

Ni (2013) believed that students are comfortable interacting with technology and will feel less intimidated when participating in the virtual world than they would be in a physical classroom. Those teachers who lead online courses should be aware that some courses are more challenging than others if they are held online and that not all courses are well suited for the online environment. To help online courses be successful, the program should have some sort of pre-enrolment and post-enrolment counselling or advising. The pre-enrolment counselling can be used to ensure that students would be fully informed of the amount of work that they would need to put in to successfully finish the course. The student enrolment in the program and their experience would be evaluated in the post-enrolment advising sessions which would gather information from students who were successful in the class. Some of the information that could be gathered would include time management tips or prior courses that were taken that a student felt provided good preparation for this course.

2.6.3 Blended learning

According to Driscoll (2002), blended learning is a combination of instructional methods. Driscoll’s definition is somewhat similar to the definition of Delialioglu and Yildirim (2007) which states that blended learning (also called mediated learning, hybrid learning, or web-assisted instruction) is the result of the interactions of ICT tools with academic courses.
Gulbahar and Madran (2009) believe that blended learning can be called hybrid instruction, a term which blends the possibilities of web-based trainings with traditional classroom teaching techniques. Rovai (2004) provides one of the most accepted definitions of blended learning which states that blended learning is a combination of online study and traditional classroom instruction. Rovai’s definition states that blended learning must contain several components present in online courses and incorporate these components with face-to-face communication. The figure No. (6) provides an illustration of Rovai’s concept.

![Figure 6. “Blended Learning” (Tayebinik and Puteh, 2013, P.3)](image)

Hopper (2003) writes that the concept of blended learning provides evidence that mixing online courses with traditional learning is more effective than online-only instruction.

After reviewing many articles about blended learning, the researcher summarized the advantages of using blended learning in schools and universities in the following list (see for example, Tayebinik and Puteh, 2013, Ginns and Ellis, 2009, Oh and Park, 2009, Davis and Fill, 2007, Azizan, 2010):

- Blended learning can help to provide tools that are not present in face-to-face learning environments
- Blended learning may provide teachers and students with greater flexibility and allow them to use resources that provide teachers with more time to work with students or conduct research
- Blended learning can increase the effectiveness of a student’s educational experience and increase a student’s results
- Blended learning provides many resources which can help to provide the best quality educational process.

The availability and evolution of ICT tools including Web 2.0, 3D, and the semantic web along with the increased availability of the Internet have helped to increase the demand for technology in education (Perera, 2010). In addition, the number of college students who have relied on hybrid learning for the majority of their academic life is increasing (Harrington, 2010).

According to Harrington (2010), teachers who prefer a mix of traditional and online teaching methods considered this combination to be the best way to benefit from each method and provide students with the opportunity to choose the method that fits them the best. The hybrid teaching method is considered “middle ground” and has been shown as the best learning system for students according to Azizan (2010). The author believes that blended learning has the ability to overcome the limitations of online learning and face-to-face learning. In the
traditional classroom, there are time restrictions while this issue is not present in online learning since individuals can spend as much time as they want to review the material and can learn even if they did not physically attend the class. Blended learning also has the ability to ensure that students complete courses, something which is an issue for those who take courses online.

Al-Qahtani and Higgins (2013) conducted a study that measures the effect of learning using three different approaches, in particular, blended learning, classroom learning, and E-Learning. The authors found that there is a significant difference in student achievement based on the teaching method used. The group of students who were provided with blended learning had higher achievement than those in the other groups. The authors found that there is no difference between the group provided with classroom learning and those provided with E-Learning. This important point is later discussed in the analysis Chapters.

2.7 Related Studies
Recent studies have examined how teachers view the role of the LMS in their teaching and the ways that ICT can contribute to or be fully integrated into the education field. The researchers used various techniques to evaluate the role of the LMS in the education process. Many of the researchers relied on Technology Acceptance Model (TAM) or a model based on TAM. For example, Yuen and Ma (2008) conducted a study entitled “Exploring teacher acceptance of E-Learning technology” to determine teacher acceptance of E-Learning technology. The researchers built a model-testing framework that used the following five factors: intention to use, perceived usefulness, perceived ease of use, subjective norm, and computer self-efficacy.

![Model testing framework](image)
Based on Figure 8 above, Yuen and Ma (2008) built a model that was based on TAM and added the two constructs of subjective norm and computer self-efficacy. These constructs provided a better understanding of why teachers accept E-Learning technology. Yuen and Ma found that their two additional constructs were two significant perception anchors of the fundamental constructs in TAM. Perceived ease of use was the sole determinant to the prediction of intent to use while perceived usefulness was not a significant indicator of the prediction of intent to use.

A study conducted by Alharbi and Drew (2014) entitled “Using the Technology Acceptance Model in Understanding academics Behaviour Intention to Use Learning management systems” at Shaqra University in Saudi Arabia modified TAM to include three external variables as shown in the Figure No. (9):

Alharbi and Drew (2014) examined 12 hypotheses to obtain a greater understanding of user behaviour and the intent to use learning management systems in Saudi universities. The following table shows the hypotheses which were examined:

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Statement</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Perceived ease of use positively affects perceived usefulness of an LMS.</td>
<td>Supported</td>
</tr>
<tr>
<td>H2</td>
<td>Perceived ease of use positively affects attitudes towards using an LMS.</td>
<td>Supported</td>
</tr>
<tr>
<td>H3</td>
<td>Perceived usefulness positively affects attitudes towards using an LMS.</td>
<td>Supported</td>
</tr>
<tr>
<td>H4</td>
<td>Perceived usefulness positively affects intention to use an LMS.</td>
<td>Supported</td>
</tr>
<tr>
<td>H5</td>
<td>Attitudes towards using positively affect intention to use an LMS.</td>
<td>Supported</td>
</tr>
</tbody>
</table>
The table above shows that the first six hypotheses examined the original TAM model provided by Davis (1989) while the other six hypotheses examined the role of external factors which were added to the original TAM model. The table shows that the perceived ease of use or perceived usefulness of the LMS would impact teacher attitude toward the use of the LMS. The fact that the ease of use or usefulness of the LMS can be a factor shows that the usability of the system impacts the positive intention to use the LMS. This result is in line with the findings of Davis (1989), Woods et al. (2004), (Asiri et al., 2012, Afshari et al., 2009), and Al-Gahtani et al. (2007).

Alharbi and Drew (2014) found that users who did not have prior experience using an LMS found the system to be more useful than those who did have experience with this type of system. The researchers also found that teachers who do not currently have an LMS system available do not necessarily feel that an LMS would be hard to use.

Prior to the work of Alharbi and Drew (2014), Hussein (2011) conducted research regarding the attitudes of lecturers at Saudi universities toward the use of LMSs. The study found that there was no difference in the attitudes of teachers regarding LMS use based on gender or specialization. The study mentioned that lecturers at the universities had positive attitudes toward the LMS and found that the issue of teaching was important as it would allow the users to learn about critical aspects of the system including how to share files and use the questions bank. The universities that were a part of the study used the same LMS system, JUSUR.

The importance of training was explored in a study performed by El Zawaidy (2014). The study found that lecturers may consider an LMS to be difficult to use if they lacked technical skills or had insufficient training. The researcher investigated three Saudi universities, in particular, King Saud University, King Khaled University, and Taif University. All of the universities that he investigated used the Blackboard system to manage their education process. The study worked to determine the barriers that faculty members may face when using Blackboard as part of an overall blended learning platform. The following three obstacles were the primary issues uncovered:

- Inadequate or no training or experience using ICT
- Internet signal that does not provide continuous, smooth connection

(Alharbi and Drew, 2014: P.153)
Restrictive rules, policies, or practices which obligate faculty members to develop their technology skills without institutional support.

There are many studies which show that providing training to LMS users is a significant issue and must be performed regardless of the LMS used.

Recently, Alturki and Aldraiweesh (2016, P.42) assessed the usability and accessibility of the Blackboard system in King Saud University and found that the number of faculty members who used the LMS increased in many of the University’s colleges and that many teachers used Blackboard to support their teaching and learning activities. In addition, the researchers found that the Blackboard interface is customized to the needs of users as it allows users to “reorder page elements and save the desired setting according to their need and experiences”. The study also found that teachers who had no experience using an LMS would most likely not adopt the LMS, something which is considered to be an enormous barrier to LMS use.

However, it will be later shown in Chapters 5 and 6 how this researcher had significantly different results arising from his survey data regarding many aspects of the issues discussed here.

2.8 Conclusion

In this Chapter it has been shown that whilst there have been many studies which examined LMS use in universities and the adoption of these systems, and despite an extensive review of the appropriate literature, there is no single study which has explicitly explored the way that teachers feel about the LMS and how this type of system can support or hinder the use of certain teaching methods. The successful adoption of a large-scale teaching tool such as an LMS must be examined from all possible angles, including the way that teachers feel that this type of system would work and could be integrated with minimal disruption into the classroom.

As shown in this chapter, the E-Learning system market contains many LMSs with various layouts. Most of the systems can perform the same tasks and provide users with the same capabilities. Not all systems contribute to the primary goal of E-Learning which is to improve the quality of learning. This goal was set by the European E-Learning action plan which defines E-Learning as “The use of new multimedia technology and the internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration.” To ensure that an LMS improves the quality of learning, the system must be evaluated from the end-user point of view. In his book, User Interface Design and Evaluation, Stone stated that for a system to achieve its goals, it must be able to meet user expectations and needs. This statement applies to all users, but the author emphasized that it was important for the system to meet the needs of those whom he termed “real users,” the users who used the system most heavily. Stone also said that once the real users were identified, the users should be divided based on personal characteristics that could make a difference in the way the LMS is viewed. Stone’s work inspired the researcher to build the study model that will be shown in Chapter 5. In addition, the study model inspired by Sears
and Jakco (2009) which stated that LMSs provide a learning alternative that can aid or hurt learning depending on the system design, influenced the researcher. Stone’s work stated that many factors could influence user evaluation since the evaluation for any software is complex and involved multiple factors that relate to system use. The researcher believed that these factors are connected and influence one another when working to employ these types of system. The researcher believed that the study model shown in Chapter 5 will focus on the important factors of the work of related studies and the researcher’s beliefs.

Up to this point of writing, research has explored user preferences, system design, the benefits of open and closed LMSs, teacher experience, and ease of use. However, there is still a pressing need and significant gap in determining how teachers feel about the system and how teachers believe that the system can allow them to use various effective teaching methods. Ultimately, the widespread success or failure of LMSs will depend on the ability of teachers to use this new teaching resource to engage in effective learning. In addition, teachers and educational leaders must have the foresight to determine how current teaching methods and institutional infrastructures can be adapted to utilise the capabilities of LMSs. We will return to this important point in the later Chapters after first presenting the research methodology that was used in our study.
Chapter 3.0: Research Methodology

3.1 Introduction
This chapter will explain the research methods used and provide other information about the study including the geographic areas where the study took place and the analysis of procedural data. The methodology of the study can be defined as a connected framework with a paradigmatic theory (O'Leary, 2004). The research methodology for this study is divided into three parts: interviews, questionnaires, and demographics. This study design allowed for both quantitative and qualitative data to be collected. A mixed methods research (MMR) format was used to design the questionnaires and interviews to investigate education estimation (Lai and Waltman, 2008). The questionnaire methods provided the study with the following benefits (Robson, 2002, Descombe, 2003):

- Survey questionnaires do not require human resources, extensive equipment, or significant financial expenditures
- Surveys are less costly than other research methods
- Surveys do not leave respondents feeling “pressured” to answer questions quickly or in a particular manner
- Survey answers can be honest because there is no face-to-face communication and no time constraints
- Survey questionnaires can be given to many respondents to ensure that the results are comprehensive.

Despite their benefits, questionnaires have many disadvantages that may cause a study to be inaccurate, especially due to human-computer interaction. The following list summarizes some of the drawbacks of gathering information only using surveys (Robson, 2002, Descombe, 2003):

- Distribution of the survey may be costly and time consuming
- Data collected from the survey may be of low quality due to poorly worded questions or answers
- Responses can be influenced if questions are answered out of order
- Respondent cannot obtain clarification on questions that he or she finds unclear or confusing.

Due to the drawbacks of only using surveys, the researcher employed interviews to gather information for this study. The interview method is considered one of the best ways to research the way that human-computer interaction works. Hove and Anda (2005) stated that interviews are the most used way to gather information in empirical software engineering studies. As a result, the researcher designed interview questions in a semi-structured way and used MMR methodology which provided the study with greater credibility and increased the likelihood of realistic results. The primary goal of using the interview method in the study was to collect data about user beliefs and feelings about the use of either the Sulis or Blackboard system as an educational platform and to obtain information about how the
design and interface of these LMSs impacted teaching methods used. These study goals could not have been met using only the quantitative measures associated with the use of the MMR method (Hove and Anda, 2005). The results of the interviews enhanced the data collected from the questionnaires and contributed to the overall research quality (Kendall, 2008).

This chapter contains several sections covering a variety of subjects related to the methods of study and locations where the researcher took place. Sections 1 and 4 provide information about the quantitative, qualitative, and MMR methods and the benefits and drawbacks of the approach. This discussion will contribute to the available information about how the use of each method helped to make the study clearer.

The study design is clarified in section 3.6. Section 3.7 discusses the study tools used and the limitations of the study. In addition, the study population, variables, and sample are discussed in sections 3.8, 3.9, and 3.10 respectively.

The study was conducted in two areas, namely UL in Ireland and NU in Saudi Arabia. The chapter explored higher education in both countries and provides general information about the higher education system and provides statistics about the respective institutions. In addition, the plans for education at UL and NU are discussed including the programs and degrees offered by the institutions and the needs of staff and students. This subject is discussed in sections 3.11 and 3.12.

The final section of the chapter presents information about the time frame for data collection at each stage and the procedures which were used to collect data either from surveys or interviews.

3.2 Quantitative methods
The quantitative study was based on measuring factors which provide indicators about particular events. According to Srivastava and Thomson (2009), Crabtree and Miller (1999), Silverman (2013), quantitative studies must provide information about the where, what, who, and when. Researchers such as Silverman (2013) and Denzin and Lincoln (2009) believe that quantitative methods do not provide clear information about why a certain phenomenon occurred. This fact is the primary difference between quantitative and qualitative studies. Quantitative studies typically focus on measuring research variables to provide a clear picture of a problem (Tavallaei and Abu Talib, 2010, Thomson, 2008). Despite the ability of the quantitative method to collect significant amounts of data, the method may not be able to provide evidence about the cause of the problem. A researcher can use a survey to measure certain valuables such as duration of system use or user qualifications to obtain a greater understanding of the issue without having to engage in the more time consuming process of interviews. The study areas involved approximately 1,160 academic staff members at NU and 520 academic staff members at UL. Due to the relatively large numbers, a quantitative survey can help to validate the study results (Bulsara, 2014).
3.3 Qualitative methods
Qualitative methods have been discussed in the social science fields. These types of studies focus on the quality of events, not the quantity of these events. Qualitative research can be used to understand human behaviours and attitudes (Young and Schmid, 1939). Leedy and Ormrod (2005) believe that qualitative research methods can help in the following circumstances: (1) if the topic has little information; (2) if research variables are unclear or unknown; and (3) if a relevant theory is missing or unknown. In the current study, there is very little available information. The study required significant information to determine the true effects of LMS design and user interface on teaching methods used by academic staff at NU and UL and to determine how teachers at both sites viewed the LMSs. Statistics are not able to provide information about user motivation that go beyond user behaviour (Bulsara, 2014). The researcher used the interview method to ensure that the qualitative information was usable. The researcher also tried to create a good relationship between the individuals at the universities to encourage them to openly share their knowledge and experience regarding their LMS experiences.

3.4 Quantitative methods versus Qualitative Methods
Every research method has benefits and drawbacks. The researcher was aware of these factors and worked to maximize positive benefits while minimizing the negative ones. The following table provides a summary of the strengths and weaknesses of each method (Johnson and Onwuegbuzie, 2004, Choy, 2014).

<table>
<thead>
<tr>
<th>Quantitative methods</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
<td><strong>Weaknesses</strong></td>
</tr>
<tr>
<td>Ability to test the hypotheses before the data collection stage</td>
<td>Methods may cause misunderstanding(s) as it makes the researcher focus on hypothesis teaching instead of hypothesis creation or theories</td>
</tr>
<tr>
<td>Ability to popularize the output of the research based on data collected on a random sample size</td>
<td>Study results may be too general to provide insight regarding core problems</td>
</tr>
<tr>
<td>Ability to collect data that can be used to make predictions</td>
<td>The research community may not understand or agree with the research methods or research tools</td>
</tr>
<tr>
<td>Ability to popularize the output of the study for use in similar research projects</td>
<td>The method does not work to record human perceptions and beliefs</td>
</tr>
<tr>
<td>Shorter data collection time compared to other methods</td>
<td>The research method is not able to provide an in-depth explanation of human interactions or experiences.</td>
</tr>
<tr>
<td>Data collection can be performed by software computer programs such as SPSS</td>
<td></td>
</tr>
<tr>
<td>Researcher cannot impact the output of the study</td>
<td></td>
</tr>
<tr>
<td>Statistical ability to provide study credibility, if needed</td>
<td></td>
</tr>
<tr>
<td>Ability to collect information from a vast number of subjects</td>
<td></td>
</tr>
</tbody>
</table>
Table 1. Strengths and Weaknesses (Quantitative methods)

<table>
<thead>
<tr>
<th>Qualitative methods</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides the user with useful research information, especially in smaller studies</td>
<td>Results may not be applicable to other studies</td>
</tr>
<tr>
<td>Complex phenomena can be described more accurately</td>
<td>Difficult to interpret the results</td>
</tr>
<tr>
<td>Different information can be obtained from each research subject</td>
<td>Difficult to obtain information from a large subject base, something which makes testing hypotheses a challenge</td>
</tr>
<tr>
<td>Cases can be investigated individually and then compared and analysed</td>
<td>Study may lack credibility</td>
</tr>
<tr>
<td>Study can provide insight into particular behaviours and attitudes</td>
<td>Data collection takes longer when compared to other methods</td>
</tr>
<tr>
<td>May provide scientific information about previously unanalysed phenomena</td>
<td>Data analysis and extraction of results are very slow</td>
</tr>
<tr>
<td>Research can provide information about phenomena and provide usable results</td>
<td>The results may be impacted by researcher opinions or beliefs</td>
</tr>
<tr>
<td>Settings related to an event can be defined by the researcher</td>
<td>There is no objectively verifiable output</td>
</tr>
<tr>
<td>Dynamic processes can be studied and analysed</td>
<td>Researcher(s) must have good interview skills.</td>
</tr>
<tr>
<td>Data can be collected in a natural setting</td>
<td></td>
</tr>
<tr>
<td>The study can better fulfil stakeholder requirements and needs</td>
<td></td>
</tr>
<tr>
<td>The study can be changed at any time to fit environmental changes that may impact the study</td>
<td></td>
</tr>
<tr>
<td>Participants have the opportunity to explain why and how a phenomenon occurs</td>
<td></td>
</tr>
<tr>
<td>The researcher can use historical context to help participants explain their experiences.</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Strengths and Weaknesses (Qualitative methods)

After reviewing the benefits and drawbacks of the quantitative and qualitative methods, the researcher felt that combining the methods would allow for the best results to be obtained. The combination of the methods provided greater insight into the relationship between the LMS and the teaching methods used by staff at UL or NU.

### 3.5 Mixed method research (MMR)

According to Creswell (2013), MMR employs a combination of quantitative and qualitative methods in a single research or enquiry program to collect and analyse data. Stange et al. (2006) defined MMR as “involved integrating quantitative and qualitative approaches to generating new knowledge and can involve either concurrent or sequential use of these two methods.”
classes of methods to follow a line of inquiry.” Bulsara (2014) believes that MMR methods are a way to collect, analyse, and integrate quantitative and qualitative studies. The process can help individuals better understand a study and obtain better results. The method also ensures that the issues of how, what, where, and why are properly addressed. According to Creswell (2013), the first use of MMR was in 1959 by Campbell and Fiske. These researchers encouraged others in the field to use “multi-methods matrix” to test multiple data gathering approaches. Teddlie and Tashakkori (2003) believe MMR could be used in social science studies and, in 1980, added it as a third research methodology. The following table summarizes some of Creswell’s work.

<table>
<thead>
<tr>
<th>Quantitative research methods</th>
<th>Qualitative research methods</th>
<th>Mixed methods research methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predetermined instrument-based questions designed to provide performance, attitude, observational, and census data. Best suited for statistical analysis.</td>
<td>Emerging method that asks open-ended questions to collect interview, observational, document, and audio-visual data. Allows for text and image analysis.</td>
<td>Uses predetermined and emerging methods that asks open- and close-ended questions to obtain multiple forms of data. Allows for statistical and text analysis.</td>
</tr>
</tbody>
</table>

*Table 3. Quantitative, Qualitative, and Mixed Methods Procedures (Creswell, 2013)*

The table is based on Creswell’s book, “Research design: Qualitative, quantitative, and mixed methods approaches” and explains the way that data should be collected using each research method and how it should be analysed. Based on Creswell’s work, qualitative methods will often use questionnaires to collect performance, attitude, observational, and census data and the data will be analysed using statistical methods. In contrast, quantitative methods will typically rely on interviews involving researchers and interviewees to obtain opinions about study issues. The researcher transcribed the interviews using text and/or images and analysed the data once this step was complete. The MMR methods combined various research methods to obtain a clear image of the issue.

Johnson *et al.* (2007) wrote an article that provided a precise definition for MMR. The article stated that an MMR study is based on qualitative and quantitative research and consists of an intellectual and practical synthesis of quality and quantity research. The article also states that MMR is a third option when conducting social and behavioural studies and has the power to balance the best parts of quantitative and qualitative methods. The researcher believed that the use of MMR would allow the study to overcome challenges that could adversely impact study accuracy. Johnson and Onwuegbuzie (2004) believe the researchers using MMR may face some or all of the following challenges:
Expensive and lengthy studies
Difficulty finding experienced researchers who are comfortable using quantitative and qualitative methods
Significant amounts of time spent teaching researchers proper methods
Potential conflicts and problems integrating the outcomes of each method used
Lack of acceptance from other researchers who believe that a study must either be quantitative or qualitative, not a combination of the two methods.

Using MMR for research about human-computer interactions can provide useful and realistic results that can be compared to other studies that use either a quantitative or qualitative method. The similarities and other points of comparison are summarized in the following list (Johnson and Onwuegbuzie, 2004):

- Details that are provided orally or through pictures can add meaning to numbers and statistics
- Charts and statistics compiled using quantitative methods can help to provide accuracy for interviews
- MMR uses the combined power of quantitative and qualitative methods
- The study can gain a deeper understanding of theories to better and more completely answer questions
- Weaknesses present in single research methods are addressed through the use of MMR
- The results of the study are reliable as a result of corroborating findings
- MMR presents findings that may provide insight for future studies
- MMR produces complete knowledge of a theory or practice.

The researcher believes that using MMR allowed the impact of the Blackboard and Sulis design and user interface on teaching methods used to be determined in a thorough and detailed manner. This research method provides the study with increased evidence and detail about the way that teachers feel about LMS user interface and design.

### 3.6 The study design

This study used descriptive analysis to describe the phenomenon and provided an accurate description for the phenomenon. The researcher used MMR to ensure that quantitative and qualitative terms were used properly. The questionnaire employed in this study addressed four primary aims. The first aim was to collect demographic information from the research subjects to obtain background about the community being studied. The second aim was to examine the effect of LMS design on the teaching methods used. The third aim was to examine the impact of the LMS user interface on the teaching methods used. The fourth and final aim was to collect information from the participants about the best and worst parts of the LMS. The overall purpose of the study was to obtain quantitative and qualitative data and the interviews provided further credibility for the survey and enhanced the study’s overall quality.
3.6.1 Questionnaire

To ensure that the purpose of the study was achieved, the questionnaire was split into three parts. The first part was designed to gather demographic information about the NU staff using the Blackboard system and the UL staff using the Sulis system. The information gathered was split into three parts. The first section was designed to gather demographic information about the staff members including user age, gender, educational background, educational experience, certifications, and experience with the LMS system before and after working at university. The information helped to determine similarities and differences for those who were involved in the survey. The second section worked to obtain information from users about the role of LMS design either Sulis in UL or Blackboard in NU in teaching methods used by staff members and the role of the LMS user interface in the teaching methods used by facility members. The users were asked 14 questions about these issues. The first eight of the 14 questions related to LMS design and the teaching methods used and the last six questions related to the LMS user interface and teaching methods used. The respondents were provided with the opportunity to add their own comments about these topics at the end of the survey and were also asked to answer two open-ended questions about the best and worst part of having an LMS. Additional information is available in the appendices.

3.6.1.1 Piloting the questionnaire

The researcher distributed the questionnaire to many Ph.D. students at UL to ensure the questions were viable. The researcher wanted to ensure that the study issues were properly addressed by the survey answers and that the questions would obtain the proper responses that could be measured accurately. During this process, some mistakes were identified and corrected. The researcher also shared the questionnaire with the project’s principal supervisor where the researcher received a suggestion to use an electronic survey service such as SurveyMonkey or Google Docs. The principal supervisor approved the questionnaire.

The electronic survey was distributed using the Internet, but had its own benefits and drawbacks. Many websites provide this service, but, according to Porter (2004), web surveys can take less time and provides great savings compared to printing and distributing a survey in a traditional manner involving mailing the survey or handing it out in person to individuals. The author believes that some people may not be able to use the Internet properly and that a paper survey may be more useful in these situations.

In this study, the researcher found that using Internet surveys was the best option based on the following factors:

- The study population was very familiar with Internet surveys
- NU and UL provided easy Internet access
- The cost of these surveys was lower than other methods
- Respondents had greater flexibility to complete the survey
- Data analysis could be performed easily using SPSS software.
3.6.2 Interviews

The researcher relied on semi-structured interview methods to obtain information from LMS users. The interviews, also known as focused interviews, used a combination of methods that include concepts that are present in structured and unstructured interviews. These methods have their own benefits and drawbacks, but the mixture of the methods provides significant benefits regarding the quantity and quality of the information gained. When accurate information is required, the best way to obtain this information often involves the researcher asking direct questions in a structured interview. The researcher can also use these open-ended questions to determine the opinions of the subjects. The answers obtained through the unstructured interviews will help to elicit a wide range of responses that will help the study (Rubin and Rubin, 2011, Seaman, 1999, Merton, 2008).

A semi-structured interview requires some preparation before the interview. The researcher developed nine questions for the semi-structured interview that varied between open-ended questions and closed (Yes/No) questions. The questions provided the respondents with the opportunity to express their opinions openly and the interviewer had the opportunity to ask follow-up questions based on the answered received. The interview questions all related to the way that the system design and interface impacted the teaching methods used. The researcher worked to ensure that information about personal issues or feelings was not obtained to avoid hurting the credibility of the data collected.

According to Hove and Anda (2005), an interviewer should work to ensure that individuals feel comfortable enough to allow them to share experiences. The interviewer should provide the subjects with a variety of times and dates to allow them to find one that best fits their schedule. The researcher selected interview subjects based on their academic positions and prior use of the LMS system. These options provided the researcher with a sample size that allowed the study to cover all parts of the academic environment. Seaman (1999) believes that the researcher must provide the interviewer with a lot of information about the study and provide clarification about the study proposal to ensure that the interview goes smoothly and provides useful results. The researcher explained the study proposal to each interviewee before the interview began formally. Some researchers believe that a person conducting a scientific interview should be neutral and not sensitive or judgmental. The interviewees should also be allowed to speak without being interrupted and have the full attention of the person conducting the interview. The researcher read articles and took online courses to adequately address this matter (Robson, 1993, Weiss, 1994).

The figure No. (10) shows the steps involved in this project. The figure details the stages of the study from preparation to data analysis. In the first phase, the researcher reviewed similar studies to determine what participants should be asked. The process helped the researcher solve the study’s problems. In the second phase, the primary purpose was to distribute the questionnaires and interview staff members at NU and UL. To accomplish these goals, the researcher used SurveyMonkey because many participants were familiar with it and the program is highly recommended by the research community. The researcher planned to meet with all interview subjects during or after receiving their applications. The parties agreed on a time for the meetings and the collection of questionnaire data and the transcription of this data.
was performed in parallel when the previous stage was complete. The data analysis took place in two parts. The first part involved the analysis of questionnaire data using the tools provided by SurveyMonkey and the second part included the analysis of the narrative description and used the NVivo program to provide data classification. The researcher obtained the results of the methods separately and integrated these results to see the similarities and differences associated with each method.
Figure 10. The phases of preparing, distribution, data collection, and data analysis.
3.7 The limitations and delimitations of the study

A study that uses only qualitative methods has limitations linked to obtaining valid, reliable data. These types of studies occur in normal settings which make the studies difficult, if not impossible, to repeat (Simon and Goes, 2013). The research has certain limitations that include time, the research community, and delimitation. The study considered the impact of the LMSs on teaching methods used and the way that the lecturers viewed the role of the system in the education process.

The study attempted to answer the following questions:

- How do lecturers critically at NU view the Blackboard system design?
- How do lecturers critically at NU view the Blackboard system user interface?
- How does the Blackboard system help lecturers at NU employ a variety of teaching methods?
- How do lecturers critically at UL view the Sulis system design?
- How do lecturers critically at UL view the Sulis system user interface?
- How does the Sulis system help lecturers at UL employ a variety of teaching methods?

Delva et al. (2002) believes that any questionnaires distributed with a time limitation will receive fewer responses for the following reasons:

- People believe that surveys are a lot of work
- People typically do not have time to complete a questionnaire
- Survey design forces people to select answers in specific ways that may or may not fit the situation properly. Interviews allow individuals to provide opinions frankly with no restraints.

The study took place between December 2015 and January 2016 on the NU and UL campus.

3.8 Study variables

The researcher defined the independent variables as the LMS design and LMS user interface. The dependent variables are the teaching methods used by NU staff and UL staff. Although there are many different education methods, the study focused on only the following three:

- Online teaching
- Face-to-face teaching
- Blended learning.

The study examined the following issues:

- If LMS design has an impact on the pedagogical performance of academic staff in terms of teaching methods
- If LMS interface has an impact on the pedagogical performance of academic staff in terms of teaching methods.
3.9 Study Population
The term “population” has two very different definitions. Generally, the term refers to the number of people in a particular area and could apply to various characteristics such as gender, religion, or age. When the term is applied to research, the population will be the total number of individuals in the study area (Carroll, 2015). The study population in this research consisted of all teaching staff at NU and all teaching staff at UL. According to the latest statistics provided by the Ministry of Education in the Kingdom of Saudi Arabia (KSA), there are 1,160 teachers at NU. There are 27% more male teachers than female teachers as NU has 735 male staff and 425 female staff. The UL has 498 academic staff members (University of Limerick, 2017).

3.10 Study sample
A research sample is part of the study population. This sample is taken randomly and should cover all characteristics of the study community (Carroll, 2015). In this study, the sample was selected using a stratified random sample method. The researcher used his expertise in this area to determine how a single sample impacted each layer of the study population. To ensure the fair representation of the various disciplines and academic ranks in the study areas either NU or UL, questionnaires were distributed online to the all-academic staff. Of those distributed, 86 questionnaires were returned by 7.41% at NU where 158 questionnaires were returned by 31.72% at UL.

3.11 Higher Education in Saudi Arabia: a methodological context
The Ministry of Education in the Kingdom of Saudi Arabia is considered the largest ministry in the country. In 2015, KSA combined the Ministry of Higher Education and the Ministry of Education. The combined Ministry now has the responsibility of supervising more than 1 million students at various educational levels. The department supervises two primary sectors, the public education sector and the higher education sector. Students in KSA must spend 12 years in public education. These 12 years are comprised of six years of primary school, three years of middle school, and three years of high school. Public education is provided to those who are between 6 and 18 years of age. Those who are under the age of 6 are not required to attend school, but many parents elect to send their children to kindergarten. These programs typically admit those who are 4 years and older. When a student completes the public education program, the student can enrol at a university or technical institute. The admittance at a school is based on the student’s cumulative GPA during the final three years of high school. There are 34 government universities located throughout KSA. These universities have some independence from the Ministry and have a degree of flexibility. The Ministry also tracks Saudi students who study abroad. The Ministry opened 35 cultural missions throughout the world to handle different student populations.

The following table provides some information about major Saudi universities including their location and date of establishment.
King Saud University (KSU) is the “original” and largest university in Saudi Arabia. It was established in 1957 and has more than 50,000 male and female students studying in its 21 colleges. Some researchers believe that Umm AlQura University (UQU) was the first university established in KSA. UQU was initially founded in 1949 under the name of “Sharia College.” The curriculum at Sharia College was limited only to Arabic and Sharia. The main purpose of Sharia College was to supply the community with lawyers, judges, and teachers. In 1981, UQU became an official college and currently the university has 40,000 students attending its 23 colleges.

From 2005 to 2010, King Abdullah opened 17 universities and established the King Abdullah Scholarship Program (KASP) to send students to universities within and outside of the KSA to provide them with additional academic opportunities and to experience different cultures. More than 100,000 Saudi students are currently studying in 14 countries around the world. The KASP program covers all levels of higher education, but the focus of the program is on medical and postgraduate studies. According to Alamri (2011), KSA was ranked by UNISCO as the fourth best country in the world in terms of sending students to study overseas, trailing only China, India and South Korea.

3.11.1 Aims of Higher education

The Ministry of Education drafted its higher education objectives in 1980 and allowed each university to create its own goals based on the Ministry’s general aims. According to Saleh (1986), the objectives of higher education as follows:

- Develop loyalty to the Islamic religion and provide students with knowledge about Islamic culture. Students should be taught that they are responsible to use what they learn to help the nation of Islam.
- Prepare citizens to contribute in their country to help Islamic culture and ideology
- Contribute to scientific research and create new solutions that help to increase the quality of life
- Provide students with the opportunity to receive higher education in KSA or in a foreign country
- Advance the authoring and scientific production movement to serve the Islamic religion and allow the country to be a leader in contributing to the advancement of civilization
Translate different types of sciences and arts into Arabic so that all people in KSA can access this information.

3.11.2 Degrees in Saudi universities
According to Alebaikan (2010), the following four types of degrees are granted by Saudi universities and institutes:

- Diplomas: Students study for three years to obtain this degree and must complete their training in a public or private sector. Students can receive a degree from a technical and vocational training corporation (TVTC). There are some exceptions to this rule such as how Jubail Industrial College (JIC) can provide both Jubail and Yanbu with diplomas.
- Bachelor’s Degree: Students will usually complete 140 credit hours to graduate. In some universities, four years of study may be accepted in place of 140 credit hours.
- Master’s degree: Students must attend two academic years of classes and complete a one year thesis project.
- Ph.D.: This degree can typically be attained in 3 to 4 years.

Most Saudi Universities use the English language for medicine, computing, and engineering programs, but rely on the Arabic language in management and arts at all levels of study. However, there are some exceptions such as how King Fahd Petroleum and Minerals University (KFUPM) offers all degrees only in English while Islamic University only offers degrees in Arabic.

3.11.3 Plan for future “AAFAQ”
The Ministry of Higher Education was created to map out the long-term future for higher education in KSA. The Ministry’s plan was launched in 2005 and extends to 2030. The plan involves 21 strategic goals. The researcher will mention the most important goals as follows:

- Finding a way for universities to meet student demands
- Meeting the needs of local businesses and corporations with qualified graduates
- Increasing the number of individuals with a Ph.D. in universities and encouraging these individuals to stay in the university system to continue to develop their skills
- Improving administrative and managerial skills for university workers
- Creating competition between students to improve their skills
- Diversifying teaching methods and developing effective curriculum
- Diversifying teaching methods and developing curriculum
- Attaining international accreditation from well-known organizations by improving the quality of education programs
- Giving scientific research high priority and proper funding
- Developing electronic software materials for use by students and the community
- Developing university infrastructure to create a good research and academic environment.

These goals require cooperation between government agencies and citizens. The researcher believes that the Ministry has taken steps to achieve these goals. In 2007, King Abdulaziz
University (KAU) achieved ABET (Accreditation Board for Engineering and Technology) accreditation, an organization which is one of the most well known in the world. The organization is located in the United States and has accredited more than 3,400 university and college programs in 28 different countries (ABET, 2015). The Saudi government has invested significant resources into providing universities with new resources.

According to a 2009 report by the Ministry of Higher Education, the department has achieved some of the following successes:

- Helped Saudi universities sign agreements with research centres and universities around the world. For example, KSU is working with more than 45 research centres in counties including France, United State, United Kingdom, India, and China.
- Invited Nobel Prize winners to give lectures and conduct research in Saudi universities. Fourteen Nobel Prize winners signed contracts with KSU to give lectures during the school year.
- Encouraged businesses to help universities. KSU and KAU launched endowment programs that have exceeded 100 million Saudi riyals.
- Opened consulting and research centres in universities that provide advice and resources.
- Helped universities with financial assistance to allow them to develop improved admissions processes. Universities have also received support to develop websites in both Arabic and English.

### 3.11.4 Najran University

NU was established in 2009 and is one of Saudi Arabia’s newest and largest universities. It is located on the eastern extension of the city of Najran in an area that is approximately 18 million square meters. The construction of the campus is ongoing as the university works to build 25 colleges to accommodate the approximately 45,000 students. The campus will feature a medical city, hotels, mall, recreational sports city, and faculty and student housing. Currently, 17,000 students study in 13 different colleges at NU.

### 3.12 Higher Education in Republic of Ireland

According to Cassells et al. (2015) there are seven universities and 14 higher institutes of technology along with five colleges of education which receive funding from the Higher Education Authority in Ireland (HEA). Moreover, there are ten small colleges funded by Department of Education and Skills that’s mean the total of higher education institutions in Ireland is 36.

As Cassells et al. (2015) mentioned, HEA funded colleges and universities have approximately 17,500 staff members, approximately half of which are academic staff. The other half of these members are support staff and work in laboratories or provide other support. This sector has 5,000 contract researchers, 60% of which are academic researchers. There are currently 210,000 students enrolled in this sector distributed in the following manner:
54% are enrolled in a university
40% attend institutes of technology
6% are enrolled in a college.

Most of the students in this sector were full-time students (81%) while the remaining 19% were part-time students. The number of part-time students has doubled between 2007 and 2014. The following table from Peter Cassells et al. (2015) shows how students are distributed into colleges, universities, and institutes and their areas of study:

<table>
<thead>
<tr>
<th></th>
<th>Universities</th>
<th>Colleges</th>
<th>Institutes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apprenticeships &amp; Other</td>
<td></td>
<td></td>
<td></td>
<td>2,821</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>83,634</td>
<td>9,032</td>
<td>78,630</td>
<td>171,296</td>
</tr>
<tr>
<td>Level 6</td>
<td>5,627</td>
<td>381</td>
<td>8,979</td>
<td>14,987</td>
</tr>
<tr>
<td>Level 7</td>
<td></td>
<td></td>
<td>25,665</td>
<td>25,665</td>
</tr>
<tr>
<td>Level 8</td>
<td>74,703</td>
<td>8,647</td>
<td>38,333</td>
<td>121,683</td>
</tr>
<tr>
<td>Occasional</td>
<td>3,304</td>
<td>4</td>
<td>5,653</td>
<td>8,961</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>27,705</td>
<td>2,961</td>
<td>6,850</td>
<td>37,516</td>
</tr>
<tr>
<td>Level 8 &amp; 9 taught</td>
<td>19,230</td>
<td>2,286</td>
<td>5,399</td>
<td>26,915</td>
</tr>
<tr>
<td>Level 9 Research</td>
<td>715</td>
<td>92</td>
<td>575</td>
<td>1,382</td>
</tr>
<tr>
<td>Level 10 (PhD)</td>
<td>7,033</td>
<td>299</td>
<td>566</td>
<td>7,898</td>
</tr>
<tr>
<td>Occasional</td>
<td>727</td>
<td>284</td>
<td>310</td>
<td>1,321</td>
</tr>
<tr>
<td>Total</td>
<td>111,339</td>
<td>11,993</td>
<td>88,301</td>
<td>211,633</td>
</tr>
</tbody>
</table>

Student Numbers 2013/14

The following table provides information about Irish universities including their location and date of establishment.

<table>
<thead>
<tr>
<th>University Name</th>
<th>Location</th>
<th>Established</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Dublin “Trinity College”</td>
<td>Dublin</td>
<td>1592</td>
</tr>
<tr>
<td>National University of Ireland, Galway</td>
<td>Galway</td>
<td>1845</td>
</tr>
<tr>
<td>University College Cork</td>
<td>Cork</td>
<td>1845</td>
</tr>
<tr>
<td>University College Dublin</td>
<td>Dublin</td>
<td>1854</td>
</tr>
<tr>
<td>University of Limerick</td>
<td>Limerick</td>
<td>1972</td>
</tr>
<tr>
<td>Dublin City University</td>
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<td>1975</td>
</tr>
<tr>
<td>Maynooth University</td>
<td>Maynooth</td>
<td>1997</td>
</tr>
</tbody>
</table>

Table 5. Irish Universities

3.12.1 Plan for future “National strategy for Higher Education to 2030”

The changing global environment has caused the Irish government and the higher education sector to create a new strategy to meet challenges. The new national strategy was launched by the Minister of Education and Science in February 2009. Dr. Colin Hunt, the former Managing Director of Macquarie Capital (Europe) Advisers has been named as the Chairman for this new strategy (AUTHORITY, 2017).

The HEA website for the National Strategy of Education posted the new strategy in 2011. The strategy is set to impact education until 2030 and should play a role in the following ways:
“In the decades ahead, higher education will play a central role in making Ireland a country recognised for innovation, competitive enterprise and continuing academic excellence, and an attractive place to live and work with a high quality of life, cultural vibrancy and inclusive social structures. At its heart, however, it will still be about people and ideas: higher education institutions will have a strong engagement with individual students, communities, society and enterprise, will give students a sense of Irish place and identity, and will equip them with the skills to play a strong part on the world stage; they will be the source of new ideas through excellent research. The nature of the learning community and the modes of teaching and learning will also change significantly over the coming years. These changes will be supported through innovative approaches to research-led teaching and learning, programme design, student assessment and a quality assurance system – all of which will reflect a new emphasis on nurturing creative and innovative minds. Irish higher education will have a strong international presence, attracting overseas students and academics, and across all disciplines it will engage in high-quality research that will distinguish Ireland internationally.”

To achieve this vision, the strategy group came up with the following “high-level objectives”:

- Ireland’s higher education system will attract a wide range of potential students from Ireland and abroad
- Students will receive an excellent education that is relevant to their personal development and growth
- Research will continue to increase and will be conducted in a way that is internationally accepted and covers all disciplines with a significant focus on certain niche areas that are significant to Ireland’s economy and cultural needs
- Educational institutions will be autonomous, collaborative, and have an outward view while also being effectively governed to ensure that they operate efficiently
- Educational institutions will work to recruit, develop, and retain talented, high-quality staff members who will be held fully accountable for their work
- Educational institutions will have a diverse set of institutional missions that will be well defined and create an inter-related system that will contribute to overall quality and efficiency
- Educational policies will form a clear framework that will help to ensure that funding and quality are aligned and that all aspects of the process are held accountable
- It is within the remit of the HEA-funded National Forum (hea.ie) to evaluate and encourage the integration of educational technologies and increased effective use of VLEs

3.12.2 University of Limerick

“UL was established in 1972 as the National Institute for Higher Education, Limerick. It became a university in 1989”. It is located 5 km from Limerick and covers an area of approximately 1,375,000 square meters. The campus includes facilities such as a library, sports centre, and student housing. There are currently 14,000 students at UL at the university’s five different facilities and departments (University of Limerick, 2017).
3.13 Data collection methods
The use of MMR in this study occurred in two levels: (A) the data collection stage using questionnaires and (B) the data collection stage using interviews. The figure No. (11) shows study time intervals and the data gathering actions that occur during these times.

04-12/09/2015
Sent official letters from UL and IRSACB to NU to obtain permission to begin the data collection phase

Sent emails to four faculty members at UL to arrange a meeting about the Sulis system

5/12/2015 Started

15/01/2016 Ended
Distributed questionnaires using SurveyMonkey to all staff members at NU with the help of the university's IT department
Distributed questionnaires using SurveyMonkey to all staff members at UL using the research supervisor

07/10/2015 Started

03/01/2016 Ended
Interviewed eleven NU staff members
Interviewed four UL staff members

16/01/2016 Started

05/03/2016 Ended
Collected data from SurveyMonkey
Created transcripts of interviews with individuals working at UL and NU
(A) Data collection from questionnaires

The study used many procedures. When interviewing those in Saudi Arabia, the Supervisor of Research from the UL sent an official letter to the Vice President for Graduate Studies and Scientific Research at NU to obtain permission for the researcher to begin collecting data from individuals at NU. When these steps were completed, the researcher was allowed to begin. The researcher prepared and distributed a questionnaire using SurveyMonkey. The link to this online survey was sent to the information technology department at NU which sent the link to the school’s academic staff.

For the study which was conducted at UL, the Supervisor of Research at UL sent official emails to all academic staff. The email contained the survey link along with the research proposal.

The researcher provided sufficient time for the study participants to complete the survey. A reminder email was sent before the five-week period was over.

(B) Data collection from interviews

The study used four primary procedures during this stage. The first step involved sending emails to the individuals who were selected. At UL, the email was sent by the research supervisor while at NU, the email was sent by the Secretary of Deanship. The researcher and the interview subjects then set a time for the interview to be held. The researcher then conducted the interviews and transcribed the interviews. The transcripts of the interviews are located in the appendices.

3.14 Ethics Approval

It should be noted here that ethics approval for this PhD research study was sought from both Institutions where the research was to be conducted. For the University of Limerick, approval was granted, (reference: 2017-06-37-AHSS) and from the University of Najran, approval was also received (please see Appendix A). There were no anticipated ethics issues and indeed, no such issues arose during the course of the data elicitation period.
3.15 Conclusion
After analysing the benefits and drawbacks of the research methods, the researcher felt that using the MMR method was the best way. The researcher worked to gather data while being fully aware of the study limitations, variables, population, and sample. The study also looked at the education systems in Ireland and Saudi Arabia. The following chapter will explore the LMSs which are most used in the two countries.
Chapter 4.0: A Comparison of the Utilization of E-Learning Management Systems in the Republic of Ireland and Kingdom of Saudi Arabia: A Case Study

At the end of the initial case study period for the thesis, this researcher was approached in 2015 by an international journal to submit a publication exploring and explaining the contexts of the research and the early findings. The published paper (Aljuhney, Y., Murray, L., 2016) also served to validate the methodology employed in eliciting the data. Many details from this resulting published paper are offered here in this chapter, which also attempts to provide greater background detail to the main study and to reveal the evolution and solidification of the research questions, early analysis and preliminary findings.

The authors of this paper investigated the number of proprietary and commercial learning management systems in the Republic of Ireland and the Kingdom of Saudi Arabia. To identify and tally the systems in use, authors conducted web searches followed by email and interview follow-ups. After investigating (31) institutions in the Republic of Ireland, and (46) of institutions in the Kingdom of Saudi Arabia, the authors learned that each country had chosen a different system for the majority of their work. The research examines both self-developed and commercial systems and looks at which is used more. The study analyses many higher education institutions using both types of E-Learning systems. The study works to answer the following questions:

- What is the most widely used learning management system used in Saudi and Irish universities?
- What is the most widely used learning management system used by teachers in Saudi and Irish universities?
- What is the most widely used learning management system used by students in Saudi and Irish universities?

The research works to provide information for a part of the educational field that has not been studied extensively.

4.1 Introduction

Advances in science and technology are rapidly altering the world. Currently, there is a tremendous technological revolution in information, electronics, computers, and communications. These changes can be seen in the educational field, especially in universities which are updating their information systems. It is easier, cheaper, and more efficient for educational institutions to upgrade their technological capacity as opposed to constructing new buildings and expanding the number of staff members in various departments.

“Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources” (Robinson et al., 2008). To improve the delivery and effectiveness of education, researchers have examined how technology can solve current educational
problems such as allowing universities to be available to more students without having to physically expand their campuses or open satellite locations. In this case, technology allows a university to broadcast and possibly record its lectures and disseminate educational materials using the Internet. As a result, students are offered greater flexibility in their ability to attend lectures and access materials. The result of the research has been an expansion of strategies and methods used by educational institutions. Concepts like distance learning have emerged through the union of technology and education and have provided educational opportunities to individuals who cannot physically attend a school (Allan, 2007, Bonk and Graham, 2012, Garrison, 2011, Graham and Dziuban, 2008, Moore et al., 2011, Vaughan, 2007).

An E-Learning management system provides a framework for the management of digital education content. This system emerged from research performed on current educational management methods and allows the automatic exchange of information between teachers and students. As a result, the accessibility of online resources and current technology allow E-Learning to be an easily attainable and viable option for many students around the world (Chanchary and Islam, 2011).

Recently, the way that educational concepts are conveyed to students has evolved from the traditional “face to face teaching” method and now involves the ability to effectively transmit information using a virtual electronic environment. For example, information that used to be written on a chalkboard or projected onto a screen has been converted into an electronic format such as a Microsoft PowerPoint presentation to allow students to access the information from their computers. As a result, the education and educational training world has changed drastically and has become more flexible by adopting different learning methods. For example, many companies in Saudi Arabia such as Saudi Aramco rely on E-Learning to train employees ("The Training World is Wide Open," 2015). The changes made to the way that information is conveyed have allowed individuals to use the Internet to learn or receive training from any part of the world without being limited by factors such as travel difficulties or expense. As the world moves toward a 24/7, globalized culture, the increase in E-Learning methods has become increasingly more important. E-Learning allows individuals to learn at any time and from any location because it does not require a live instructor and can incorporate a combination of blended, online, computer-assisted, and virtual learning methods (Allan, 2007). However, in some cases such as colleges, students may be required to attend online courses at a certain time. Despite this restriction, E-Learning still allows students to have a flexible learning schedule. For example, Missouri University of Science and Technology in the United States allows its distance education students to attend lectures at a specific time, but also allows them to watch the recording of the lecture at a later time ("Missouri University of Science and Technology Policy Memoranda," 2015).

The researchers believe that Ireland has successfully incorporated technology into its educational and training fields. The majority of Irish universities use LMSs, VLMs, or CMSs to handle the teaching and learning processes in such areas for example content delivery methods, storage and assessment. Some Irish universities built their own LMS while others purchased an LMS from a company such as Blackboard or use an open-source system such as Moodle. One of the reasons that Irish universities worked to adopt E-Learning was in
response to the educational aims of the EU which wanted to explore the possibilities of E-
Learning and encouraged countries to attain higher educational goals. In its Lisbon objectives
(2000), the EU stated that it wanted to “make Europe the most competitive and dynamic
knowledge-based economy in the world, capable of sustained economic growth with more
and better jobs and great social cohesion” (MacKeogh & Fox, 2009, p.148). In May 2008, the
European Council suggested that member states establish E-Learning and distance learning
programs to encourage a culture of lifelong learning (MacKeogh & Fox, 20-22 October
2008).

The researchers in the current study (April 2015) collected information about which systems
are used most in Irish and Saudi universities. They also worked to obtain as much
information as possible about the E-Learning management system used, the number of users
relying on the system, and the location of the academic institution. This information provides
discusses the following benefits:

- Knowing the general trend of adopting Learning Management Systems in Saudi and
  Irish universities
- Providing information about which system is used most by students in Saudi and Irish
  universities
- Providing information about which system is used most by teachers and students in
  Saudi and Irish universities
- Allowing further research to determine why one system is used more than another
  system(s).

The study is part of a project that works to determine the relationship between LMSs and the
pedagogical performance of academic staff members in Saudi and Irish universities.
Moreover, the researcher purposefully chose to study Ireland and Saudi Arabia due to the
differences in each country’s educational environment and to take advantage of the
researcher’s educational experience and background.

According to the Organization for Economic Cooperation and Development (OECD), Saudi
Arabia has one of the highest birth rates in the world. Furthermore, more than 50% of the
Saudi population is under 20 years old. This statistic means that Saudi universities are
currently facing or will soon be facing significant challenges regarding enrolment. As a
result, the country is acutely aware of the importance of E-Learning and distance education.
Since new buildings and infrastructure cannot be built as quickly as needed, E-Learning
offers a viable solution for the enrolment issue (Chanchary & Islam, 2011).

Saudi Arabia has been able to stay relatively up-to-date with E-Learning and distance
education capabilities. Most Saudi universities, both public and private, have centres which
provide and manage their teaching and learning processes. In addition, the Ministry of
Education has opened the National Centre for E-Learning and Distance Education (NCeDL)
with an ambitious vision that includes the “establishment of a holistic educational system
based on the best applications and techniques of E-Learning, as well as the achievement of
progress and excellence in both learning and teaching” ("The National Center for E-Learning and Distance Learning," 2015, par.3).

4.2 Methods
This project examined the LMSs used in the Republic of Ireland and the Kingdom of Saudi Arabia. The types of systems used, which systems are used most, and if the system was self-developed or commercially developed were also analysed. The study relied on the random selection of a sample target. The study examined 31 higher educational institutions in 13 Irish cities and 46 universities and colleges in 23 Saudi Arabian cities. The research explored the website of each educational institution to determine which system(s) is used and the number of students and academic staff using the system. When additional information was needed that could not be found on the website, the researchers used email or telephone calls to obtain relevant information. The researchers used Microsoft Excel to conduct a data analysis for this study. Microsoft Excel allowed the researchers to analyse which LMS was used most by Irish and Saudi universities and to determine the systems that were used most by teachers and students. The results for each country were then compared. The main purpose of using Excel was to provide the study with descriptive statistics which allowed the researcher to analyse information and answer research questions. The information used in this study was based on the information provided by the official website of each university. The study also used information that was posted on the official website of the Saudi Arabian Ministry of Education and the Irish Department of Education. Some of the information found on these websites included the number of universities, teachers, and students in each country. In addition, the researchers sent many emails to confirm data collected from websites. In some cases, no response was received from a university. If no email response was received, the researchers used telephone calls to confirm the data. Misinformation was avoided through follow-up email and/or phone calls to the university. In addition, the websites were examined to ensure that they were up to date.

4.3 E-Learning Management System in Republic of Ireland
Table No. (6) includes 31 universities and colleges in 13 cities in the Republic of Ireland and provides information about the types of educational management systems used. As of May 9, 2015, the Irish Department of Education and Skills website shows that there are 44 institutes of higher education in Ireland. Based on this figure, the research covered approximately 70% of all Irish higher education institutes. Moreover, the researchers took steps to ensure that there was diversity in the study by including different types of schools.

Figure No. (12) shows a breakdown of the E-Learning management systems used by universities in Ireland. Figure No. (13) and 14 show the percentage of teachers and students utilizing each system, respectively.

The outcome of this study showed that Moodle is the most used E-Learning management system in Irish universities. Moodle is used in 55% of Irish colleges while 32% of colleges prefer outsourcing this task to organizations such as the Blackboard Company. A smaller
percentage of colleges, 3%, developed their own system. For example, Dublin City University (DCU) created a system called Loop, a system that is a mixed and upgraded version of Moodle. This study also showed that more than 52% of all academic staff and students in Ireland use Blackboard. Approximately 10% of Irish institutes do not have any type of E-Learning system.

**Moodle system:**

*Moodle* is OSS that is distributed under the General Public License (GNU). A GNU means that *Moodle* users are allowed to download, install, use, modify, and distribute the program for free. *Moodle* is available at https://Moodle.org/ and allows educators to create effective online learning sites.

<table>
<thead>
<tr>
<th>Irish Universities</th>
<th>City</th>
<th>Website</th>
<th>Student Number</th>
<th>Academic Staff Number</th>
<th>LMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Hallows College</td>
<td>Dublin</td>
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<td>700</td>
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<td>Westmeath</td>
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<td>5200</td>
<td>250</td>
<td>Moodle</td>
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<tr>
<td>Cork Institute of Technology</td>
<td>Cork</td>
<td><a href="http://www.cit.ie">www.cit.ie</a></td>
<td>17000</td>
<td>824</td>
<td>Blackboard</td>
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<td>Dublin City University</td>
<td>Dublin</td>
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<td>12000</td>
<td>440</td>
<td>Loop</td>
</tr>
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<td>Dublin</td>
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<td>22000</td>
<td>1198</td>
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<tr>
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<td>2000</td>
<td>340</td>
<td>Blackboard</td>
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<td>Dundalk</td>
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<td>600</td>
<td>Moodle</td>
</tr>
<tr>
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<td>623</td>
<td>Moodle</td>
</tr>
<tr>
<td>Institute of Public Administration</td>
<td>Dublin</td>
<td><a href="http://www.ipa.ie">www.ipa.ie</a></td>
<td>3500</td>
<td>100</td>
<td>Moodle</td>
</tr>
<tr>
<td>Institute of Technology Blanchardstown</td>
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<td>None</td>
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<td>Institute of Technology Sligo</td>
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<td>itsligo.ie</td>
<td>6500</td>
<td>300</td>
<td>Moodle</td>
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<td>4762</td>
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<td>Institute of Technology, Tralee</td>
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<td>Letterkenny Institute of Technology</td>
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<td><a href="http://www.lyit.ie">www.lyit.ie</a></td>
<td>3000</td>
<td>450</td>
<td>Blackboard</td>
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<td>Limerick</td>
<td><a href="http://www.lit.ie">www.lit.ie</a></td>
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<td>500</td>
<td>Moodle</td>
</tr>
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<td>Technology</td>
<td>Region</td>
<td>Website</td>
<td>Students</td>
<td>Staff</td>
<td>LMS</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------</td>
<td>-----------------------</td>
<td>----------</td>
<td>-------</td>
<td>--------</td>
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<tr>
<td>Marino Institute of Education</td>
<td>Dublin</td>
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<td>900</td>
<td>120</td>
<td>Moodle</td>
</tr>
<tr>
<td>Mary Immaculate College</td>
<td>Limerick</td>
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<td>3500</td>
<td>150</td>
<td>Moodle</td>
</tr>
<tr>
<td>Maynooth University</td>
<td>Maynooth</td>
<td><a href="http://www.maynooth.university.ie">www.maynooth.university.ie</a></td>
<td>10570</td>
<td>466</td>
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</tr>
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<td>National College of Art &amp; Design</td>
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<td>1300</td>
<td>110</td>
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</tr>
<tr>
<td>National College of Art and Design</td>
<td>Dublin</td>
<td><a href="http://www.ncad.ie">www.ncad.ie</a></td>
<td>1311</td>
<td>88</td>
<td>Moodle</td>
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<tr>
<td>National College of Ireland</td>
<td></td>
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<td>5000</td>
<td>220</td>
<td>Moodle</td>
</tr>
<tr>
<td>National University of Ireland, Galway</td>
<td>Galway</td>
<td><a href="http://www.nuisgalway.ie">www.nuisgalway.ie</a></td>
<td>17318</td>
<td>1078</td>
<td>Blackboard</td>
</tr>
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<td>Royal College of Surgeons in Ireland</td>
<td>Dublin</td>
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<td>3360</td>
<td>470</td>
<td>Moodle</td>
</tr>
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<td>Saint Patrick's College, Maynooth</td>
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<td><a href="http://www.maynoothcollege.ie">www.maynoothcollege.ie</a></td>
<td>470</td>
<td>20</td>
<td>Moodle</td>
</tr>
<tr>
<td>Shannon College of Hotel Management</td>
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<td>397</td>
<td>17</td>
<td>None</td>
</tr>
<tr>
<td>University College Cork</td>
<td>Cork</td>
<td><a href="http://www.ucc.ie">www.ucc.ie</a></td>
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<td>Blackboard</td>
</tr>
<tr>
<td>University College Dublin</td>
<td>Dublin</td>
<td><a href="http://www.ucd.ie">www.ucd.ie</a></td>
<td>30870</td>
<td>1322</td>
<td>Blackboard</td>
</tr>
<tr>
<td>University of Dublin</td>
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<td>Waterford Institute of Technology</td>
<td>Waterford</td>
<td><a href="http://www.wit.ie">www.wit.ie</a></td>
<td>9500</td>
<td>900</td>
<td>Moodle</td>
</tr>
</tbody>
</table>

Table 6. List of universities examined Ireland

Figure 12. Learning Management System use in Irish universities
4.4 E-Learning Management System in Saudi Arabia

Table No. (7) provides information about 46 universities and colleges in Saudi Arabia located in 23 different cities. As of May 1, 2015, the Saudi Arabian Ministry of Education website states that there are 61 public and private higher education institutes in the country. Based on this figure, the research covered more than 75% of all higher education institutions and included a diverse sampling of schools including small and large public or private schools.
Figure No.(15) provides an illustration of the E-Learning management systems used by Saudi Arabian universities. Figures 16 and 17 show the percentage of teachers and students utilizing each system, respectively.

The results of this investigation indicate that the most used E-Learning management system in Saudi universities is Blackboard. This system is used in 44% of Saudi institutions while 32% of institutions use an open-source system such as Moodle or Jusur. Jusur is a system that was created in 2007 by the Saudi National Centre for E-Learning (NCeDL). It has been adopted by only 7% of schools, possibly because it is so new or because universities had already established their own E-Learning systems and had no need or desire to implement a new one. Jusur allows users to create sources, register both staff and students, track learners, and provide student evaluations (Zouhair, 2010). Approximately 13% of colleges in Saudi Arabia do not currently support E-Learning. The study showed that more than 65% of students and academic staff in Saudi Arabia use Blackboard while more than 22% of students use an open-source system such as Moodle or Jusur.

Blackboard system:

Blackboard is one of the principal commercial LMS or CMS software packages used by American and European universities (Beatty & Ulasewicz, 2006).

<table>
<thead>
<tr>
<th>Saudi Universities</th>
<th>City</th>
<th>Website</th>
<th>Student number</th>
<th>Academic Staff number</th>
<th>LMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Baha University</td>
<td>Al Baha</td>
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<td>27344</td>
<td>1226</td>
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<td>Al Farabi College of Dentistry and Nursing</td>
<td>Riyadh</td>
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<td>1773</td>
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<td>Fahd bin Sultan University</td>
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<td>Dhahran</td>
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<td>Northern Borders University</td>
<td>Arar</td>
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<td>Khobar</td>
<td><a href="http://www.pmu.edu.sa">www.pmu.edu.sa</a></td>
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<td>Prince Sultan College For Tourism and Business</td>
<td>Jeddah</td>
<td><a href="http://www.pscj.edu.sa">www.pscj.edu.sa</a></td>
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<td>Riyadh</td>
<td><a href="http://www.pnu.edu.sa">www.pnu.edu.sa</a></td>
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<td>Alqassim</td>
<td><a href="http://www.qu.edu.sa">www.qu.edu.sa</a></td>
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<td>79845</td>
<td>4295</td>
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<td>University College of Jubail</td>
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<td>184</td>
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</table>

Table 7. List of universities examined in Saudi Arabia

Figure 15. Learning Management System use in Saudi universities
Figure 16. Percentage of teachers using each type of Learning Management System in Saudi universities

Figure 17. Percentage of students using each type of Learning Management System in Saudi universities
4.5 Conclusions

Based on the results of the study, the Blackboard system is used in 20 of 46 Saudi universities. The Blackboard system is used in both large and small Saudi universities including King Feisal University which has roughly 135,000 students. Many of these students are registered in a blended-learning program that includes in-class and online learning. King Feisal University uses Blackboard to handle its educational curriculum.

According to Aljabre (2012), the number of Saudi female students has been growing and the establishment of online learning programs will allow additional female students to begin or continue their studies. The researchers believe that the Saudi government wants to find a way to increase the number of female students. For example, in 2008, Princess Nora bint Abdurrahman University (PNU), a female-only university, was opened. Currently, PNU has a total enrolment of roughly 40,000 female students. The university provides blending learning for students and uses the Blackboard system. The success of PNU provides additional support regarding the use of LMS as a way to increase the number of students.

The way that Saudi Arabian universities handle distance learning is similar to the way that Irish universities address this situation. The primary difference is that Blackboard is used in only 7 higher education institutes in Ireland compared to 20 higher education institutes in Saudi Arabia. However, the schools which have the Blackboard system are home to the majority of students in both countries.

The results of the research indicate that Moodle is the most used E-Learning management system in Ireland with 17 colleges using this program. This result supports a study conducted in 2011 by a group from the University of Liverpool that examined the most important factors that influence small- and medium-sized higher education colleges and how these factors can impact the way that an open-source program such as Moodle can be used to handle an E-Learning system. The 2011 study found that the most important factors in implementing a new system are quality, reliability, support, and cost (Walker, Livadas, & Miles, 2011). Likewise, this study shows the similarity in how smaller institutions in two different countries prefer an open-source system such as Moodle. Small and private colleges often have a limited budget which forces them to look for cheaper E-Learning solutions.

The type of education system at a university can play a significant role in the decision to adopt an E-Learning system. The results of this study show that some Saudi and Irish educational institutions do not use E-Learning extensively. In addition, colleges in both countries continue to use traditional methods of learning and are not eager to move to an E-Learning management system. For example, in Ireland, educational institutions such as the Shannon College of Hotel and Management and the National College of Art & Design do not use an E-Learning management system because they prefer to train students in a practical way that is not conducive to this type of system. In Saudi Arabia, private medical colleges such as Batterjee Medical College and Riyadh College of Dentistry and Nursing do not use E-Learning for the same reason. However, this issue requires further investigation.
The research was designed to discover, analyse, and present information about which LMS was most used in Ireland and Saudi Arabia. It was also designed to show the similarities and differences between E-Learning implementation in Ireland and Saudi Arabia. The research found that the most used LMS in Saudi Arabia was *Blackboard* while the most used LMS in Ireland was *Moodle*. These results provide clear evidence that most colleges with a large enrolment prefer to use an outside vendor such as *Blackboard* to fulfil their E-Learning management needs. In addition, the research showed that 26% of academic staff in Saudi Arabia and 46% academic staff in Ireland used an open-source system like *Moodle*. Moreover, 36% of Irish students and 22% of Saudi students used an open-source system. The research also found that there are a small number of colleges in both countries that do not use a Learning Management System of any kind. The results provide many questions that can become the foundation for further research including determining why some colleges prefer a commercial system for E-Learning, why other institutes prefer open-source systems, and how to develop E-Learning systems that cover the needs of all educational systems.

For the purposes of this research project, a “small” university was defined as one as having less than (10,000) students, a “medium” university was defined as having between (10,000) and (15,000) students, and a “large” university was defined as having more than (15,000) students.

This Chapter has sought to provide richer detail on the background and contexts of the study, offering initial findings and results. From this area, we now move on to the main study itself in the next Chapter in particular looking at how the personal characteristics and educational backgrounds of users may impact upon elements of LMS evaluations.
Chapter 5.0: Determining How Personal Characteristics and Educational Background of Users May Impact LMS Evaluation (Analysing data collected from study questionnaires)

5.1 Introduction
The aim of this chapter is to build up an academic profile of the respondents at both institutions to provide the results of the survey administered to individuals at the UL and NU. The study relied on the MMR concept and provided data using quantitative and qualitative terms which has showed in Chapter 3. The survey was administered between December 5, 2015 and January 15, 2016.

For UL, the survey was called “Sulis system and teaching methods used” and only UL teachers were allowed to participate. The survey was administered online using surveymonkey.com and the Internet link to the survey was emailed by the research supervisor to all faculty members at UL colleges. The second part of the survey involved the distribution of a survey to NU employees entitled “Blackboard system and teaching methods used.” Only NU teachers were allowed to participate. This survey was managed online using surveymonkey.com and the Internet link to the survey was emailed by the IT division at NU to all faculty members.

In the first part of this chapter, the results of the demographic questions are presented and descriptions of the target demographic are given. In addition, differences regarding the way that various sub-groups responded to questions are analysed. The researcher has provided figures and tables to present the answers to various questions. The chapter will also discuss detailed demographic issues.

The second part of the chapter discusses the way that questions were answered in relation to the first axis of the study problem, the Sulis and Blackboard system designs and teaching methods used. The chapter examines the first study hypothesis from many points of view to determine respondent beliefs. The respondents were asked to give general answers regarding the issues and their answers were later analysed in different ways based on demographic categories.

The last part of the chapter discussed the way that the answers to the study questions relate to the second axis of the study problem, the Sulis and Blackboard user interface and teaching methods used. The chapter examines the second hypothesis by using the same methods of examination used to explore the first hypothesis.
5.2 Demographic results
The survey covered the following eight demographic issues: age, gender, specialization, teaching experience, academic qualifications, experience using the system, preferred method of teaching students, and prior experience with the system for parts of the research area. The number of answers received differed based on the demographic category. The answers provided for the different categories allowed the study sample to be classified by study issue. The categories were further analysed to determine patterns regarding study answers. The results will be compared using certain demographic issues for both UL and NU staff members. A comparison will be conducted to analyse similarities and differences.

5.2.1 University of Limerick (UL)
The study received 158 responses from UL lecturers regarding the survey. Most colleges in the University contributed to the survey to differing degrees. The following image provides a depiction of the answers in relation to respondent demographics.

### 5.2.1.1 Age

Figure 18. Distribution of study sample based on Age (UL)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 - 25</td>
<td>13.3%</td>
<td>21</td>
</tr>
<tr>
<td>26 - 35</td>
<td>30.4%</td>
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<td>36 - 46</td>
<td>31.6%</td>
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<td>46 - 55</td>
<td>13.3%</td>
<td>21</td>
</tr>
<tr>
<td>56 - 65</td>
<td>11.4%</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td></td>
</tr>
</tbody>
</table>

Table 8. Distribution of study sample based on Age (UL)

Figure No. (18) and Table. No. (8) provide information regarding the distribution of the study sample based on age at UL. The table shows that the largest age groups were the 36 to 46 year old and 26 to 35 year old groups. These groups accounted for more than half of the survey responses. The 56 to 65 year old group contributed the fewest answers. This result
was in line with the study conducted by Moore and Tarnai (2002) which found that younger individuals had a tendency to provide a greater percentage of survey responses than older individuals. Wagner et al. (2014) believe that age is one of the most important factors and could play a significant role in how the user feels about the computer software. Therefore, the study will examine each age group separately regarding the study problems to figure out the similarities and differences as revealed by age groupings.

5.2.1.2 Gender

![Figure 19. Distribution of study sample based on gender (UL)](image)

**Table 9. Distribution of study sample based on gender (UL)**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>56.1%</td>
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<tr>
<td>Male</td>
<td>43.9%</td>
<td>69</td>
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<tr>
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</table>

Figure. No. (19) and Table. No. (9) show the percentage of responses based on gender. Females had 14% more responses than males. According to Curtin et al. (2000), females participate in questionnaires more than men do. The results of Curtin’s study were supported by Moore and Tarnai (2002) who found a similar trend in their study.
5.2.1.3 Specialization

Figure 20. Distribution of the study sample based on specialization (UL)

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<tr>
<th>Answer Options</th>
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</tr>
</thead>
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<td>Computing and Informatics</td>
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<td>13</td>
</tr>
<tr>
<td>Arts</td>
<td>19.0%</td>
<td>30</td>
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<tr>
<td>Engineering</td>
<td>12.0%</td>
<td>19</td>
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<tr>
<td>Science</td>
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<tr>
<td>Languages</td>
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<td>Education</td>
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<td>7</td>
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<tr>
<td>Business</td>
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<td>24</td>
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<tr>
<td>Other</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>158</strong></td>
</tr>
</tbody>
</table>

Table 10. Distribution of the study sample based on specialization (UL)

Figure. No. (20) and Table. No. (10) provide information about the specific fields of the survey participants in UL. The science or arts field accounted for 38% of total participation and contributed more responses than any other specialization. The education specialization contributed only 7 responses while the computing and informatics specialization contributed 13 responses. The number of responses from all other specializations were relatively equal. Eight percent of the responses came from individuals who were classified under “Other.” These responses had a relatively small impact on the overall ratios. The researcher believes that the level of participation in the survey could be a sign of the level of satisfaction with the system. However, this claim needs to be explored in greater depth and could be analysed based on how various departments feel about the system. In addition, lecturers may view the system differently based on their educational background. For example, Abdellatief et al. (2011) believe that the evaluation of E-Learning could be based on a user’s specialization with the most important evaluations being provided by lecturers in fields involving the study of informatics. This point is further explored in greater detail later in this Chapter.
5.2.1.4 Teaching experience

The questionnaire divided teachers into those who had less than three years of teaching experience, between four and nine years of teaching experience, and greater than 10 years of teaching experience. Those who had greater than 10 years of teaching experience accounted for 39.5% of responses while those who had between four and nine years of teaching experience accounted for 26.1% of responses. Only 34.4% of individuals surveyed had less than three years of teaching experience. According to Teng and Allen (2005), there is evidence that suggests that a lecturer’s educational experience can impact on that person’s thoughts about LMSs such as Blackboard. Therefore, the researcher has divided the teachers into three groups: those who have little educational experience, moderate educational experience, and significant educational experience to determine if there is a link between the educational experience of a teacher and the responses to the study problems. Buabeng-Andoh (2012) reported that newer teachers who have relatively little experience in the educational field are more willing and likely to use technology to aid their teaching. This point is further explored in greater detail later in this Chapter.
5.2.1.5 Academic qualifications

The researcher limited the possible responses regarding academic qualifications to PhD, Master’s degree, Bachelor’s degree, and Other. More than 50% of participants had PhDs while approximately 33% had Master’s degrees. Only 14% of the participants had Bachelor’s degrees. The researcher believed that this result reflects the worldwide trend in universities where most teachers have their Master’s degree or are PhDs. The study will examine the differences between those with varying levels of educational achievement.

5.2.1.6 Experience using the *Sulis* system

![Figure 23. Distribution of the study sample based on experience using the *Sulis* system (UL)]
The investigation divided the lecturers into three groups, those who used the system for less than a year, those who used the system for two to three years, and those who used the system for more than three years. Half of the lecturers in the study worked with the Sulis system for greater than four years. After working with the system for more than a year, most people will be used to the system and be familiar with the way that it operates. However, user satisfaction is not linked with the amount of time that the user has worked with the system. The study will examine if the length of time that a user has worked with the system influences that person’s views of the system.

### 5.2.1.7 Preferred method for teaching students

![Pie chart showing method of teaching preferences](image)

Figure 24. Distribution of the study sample based on preferred method of teaching students (UL)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face communication</td>
<td>67.9%</td>
<td>106</td>
</tr>
<tr>
<td>Online courses</td>
<td>0.6%</td>
<td>1</td>
</tr>
<tr>
<td>Blended learning</td>
<td>31.4%</td>
<td>49</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>156</strong></td>
</tr>
</tbody>
</table>

Table 14. Distribution of the study sample based on preferred method of teaching students (UL)

Figure. No. (24) and Table. No. (14) show that most lecturers at UL prefer the traditional method of teaching, namely face-to-face communication. This teaching style was preferred by 67.9% of respondents while 31.4% of teachers preferred blended learning. Only one
person preferred online learning. This result was in line with the results of many other studies which found that people still prefer face-to-face communication involved with traditional teaching methods over other ways of teaching. An example of this finding is the study conducted by Shi et al. (2011) which showed that although that students used the Internet a significant amount, they still preferred to learn using face-to-face communication. In addition, the study conducted by Hua et al. (2013) found that students were not as excited about online courses and were more likely to prefer the traditional methods of learning. In the study entitled “Changing the Landscape of Teacher Education via Online Teaching and Learning,” Shin and Lee (2014) found that 67% of the universities agreed that establishing effective online courses was one of their most important long-term goals. The researcher believes that the LMS system used in colleges or universities will have a significant role in the way that students and staff interact with one another including what teaching methods will be employed. In addition, the LMS system could greatly impact upon a student’s learning experience.

5.2.1.8 Using the Sulis system before working for UL

![Pie chart showing distribution of teachers using Sulis system]

Figure 25. Distribution of the study sample based on using the Sulis system before working for (UL)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>8.9%</td>
<td>14</td>
</tr>
<tr>
<td>No</td>
<td>91.1%</td>
<td>144</td>
</tr>
</tbody>
</table>

Table 15. Distribution of the study sample based on using the Sulis system before working for (UL)

Figure. No. (25) and Table. No. (15) show that 91.1% of teachers had not used Sulis prior to working at UL while 8.9% of teachers had prior experience with the system. In Chapter 4, the study found that the Sulis system was only used at UL in Ireland. The results of the study showed that few members of the University had experience with Sulis prior to working at UL. However, the researcher believes that the results of the study could be misleading since many of the lecturers at UL had not worked with an LMS of any kind prior to joining the UL. The
interviews found that some staff members may have worked with LMSs such as Moodle or Blackboard while at UL before UL started using the Sulis system.

5.2.2 Najran University

The study has received 86 responses from lecturers working at NU. Individuals from most colleges at NU contributed to the survey in varying percentages. The following image shows the breakdown of answers according to the demographics of the University.

5.2.2.1 Age

![Figure 26. Distribution of study sample based on age (NU)](image)

Table 16. Distribution of study sample based on age (NU)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 - 25</td>
<td>4.6 %</td>
<td>4</td>
</tr>
<tr>
<td>26 - 35</td>
<td>43.7 %</td>
<td>38</td>
</tr>
<tr>
<td>36 - 46</td>
<td>32.2 %</td>
<td>28</td>
</tr>
<tr>
<td>46 - 55</td>
<td>16.1 %</td>
<td>14</td>
</tr>
<tr>
<td>56 - 65</td>
<td>3.4 %</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>87</td>
</tr>
</tbody>
</table>

Figure No. (26) and Table. No. (16) provide information regarding the distribution of the sample based on age. The table shows that the largest contributors were part of the 26 to 35 year old and 36 to 46 year old groups. This result is in line with the primary contributors in the UL survey. The 56 to 65 year old group contributed the fewest answers in the surveys conducted at UL and NU. This result is in line with other studies that are discussed in section 5.2.1.1.
5.2.2.2 Gender

Figure 27. Distribution of study sample based on gender (NU)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>29.5%</td>
<td>26</td>
</tr>
<tr>
<td>Male</td>
<td>70.5%</td>
<td>62</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>88</td>
</tr>
</tbody>
</table>

Table 17. Distribution of study sample based on gender (NU)

Figure. No. (27) and Table. No. (17) show the percentage of responses based on gender at NU. Males made up approximately two-thirds of the total samples and females comprised a relatively limited percentage of the sample at approximately 30%. However, if this breakdown is compared with the research conducted at UL, it is clear that females at UL contributed more than females at NU by 26%. This participation disparity could have occurred due to many factors including the total number of female staff members at NU or the culture of the members. The results seen at NU are contrary to numerous other studies which found that females typically contributed more than males. The researcher believes that more investigation is needed to find the reasons behind these results.
5.2.2.3 Specialization

![Pie chart showing distribution of study sample based on specialization (NU)](image)

**Table 18. Distribution of the study sample based on specialization (NU)**

<table>
<thead>
<tr>
<th>Answer Option</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing and Informatics</td>
<td>36.8%</td>
<td>32</td>
</tr>
<tr>
<td>Engineering</td>
<td>12.6%</td>
<td>11</td>
</tr>
<tr>
<td>Science</td>
<td>11.5%</td>
<td>10</td>
</tr>
<tr>
<td>Languages</td>
<td>12.6%</td>
<td>11</td>
</tr>
<tr>
<td>Education</td>
<td>11.5%</td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>8.0%</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>87%</strong></td>
<td><strong>87</strong></td>
</tr>
</tbody>
</table>

Figure. No. (28) and Table. No. (18) provide information about the specific fields of the survey participants in NU. Those with a computing and informatics background contributed the most to the survey and comprised 36.8% of responses. This result is quite different from the result observed at UL where there was extremely limited participation from those with this background. As stated in section 5.2.1.3 the contribution breakdown can be a sign of satisfaction or dissatisfaction regarding system features. Others at NU with different specializations contributed at rates that were relatively similar to one another. In particular, the Engineering and Language departments contributed 12.6% of responses each and the Science and Education departments contributed 11.5% of responses. The study targeted the same departments at NU and UL to ensure greater similarity. For example, the Islamic studies department at NU was not included in the survey as there was no equivalent department at UL.
5.2.2.4 Teaching experience

![Distribution of the study sample based on teaching experience (NU)](chart.png)

Table 19. Distribution of the study sample based on teaching experience (NU)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3 years</td>
<td>23.8%</td>
<td>20</td>
</tr>
<tr>
<td>Between 4 and 9 years</td>
<td>41.7%</td>
<td>35</td>
</tr>
<tr>
<td>Greater than 10 years</td>
<td>34.5%</td>
<td>29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>84</strong></td>
</tr>
</tbody>
</table>

The teachers at NU were divided into three groups, one involving teachers with less than three years of experience, another involving teachers with four to nine years of experience, and a third involving teachers with greater than ten years of experience. The greatest number of responses were received from lecturers who had between four and nine years of teaching experience. This result was seen in both the NU and UL teachers surveyed. In fact, 70% of the total participants belonged to this category. The division of the study sample is explained in greater detail in section 5.2.1.4.

5.2.2.5 Academic qualifications

![Distribution of the study sample based on academic qualifications (NU)](chart.png)
At NU, the study answers were limited to three degrees: PhD, Masters, and Bachelors. This division allowed the research conducted at NU and UL to be compared. Most of the participants in the NU survey possessed Master’s degrees and the researcher assumed that this occurred since NU was a newer university in Saudi Arabia. The University was established in 2006 and has had relatively little time to establish and shape its teaching contingent. Individuals who had PhDs represented only 34.5% of participants at NU. In contrast, PhD holders represented more than half of the UL participants. There were only four individuals at NU who participated and had Bachelor’s degrees.

5.2.2.6 Experience using the Blackboard system

According to Sylvern (2016), learning new software could create many difficulties. He believes that new users should work to gather as much information as possible about the new software and then give themselves time to learn and master the program. Many companies believe that greater employee experience with the system could allow the learning of a new

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor's Degree</td>
<td>4.6%</td>
<td>4</td>
</tr>
<tr>
<td>Master's Degree</td>
<td>58.6%</td>
<td>51</td>
</tr>
<tr>
<td>PhD</td>
<td>34.5%</td>
<td>30</td>
</tr>
<tr>
<td>Other</td>
<td>2.3%</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>87</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 20. Distribution of the study sample based on academic qualifications (NU)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>40.0%</td>
<td>34</td>
</tr>
<tr>
<td>Between 2 and 3 years</td>
<td>42.4%</td>
<td>36</td>
</tr>
<tr>
<td>Greater than 4 years</td>
<td>17.6%</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 21. Distribution of the study sample based on experience using the Sulis system (NU)
LMS to progress more smoothly (Schank, 1995). The researcher divided the sample into three groups, namely those who have little experience with the system, moderate experience with the system, and significant experience with the system. Forty percent of the lecturers at NU have worked with the Blackboard system for less than a year and 40% of the lecturers have worked with the system for less than three years. There are only a few members (17%) at NU who have worked with the Blackboard system for a significant amount of time. The study will examine if the time that the NU members worked with the Blackboard system impacted the way individuals felt about the study problem. The study will also analyse the differences between the beliefs of UL and NU lecturers regarding the link between the amount of time using a system and that person’s beliefs about the system.

5.2.2.7 Preferred method for teaching students

Table No. (32) and Figure No. (22) show that a third of the teachers at NU prefer the blended learning method of teaching students. This result is similar to the results found at UL. The study also found that the lecturers at NU prefer face-to-face communication over other methods of teaching. This result is similar to the result found at UL and in other studies as discussed in section 5.2.1.7.
5.2.2.8 Using the Blackboard system before working for NU

Based on the results provided in Chapter 4 which stated that Blackboard is the most used LMS in Saudi Arabia, Figure No. (33) and Table No. (23) showed that nearly a quarter of the lecturers at NU have used the Blackboard system previously. The researcher assumes that this experience could help teachers deal with the system more effectively. This assumption will be tested within the parameters of the study at a later time.
5.3 Evaluation of the LMS systems based on the lecturers perspective.

According to Hassenzahl and Tractinsky (2006), the process of evaluating a technology product is complex and involves many factors. The researchers believed that user evaluation of the product is not based only on the product’s features, but also on other intangible factors including grace, level of enjoyment, and emotions. Researchers in the field of Human-Computer Interaction (HCI) believe that determining the success of a system in fulfilling organizational and user needs requires that user satisfaction be measured. However, this process is a critical and difficult process (Tella, 2011, Delone and McLean, 2003). The researcher relied on evaluating the system design and user interface from the user point of view to determine what the lecturers perceive as the system’s weaknesses and strengths. The study also worked to determine if lecturers believed that the current system employed at NU or LU can help them employ a variety of teaching methods.

According to the study conducted by Steel and Levy (2009, P.1014): “In a technology environment, this internal space comprises both teachers’ pedagogical beliefs and their beliefs about the roles, value and use of technologies in their teacher practices. These belief systems are key to understanding why technology integration into university teaching practices is minimal and largely focused on administrative uses and information management and dissemination rather than on learning and teaching”. When evaluating information systems (ISs), comparing one system to another is very beneficial and can provide many benefits that allow both systems being tested to improve. However, the comparison phase should be one of the final phases and should be preceded by stages that involve user evaluation and measurements of the user evaluation phenomenon. The responses obtained from the user evaluation stage should be studied and compared (Palmius, 2007). The researcher assumes that the evaluation of two different LMSs, in this case Blackboard at NU and Sulis at UL, from the lecturers’ point of view would allow the various features of the systems and the impact of the systems on teaching methods used to be clear. To obtain these objectives, the following questions were presented in Chapter 1:

- How do lecturers critically view the LMS system design?
- How do lecturers critically view the LMS system user interface?
- How does the current LMS help lecturers employ a variety of teaching methods?

The LMS should create a virtual environment that plays a role in making resources readily available to users including students, lecturers, and staff. In addition, the virtual environment should reinforce all types of teaching and learning methods including online, blended, or traditional (Heirdsfield et al., 2011, Malikowski et al., 2007, Coates, 2007).

Buabeng-Andoh (2012) believes that governments around the world are making huge investments to implement information technology and improve the quality of education. However, the role of this type of technology is still limited in the educational world. The study will seek to answer the above questions. The researcher will analyse LMS design, in particular, Sulis and Blackboard, and determine the role of the system’s design features on
teaching methods used. The study will also look into the user interfaces of the systems to see if the system elements impact teaching methods used by lecturers.

### 5.3.1 Evaluation of the LMS (Sulis & Blackboard) Design

The researcher worked to provide answers for the following questions:

- How do lecturers critically view the LMS system design?
- How does the current LMS help lecturers employ a variety of teaching methods?

The study prepared the following hypothesis that was presented in Chapter 1:

- LMS design has an impact on the pedagogical performance of academic staff in terms of teaching methods.

The researcher prepared eight survey questions to measure the relationship between LMS design and teaching methods used by faculty members in UL and NU. All questions were based on Likert scales and the participants were asked to choose between the following five options: strongly agree, agree, neutral, disagree, and strongly disagree. Each option was given a corresponding point value from 1 to 5. Strongly agree was given a point value of 5, agree was given a point value of 4, neutral was given a point value of 3, disagree was given a point value of 2, and strongly disagree was given a point value of 1. The Likert scale is a very well-known and well-respected method that measures human beliefs and attitude. The scale has been used since 1932. However, Likert scales do not account for the views of individuals and only provide an evaluation for an entire group (Boone and Boone, 2012). Therefore, to provide a clear image for the study problem, the study used MMR which was discussed in Chapter 3. The weighted average will help to determine the overall opinion of participants on each issue related to the LMS. Table No. (24) contains the score for each issue as determined by the weighted average. The table also provides a general average for all questions in both parts of the research.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Weighted average</th>
<th>Sulis/UL</th>
<th>BB*/NU</th>
</tr>
</thead>
<tbody>
<tr>
<td>The requirements of using the system help me to use a variety of teaching methods</td>
<td>3.30</td>
<td>3.96</td>
<td></td>
</tr>
<tr>
<td>The time it takes to complete one task through the system helps me to use a variety of teaching methods</td>
<td>3.18</td>
<td>3.67</td>
<td></td>
</tr>
<tr>
<td>The flexibility of having access to the system from any location and at all times helps me to use a variety of teaching methods</td>
<td>3.81</td>
<td>3.94</td>
<td></td>
</tr>
<tr>
<td>The organization of screens in the system makes my work in the system easier</td>
<td>2.92</td>
<td>3.72</td>
<td></td>
</tr>
<tr>
<td>I am satisfied with the time needed to complete tasks in the system</td>
<td>3.04</td>
<td>3.71</td>
<td></td>
</tr>
<tr>
<td>The system provides me with a way to use many teaching methods</td>
<td>3.21</td>
<td>3.78</td>
<td></td>
</tr>
<tr>
<td>The organization of functions in the system helps me to use a variety of teaching methods</td>
<td>3.07</td>
<td>3.76</td>
<td></td>
</tr>
<tr>
<td>I am satisfied with the navigation of the system</td>
<td>2.81</td>
<td>3.53</td>
<td></td>
</tr>
</tbody>
</table>

**General Average***  

3.16  3.75

Table 24. Scores of the relationship between the LMSs design and the teaching methods used
* General average = the overall average of the answers to the eight questions which measure the impact of systems design on teaching methods used. BB = Blackboard

Table No. (24) shows that, on average, the Sulis and Blackboard systems were viewed positively by users. However, some questions had a weighted average that had a score of barely under or over 3, especially in relation to the Sulis system. The study looked at the sample in greater detail to determine the beliefs for each group as shown in the following list:

- To determine if people with different educational backgrounds have different or similar views on the issue
- To determine if the length of time an individual has used the system influences his or her views
- To determine if the educational background of an individual has an impact on a person’s views of the system
- To determine if age has an impact on a person’s opinion of the system
- To determine if the academic qualifications of UL and NU faculty members impact views on the system.

Buabeng-Andoh (2012), Schiller (2003) stated that there are many personal factors that can influence user’s beliefs about the role of technology in teaching. Examples of these personal factors include gender, teaching experience, time using the technology, and age.

In their book, *User Interface Design and Evaluation*, Stone et al. (2005) stated that it is critical that the design of any software match user expectations. Especially when software is being designed for a particular use by a company or institution, the software creators should be ambitious in working to ensure that the system meets the needs of the “real users.” This term refers to the users who will use the system very heavily to complete work. In this study, the “real users” of the Sulis and Blackboard systems are teachers and students. The study will be limited to the teachers as discussed in Chapter 3. Stone believes that once the “real users” are identified, then this group of users should be divided based on personal characteristics.
such as age, sex, culture, educational background, and experience. This process will allow software designers to ensure that all user expectations are met. In addition, placing users into smaller groups will help to make the initial designing or redesigning of the system easier. Knowing the personal characteristics of various user groups can be very beneficial and allow the software to better meet user needs. For example, individuals who have less experience working with technology and various systems will view a system differently than someone who has extensive experience with technology. Figure No. (34) provides a model which shows how the researcher accounted for many personal characteristics in the survey design and used this information to analyse the data collected. The model shows the five primary external variables that this study limited to, namely, age, teaching experience, specialization, LMS experience and qualifications.

5.3.1.1 Evaluation of the LMS design from the viewpoint of different specializations

The researcher created a method of analysing how a person’s specialization impacts his or her beliefs and how these beliefs impact the person’s views of the system design. The results are presented in Table No. (25).
Table 25. Scores of the relationship between the LMSs design and the teaching methods used from the viewpoint of different specializations.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sulis / UL</td>
</tr>
<tr>
<td></td>
<td>CI  Arts  Eng  Sci  Lang  Edu  Bus</td>
</tr>
<tr>
<td>The requirements of using the system help me to use a variety of teaching methods.</td>
<td>3.08  3.46  3.23  3.59  3.45  2.83  3.14</td>
</tr>
<tr>
<td>The time it takes to complete one task through the system helps me to use a variety of teaching methods.</td>
<td>2.58  3.36  3.15  3.59  3.35  2.67  3.14</td>
</tr>
<tr>
<td>The flexibility of having access to the system from any location and at all times helps me to use a variety of teaching methods.</td>
<td>3.33  3.39  3.69  4.00  4.05  3.50  3.82</td>
</tr>
<tr>
<td>The organization of screens in the system makes my work in the system easier</td>
<td>1.92  3.18  2.85  3.23  3.10  2.67  3.00</td>
</tr>
<tr>
<td>I am satisfied with the time needed to complete tasks in the system.</td>
<td>2.17  3.14  2.85  3.27  3.35  2.67  3.36</td>
</tr>
<tr>
<td>The system provides me with a way to use many teaching methods.</td>
<td>2.67  3.32  2.92  3.45  3.40  2.67  3.36</td>
</tr>
<tr>
<td>The organization of functions in the system helps me to use a variety of teaching methods.</td>
<td>2.50  3.56  2.77  3.19  3.16  2.50  3.15</td>
</tr>
<tr>
<td>I am satisfied with the navigation of the system.</td>
<td>2.08  3.08  2.77  3.10  2.95  2.00  3.10</td>
</tr>
<tr>
<td>General average*</td>
<td>2.54  3.38  3.02  3.42  3.35  2.68  3.25</td>
</tr>
<tr>
<td>Percentage of participation in the sample*</td>
<td>8%  19%  12%  19%  13%  4%  15%</td>
</tr>
</tbody>
</table>


# 10% of participants came from a specialization that was not listed in the UL survey and 8.64% of participants came from a specialization that was not listed in the NU survey.
Table No. (25) shows that the NU and UL participants hold different views. The views require the researcher to analyse the answers provided on a department-by-department basis and then compare all departments to identify similarities and differences. In the study, the UL departments will be discussed first and the NU departments will be discussed second. Finally, the similarities and differences will be analysed.

5.3.1.1.1 UL departments

Teachers who have a degree in computing and informatics believe that the design of the Sulis system has a negative impact on the teaching methods used and that the system does not provide a good platform for teaching their particular topics. In addition, these individuals believe that the system is time consuming and possesses a disorganized and overly complex navigation system. The teachers do like how the design of the system allows them to access the system at any time and from any place. This particular feature of the system is something that is universally appreciated by faculty members at UL. In addition, UL faculty finds the system to be generally easy to use as it is quite intuitive. The researcher feels that the low participation in the survey from the computing lecturers could be a sign of annoyance that they feel regarding the Sulis system. Abdellatif et al. (2011) believe that people with a computer background have the ability to evaluate E-Learning systems properly and that the opinion of these individuals is more important than the opinion of other users. The researcher agrees to some extent with this opinion but also believe that other specializations could look at the system from a different point of view. For example, lecturers from an education background could see if the system boosts the educational experience while those without an education background may not have this ability.

Lecturers who have a degree in the arts have a positive view of the Sulis system design and believe that the Sulis system allows them to use multiple teaching methods. In addition, these individuals believe that, to some extent, the Sulis system does not consume much time and that all features of the system are clearly organized. The lecturers have no strong feelings regarding system navigation, something which other lecturers felt needed improvement. This topic was addressed by two survey questions, one which asked participants about the organization of the screens and the other which measured participant satisfaction with the navigation of the system. The people with a degree in the arts made up 19% of the total sample, a figure that is considered “great” participation. The researcher believes that the difference in views between the lecturers in computing and arts is due to the amount of work that each does in the system. In general, the art lecturers received more training on the system than the computing lecturers. In the article entitled “Faculty perspectives on moving from Blackboard to the Moodle learning management system” by Beatty and Ulasewicz (2006), the researchers interviewed two teachers, one with an arts background. This individual believed that the major role of the LMS is to create an educational environment that all users can easily access and interact with to engage in self-learning. In addition, the lecturer believed that the LMS should be able to serve arts students who work primarily in the visual environment. This opinion shows that all user discussions and user projects interact with each other to lead to self-learning. Moreover, she believes that specialization differences in system users could lead to vastly different evaluations of the system.
Lecturers in the engineering department had a neutral view of the impact of the Sulis system design on their teaching methods. These lecturers believed that the system was good at providing them with flexibility regarding when they were able to access it and the lecturers reported that the system was generally easy to use. Many of the engineers felt that the amount of time needed to complete tasks in the system was acceptable. The Sulis system properties that left the lecturers dissatisfied were the messy organization of screens and the difficulty of navigation. Llamas et al. (2011) looked at the use of the LMS in relation to education teachers. The study received responses from more than 146 engineering teachers who used seven different LMSs including Moodle, Blackboard, and Sakai. The respondents were from more than nine countries. The study found that most of the engineering teachers had a high level of satisfaction regarding the flexibility of LMSs and believed that the flexibility of the system was a great feature. The result of this study is compatible with the results found in this study.

The individuals who specialized in science accounted for approximately 19% of the total participants in the survey. The people with this educational background believe that the Sulis system design can play a positive role in the teaching methods used. In addition, the lecturers liked the way that Sulis can be accessed from anywhere at any time and believe that this feature is very beneficial. The Table NO. (18) provides a summary of participant responses shows that there is a marked difference in the way that lecturers with a science background feel compared to those who have a computing background. For example, many who have a background in science feel that the navigation in the system is acceptable while those with a computing and informatics background believe it is messy and unclear. In addition, those with a science background find the time it takes to complete tasks to be acceptable while those with a computing and informatics background believe that the amount it time to accomplish tasks in the system is somewhat excessive and time consuming. Based on the results of the survey, the department of science was the most satisfied department at UL regarding the role of the Sulis system and its impact on teachers.

Lecturers with a background in language made up 13% of the total sample. Many teachers with this specialization had a positive view of the Sulis system design and its impact on teaching methods. Likewise, the results of the Basal (2015) study which investigated 122 English teachers in Turkey about the role of LMSs in their courses found that many teachers had a positive perception of the role of these systems in allowing many teaching methods to be used in addition to traditional teaching methods. In addition, the UL survey stated that many with this background believed that the Sulis system provided them with greater flexibility and access to the system, but also added that the system’s navigation was a problem that could negatively impact the way that students were taught.

Only seven individuals from the education department contributed to the survey. As a result, their impact on the survey was small compared to other departments. This small sample showed that the department felt that the Sulis system had very poor navigation and that the features on the screen are not clearly displayed. They believe that the system does not enable them to employ many teaching styles and that the design of the system causes some delays. They did like the flexibility that the system provided and that the system could be accessed
remotely. Ekman *et al.* (2015), a researcher in Sweden, found that there were significant differences between the views of lecturers with a background in education and those with other specializations regarding the use of an LMS. Education teachers, in general, successfully used an LMS to employ many teaching methods. In addition, the research found that education teachers used the LMS more than others and used more functions more effectively. The research felt that the difference in the results obtained through the research conducted in UL lecturers and the research conducted by Ekman *et al.* in Sweden can be attributed to the different LMS software used.

The business department contributed 15% of survey data. Overall, the teachers in this department had a positive view of the *Sulis* system design and felt that it played a positive role in supporting the teaching of students. However, they noted that the navigation of the system was less satisfying and that it could be improved.

### 5.3.1.1.2 NU departments

Teachers who have a degree in computing and informatics participated in the NU survey at a 40% rate. They believed that the design of *Blackboard* played a positive role in allowing individuals to use many teaching methods. As a whole, the group had a high level of satisfaction regarding design features, especially access to the system. Computing and informatics teachers at NU were the second most satisfied group with the *Blackboard* design. Education teachers were the most satisfied with the system. According to Buabeng-Andoh (2012), lecturers with a computer background are more likely to have a positive attitude regarding technology use in the classroom, however, it is important that the technology available has an actual use and need.

Lecturers in the engineering department had a positive view of the impact of the *Blackboard* system design on their teaching methods. All the *Blackboard* features received high levels of satisfaction. Those in this department felt that the *Blackboard* system did not cause time-consuming processes.

Lecturers in the science department had the lowest contribution to the survey and accounted for 12.35% of the responses. In general, Table No. (25) showed that the general average for this group was 3.62, one of the lowest average scores at NU. Despite the way that this score compares to the scores of other departments, the researcher believes that this number is high. In addition, science lecturers believe that the *Blackboard* system plays a positive role in the teaching methods use; however, the researcher believes that still this number is high. In addition, the science lecturers look believed that the *Blackboard* design play a positive role in teaching methods used by them.

Languages lecturers in NU stated that the *Blackboard* system design allowed them to use many styles of teaching. All of the system’s features received high scores including navigation, time, and ability to access the system remotely. The scores of all features were very similar.

Education lecturers believed that the *Blackboard* design is constructed in a way that effectively supports the education process and allows for many teaching methods to be used.
All features of the system received high scores from these lecturers. As Buabeng-Andoh (2012) stated, when users feel that software is useful, they are more likely to use the software more efficiently and incorporate it more into the teaching process.

5.3.1.1.3 Conclusion

The researcher believes that there are many similarities in the way that respondents with different specializations feel about the LMS design and how it influences the teaching methods used. The following shows the researcher’s conclusions:

- When asked if they felt that the LMS can provide a way to use many teaching methods, most lecturers believed that the LMS is effective in helping teachers use many teaching methods. These results support the study conducted by Steel and Levy (2009) which claimed that the LMS has a major role in the teaching practice in the higher education. Based on the information displayed in Table No. (25), lecturers with a computer or education background at UL believed that the current LMS at the University did not help educators use many teaching methods. This finding shows that not all LMS software can aid in lecturers effectively. In particular, the Blackboard system has received only positive reviews about its role at NU in helping lecturers use different teaching methods. In contrast, the Sulis system did not receive unanimous positive reviews from those at UL.

- The researcher believes that the dissatisfaction that users feel about the system design could be a result of the system failing to perform all tasks properly. There are many teachers at UL who believe that the navigation of the Sulis system is problematic or merely average. As a result, the overall opinion of the system design is negative in the view of some UL lecturers.

- The researcher assumes that the percentage of participants in the survey could be a sign of dissatisfaction or satisfaction with the system. Table No. (25) provides some evidence which supports this assumption. For example, computer and education teachers at UL had low levels of participation and both of them had high dissatisfaction levels with the Sulis system. Unlike the computer and education teachers at UL, there were a significant number of teachers at NU who participated in the survey and reported a high level of satisfaction with the Blackboard system.

- There is a consensus regarding the importance of features that each LMS should have such as the ability for users to access the system remotely and use the system easily. In the case of this study, both Blackboard and Sulis have an acceptable level of user satisfaction regarding these issues and many lecturers believe that the systems allow many teaching methods to be used. The results of the study are in line with the study performed El Zawaidy (2014) who performed research regarding the use of the Blackboard system in Saudi universities. El Zawaidy found that most of the lecturers in Saudi universities stated that the Blackboard system was easy to use.

- Garrote Jurado (2007) said that one of the greatest advantages regarding an LMS is the ability of the system to save lecturers’ time. In this study, the Blackboard system was a time saver for lecturers working at NU. However, the Sulis system was seen as a time consuming system.
To increase the use of LMSs by teachers, the systems should be rethought and possibly redesigned to fit better with lecturer needs. Yueh and Hsu (2008) have suggested that systems be better tailored to meet the needs of users. In our study, the Sulis design has failed to meet lecturer needs while the Blackboard system has a high level of satisfaction from teachers working at NU.

Based on the McGill and Hobbs (2008) study, lecturers are less satisfied with the LMS than students and they believe that the LMS has been responsible for limited contributions to teaching methods. The current study revealed that Blackboard and Sulis generally help teachers use various teaching methods despite having some reservations about the Sulis system design.

Based on the result of Table No. (25), the researcher believes that the diversity of specializations among the lecturers in different educational organizations made the interactions of LMS users different. The decision regarding which LMS to install in a university is very complicated. Lecturers work in the LMS as an end user and a developer (McGill and Hobbs, 2008). Decision makers in a learning institution must evaluate and make decisions based on which LMS suits the institution the best and adjust the system, as needed, based on user opinions, needs, and experiences (Caminero et al., 2013).

5.3.1.2 Evaluation of the LMS design based on the lecturer’s experience

The survey divided the respondents into three categories based on a person’s experience with the system. These categories were created to determine if a user’s prior experience with the LMS impacted upon how much a user liked or disliked the system. The categories were also designed to determine if the user believed that the system helped a person use many methods of teaching. According to Steel and Levy (2009), experience with an LMS for teachers is very important and lecturers may use the LMS less effectively if they do not have experience working with the system. The researcher believes that experience with the LMS for users is important, but proper training should be provided to the user to ensure that the user is not learning how to use the system by trial and error. This training should be provided to individuals regardless of their prior experience to ensure that all users start their experience with the same knowledge. User experience could lead to failure or mastery in the use of any software and developers should be mindful of the differences in user experience when they develop new software (Moseley and Ajani, 2015).

Table No. (26) contains a weighted average of respondent answers for each answer. The table is categorized by question and previous experience with LMSs.
### Table 26. Scores of the relationship between the LMS design and the teaching methods used based on the lecturer’s experience using the LMS.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Experience of using the LMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Sulis / UL</em></td>
</tr>
<tr>
<td></td>
<td>Less than 1 year</td>
</tr>
<tr>
<td>The requirements of using the system help me use a variety of teaching methods.</td>
<td>3.29</td>
</tr>
<tr>
<td>The time it takes to complete one task through the system helps me use a variety of teaching methods.</td>
<td>3.42</td>
</tr>
<tr>
<td>The flexibility of having access to the system from any location and at all times helps me use a variety of teaching methods.</td>
<td>3.79</td>
</tr>
<tr>
<td>The organization of screens in the system makes my work in the system easier</td>
<td>3.33</td>
</tr>
<tr>
<td>I am satisfied with the time needed to complete tasks in the system.</td>
<td>3.42</td>
</tr>
<tr>
<td>The system provides me with a way to use many teaching methods.</td>
<td>3.46</td>
</tr>
<tr>
<td>The organization of functions in the system helps me to use a variety of teaching methods.</td>
<td>3.32</td>
</tr>
<tr>
<td>I am satisfied with the navigation of the system.</td>
<td>3.36</td>
</tr>
<tr>
<td><strong>General average</strong></td>
<td><strong>3.42</strong></td>
</tr>
<tr>
<td>Percentage of participation in the sample</td>
<td>23.23%</td>
</tr>
</tbody>
</table>
The following bullet points contain an analysis of the data presented in Table No. (26):

- Teachers who have used the LMS for less than a year either at NU or UL are satisfied with the LMS design and believe that the systems allow them to employ many teaching methods.
- The level of the satisfaction regarding the Sulis system design and the role of the system in allowing different teaching methods declined sharply from a score of 3.42 for new users (those with less than a year) to 2.97 for average users (those with less than three years). Blackboard users showed the same level of “positive” satisfaction regarding system design and the role it plays in allowing teaching methods to be used.
- Teachers who have used the LMS for more than 4 years believed that LMS platform, whether Blackboard or Sulis, has a good design. All the design features in both systems received responses indicating user satisfaction with the exception of the easy of navigation in the Sulis system.
- Based on Table No. (19), the navigation of the Sulis system was considered problematic by all UL teachers except for new users. A system’s navigation is considered “good” or “bad” based on the ability of a user to access certain parts of the system easily (Moseley and Ajani, 2015). A problem navigating the system could lead to further problems that could ultimately lead to the failure of the system to achieve its goals. In comparison, the navigation of the Blackboard system seems to be acceptable to all users.
- Table No. (26) shows that the Blackboard system is considered a good LMS in terms of saving users time. This time saving can be used to bolster user satisfaction regarding the system (Moseley and Ajani, 2015). The Sulis system is less satisfactory in its ability to save time. Moseley and Ajani (2015) said that “most users are extremely conscious of how long it takes to get the information they need. This makes it imperative that the features designed save time for the user.” This quote shows the importance of saving time and efficient system navigation.
- All lecturers at UL or NU believed that the most important part of an LMS is its ability to save users time. Without being able to access resources from any location and at any time, teachers would not be able to integrate technology into the teaching process. A key factor in the consideration of the system as an effective supporter of the educational process is the ability to make resources readily available (Buabeng-Andoh, 2012, Yildirim, 2007).
- All faculty members at NU and UL tend to believe that the LMS can provide them with a way to use many teaching methods. Steel and Levy (2009) stated that the LMS has the ability to support traditional teaching methods. The researcher believes that choosing the right software is key to the success of an LMS.

5.3.1.2.1 Conclusion
The researcher feels that new users will be able to better realize the system’s role and be more willing to explore the system’s capabilities. Steel and Levy (2009) interviewed a lecturer regarding his beliefs about LMSs and found that the lecturer believed that the pedagogical performance he displays would be the same using either an LMS or face-to-face
communication. A study conducted by Alharbi and Drew (2014) showed that there is a relationship between adopting an LMS as a teaching solution and the user experience with the LMS. The study also found that users with less experience are more willing to adopt the LMS than experienced users. This finding shows that the type of E-Learning system selected by a university can have a significant impact on a user’s positive or negative experience.

In the current study, Table No. (26) shows that the most satisfied group of users with the LMS is the new user group. The researcher believes that as the system is used more, the user’s opinion about the system becomes more credible. As a result, the average score for users with more experience is weighted more heavily than the average score for the users with less experience.

Table No. (26) also shows that the design of an LMS plays a significant role. Users found that the Blackboard system had a much better design than the Sulis system. All teachers at NU had a high level of satisfaction with the Blackboard system and felt that the system served them effectively. In contrast, the Sulis system had some design issues that impacted ease of navigation and the time to navigate from one part of the system to another. The decline in the level of satisfaction between new Sulis users and more experienced Sulis users can be attributed to the failure of certain Sulis features to meet user expectations and needs. Buabeng-Andoh (2012) found that providing educational organizations with the best software to aid in the implementation of the educational process may not succeed if teachers have negative attitudes regarding the role of technology in the teaching process. The researcher believes that the attitude that is created through experience with technology can have an impact in the way that teachers view it. Therefore, employing the right software which has features that meet teacher expectations and needs is critical. For example, the Blackboard system implemented at NU has high levels of satisfaction while the Sulis system at UL has almost universally low satisfaction levels.

5.3.1.3 Evaluation of the LMS design based on the lecturer’s teaching experience
There are many researchers who have studied the relationship between teacher experience and the use of technology in the classroom. A study by Niederhauser and Stoddart (2001) claimed that teacher experience does not necessarily influence if they will or will not like to use a software such as an LMS in the classroom (Wong and Li, 2008, Giordano, 2007, Hernández-Ramos, 2005). The researcher explored the relationship between teaching experience and how it relates to their opinion of the LMS. Table No. (27) uses a weighted average to determine the thoughts of teachers with various amounts of teaching experience regarding LMSs.
<table>
<thead>
<tr>
<th>Questions</th>
<th>Teaching experience</th>
<th>Sulis / UL</th>
<th>Blackboard / NU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Less than 3 years</td>
<td>Between 4 and 9 years</td>
</tr>
<tr>
<td>The requirements of using the system help me to use a variety of teaching methods.</td>
<td></td>
<td>3.54</td>
<td>3.08</td>
</tr>
<tr>
<td>The time it takes to complete one task through the system helps me to use a variety of teaching methods.</td>
<td></td>
<td>3.51</td>
<td>3.03</td>
</tr>
<tr>
<td>The flexibility of having access to the system from any location and at all times helps me to use a variety of teaching methods.</td>
<td></td>
<td>4.10</td>
<td>3.58</td>
</tr>
<tr>
<td>The organization of screens in the system makes my work in the system easier</td>
<td></td>
<td>3.32</td>
<td>2.86</td>
</tr>
<tr>
<td>I am satisfied with the time needed to complete tasks in the system.</td>
<td></td>
<td>3.41</td>
<td>3.06</td>
</tr>
<tr>
<td>The system provides me with a way to use many teaching methods.</td>
<td></td>
<td>3.49</td>
<td>3.06</td>
</tr>
<tr>
<td>The organization of functions in the system helps me to use a variety of teaching methods.</td>
<td></td>
<td>3.41</td>
<td>2.82</td>
</tr>
<tr>
<td>I am satisfied with the navigation of the system.</td>
<td></td>
<td>3.16</td>
<td>2.76</td>
</tr>
<tr>
<td><strong>General average</strong></td>
<td></td>
<td><strong>3.49</strong></td>
<td><strong>3.03</strong></td>
</tr>
<tr>
<td>Percentage of participation in the sample</td>
<td></td>
<td>34.39%</td>
<td>26.11%</td>
</tr>
</tbody>
</table>

Table 27. Scores of the relationship between the LMSs and the teaching methods used based on the lecturer’s experience.
The table No (27) provides various views of different teaching groups. Certain features in the LMS have a more significant impact than others on teaching methods. The researcher summarizes the key points from the table in the following bullet points:

- Lecturers who have less than three years of experience in the education field have higher satisfaction levels regarding the role of system design on teaching methods used. The average score for the Sulis system was 3.49 while the average score for the Blackboard system was 3.76. The lecturers at UL stated that the ability to access the system at any time is the best feature and that the system possesses good navigation features that are not unnecessarily time consuming. The lecturers at NU were satisfied with all features of the Blackboard design.

- Lecturers with more than four years of experience had a neutral view of the Sulis system. These individuals believed that certain features of the system negatively impacted teaching methods used. Some felt that the system’s navigation was confusing and that the order of screens was not organized in a logical manner. According to Buabeng-Andoh (2012), teachers who showed a neutral opinion about the role of technology in teaching could feel this way due to a lack of knowledge and skill regarding the proper use of the technology. However, the researcher has reservations about this theory since the right technology can be very beneficial to people of all knowledge levels. In addition, Table No. (27) shows that individuals with similar backgrounds at NU has positive opinions regarding the role of an LMS on teaching methods used and had a high level of satisfaction regarding Blackboard design.

- In general, the level of satisfaction regarding the Sulis system design and how it impacts teaching methods used decreased as teachers worked longer in the education field. In contrast, the influence of the Blackboard system design on teaching methods used remained stable and “positive” regardless of teacher experience. This result supported the researcher’s theory that not all LMSs can play the same role and that only systems with good designs can truly impact pedagogical teaching.

- All groups liked the flexibility that the system provided and found that the ability to access the system at any time and from any location was something which supported their ability to use a variety of teaching methods.

- At UL, those with less than three years or more than ten years of experience felt that the system provided them with a way to use many teaching methods. Those who had between four and nine years of experience had a neutral view of the system.

- At NU, there were no statistically significant differences between the lecturers who spent less than three years teaching or those who have more experience when analysing the study problem.

- The percentage of participants from each group in the survey made the comparison of the groups realistic.

5.3.1.3.1 Conclusion
Overall, teachers with less teaching experience believe that an LMS has a positive impact on teaching methods used and exhibit a high level of satisfaction regarding system design. The
researcher believes that these beliefs and feelings are due to the fact that systems such as Sulis or Blackboard fulfil teacher expectations properly. Researchers believe that newer lecturers who have good computing skills are more likely to integrate technology into the teaching process. Granger et al. (2002) interviewed more than 60 teachers in Canada about factors which contribute to teachers implementing technology in the classroom. The study found that there is no relationship between the years an individual has been teaching and the use of technology. Based on this result, it can be concluded that computer skills do not matter as much as some may believe. Russell et al. (2003) claimed that new teachers may not incorporate technology such as LMSs into their teaching due to two primary reasons. First, new teachers are learning how to use technology properly and may not want to add another factor to the already complex process of learning how to teach effectively. Second, new teachers may have some issues when they begin their careers and may want to focus on familiarizing themselves with the educational organization and may choose not to incorporate something such as an LMS.

Based on Table No. (27), this researcher believes that the LMS can play a role in the teaching methods used if users liked the LMS and found it useful regardless of teaching experience. Six years later Gorder (2008) stated that there is a direct relationship between years of teaching experience and the use of technology incorporation of teaching in their teaching. Gorder stated that the effective use of technology was related to the cost of technology. Another study conducted by Baek et al. (2008) found that teachers who have taught for many years are generally less enthusiastic about using technology in the classroom.

The current study showed that experienced lecturers believe that the impact of the LMS on teaching methods can be limited or heavily based on the software employed. The Sulis design has a limited impact on teaching methods while the Blackboard design has a greater impact.
5.3.1.4 Evaluation of the LMS design based on the lecturer’s age

The age of the user has a direct relationship with the user experience with the software (Kim et al., 2013). Therefore, the programmers of E-Learning systems have to keep user age in mind. This factor could lead to the creation of effective or ineffective software (Moseley and Ajani, 2015). The researcher built the following table to examine if the age of the lecturer had any impact on how the teacher viewed the study problem. The table No (28) the same structure of other tables by using a weighted average to determine the thoughts of each group analysed.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Sulis / UL</th>
<th>Blackboard / NU</th>
</tr>
</thead>
<tbody>
<tr>
<td>The requirements of using the system help me to use a variety of teaching methods.</td>
<td>3.60 3.23 3.24 3.20 3.44</td>
<td>4.50 3.94 4.22 3.79 2.67</td>
</tr>
<tr>
<td>The time it takes to complete one task through the system helps me to use a variety of teaching methods.</td>
<td>3.67 3.28 2.93 3.10 3.25</td>
<td>4.00 3.79 3.81 3.43 2.67</td>
</tr>
<tr>
<td>The flexibility of having access to the system from any location and at all times helps me to use a variety of teaching methods.</td>
<td>3.93 3.85 3.73 3.95 3.69</td>
<td>4.50 4.09 4.04 3.79 2.33</td>
</tr>
<tr>
<td>The organization of screens in the system makes my work in the system easier.</td>
<td>3.27 3.15 2.84 2.60 2.63</td>
<td>4.00 3.73 3.85 3.64 2.67</td>
</tr>
<tr>
<td>I am satisfied with the time needed to complete tasks in the system.</td>
<td>3.27 3.18 2.98 2.90 2.81</td>
<td>4.25 3.88 3.63 3.64 2.33</td>
</tr>
<tr>
<td>The system provides me with a way to use many teaching methods.</td>
<td>3.40 3.31 3.24 3.10 2.88</td>
<td>4.00 3.82 3.84 3.79 2.67</td>
</tr>
<tr>
<td>The organization of functions in the system helps me to use a variety of teaching methods.</td>
<td>3.21 3.11 3.12 2.89 2.94</td>
<td>3.50 3.75 3.96 3.71 3.00</td>
</tr>
<tr>
<td>I am satisfied with the navigation of the system.</td>
<td>3.07 2.97 2.86 2.78 2.07</td>
<td>3.50 3.44 3.84 3.50 2.67</td>
</tr>
<tr>
<td><strong>General average</strong></td>
<td><strong>3.42</strong></td>
<td><strong>3.26</strong></td>
</tr>
<tr>
<td>Percentage of participation in the sample</td>
<td>13.29%</td>
<td>30.38%</td>
</tr>
</tbody>
</table>

Table 28. Scores of the relationship between the LMSs and the teaching methods used based on the lecturer’s ages
The table No (28) shows a divergence in the views of various groups. The following paragraphs contain an analysis of each group and provide information about similarities and differences between groups.

For the teachers who were 22 to 25 years old, the general average is 3.42 for the *Sulis* system and 4.03 for the *Blackboard* system. Those values are considered high and mean that the individuals in those groups believe that the design of the system has a positive impact on teaching methods used. The group at UL had a positive view of all issues regarding the *Sulis* system including system navigation, something which was considered the poorest feature of the system based on the responses of other age groups in the survey. According to Moseley and Ajani (2015), younger individuals may have found the navigation of the system to be easier than older individuals. The current study’s results provide evidence for this claim.

The teachers who were 26 to 35 years old contributed 30.38% of responses in UL and nearly the half of the responses in NU. Those groups had a positive point of view regarding system design and the impact that the design has on teaching methods used. In addition, this group found most of the other issues regarding the system to be acceptable. There was no significant difference observed between the 22 to 25 year old group and the 26 to 35 year old group regarding the role of the E-Learning system in the educational process.

The teachers who were 36 to 46 years old at UL contributed 31.65% of the sample, the largest contribution in the study from UL. The average score for this group was 3.11, an indication that they had a relatively neutral point of view. This particular group viewed certain issues in the *Sulis* system positively including the ability to access the system remotely. In contrast, they viewed other system features negatively including the system’s ability to support a variety of teaching methods. The group also felt that the time to complete tasks in the system was far longer than it should be and that navigating the system was problematic. Lochner *et al.* (2015) performed a study regarding the concerns that teachers have about adopting an LMS. The study found that most of the secondary teachers in the study were concerned about the time required to learn and then use the LMS, factors which they felt would hinder the adoption and ultimate use of the system.

The researcher believes that people have valid concerns about the time it will take to learn and use a new system. If the people were told that a system will be very time consuming, then people will find ways to avoid using the system or use it in an extremely limited manner. On the other hand, a system such as *Blackboard* which has a very good design and saves people time will be popular and widely used.

The teachers aged 47 to 55 years at UL had an average score of 3.06. This score indicated that the group was generally neutral about the *Sulis* system design. They believed that the system design had a negative impact on the teaching methods used, in particular the system’s navigation and the time to complete tasks. The group had a positive view of some system aspects such as the ability to access the system from anywhere and at any time. This particular feature received a score of 3.95 from this group and was the highest rated feature. The group of the same age at NU was also content about the *Blackboard* features.
The group aged 56 to 65 years old whether in NU or UL recorded the lowest general average of all groups with a score of 2.96 for UL and 2.62 for NU. The group had reservations regarding many issues such as believing that the systems do not provide them with a way to use many teaching methods. In addition, the group believed that the navigation of the system was poor and that the system added unnecessary time to task completion.

5.3.1.4.1 Conclusion
The following bullet points describe the similarities and differences of the groups analysed in this section:

- The average score of each group shows that, as individuals age, they tend to believe that the system design has less of an impact on teaching methods used.
- All individuals whether in NU or UL except for those above 56 years old believe that the system allows them to use many teaching methods.
- Most groups in UL believe that the navigation of the system is a problem. Most groups at NU believed that the navigation of the Blackboard system was.
- Most groups in NU and UL believe that the best feature of the LMS is the ability to access the system remotely.
5.3.1.5 Evaluation of the LMS design based on the lecturer’s academic qualifications

Table No. (29) displays information regarding a lecturer’s educational degree and how the lecturer views the study problem. The table has the same structure as previous tables and uses weighted averages to draw conclusions about each category.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Academic qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Sulis/UL</em></td>
</tr>
<tr>
<td></td>
<td>PhD</td>
</tr>
<tr>
<td>The requirements of using the system help me to use a variety of teaching methods.</td>
<td>3.71</td>
</tr>
<tr>
<td>The time it takes to complete one task through the system helps me to use a variety of teaching methods.</td>
<td>3.03</td>
</tr>
<tr>
<td>The flexibility of having access to the system from any location and at all times helps me to use a variety of teaching methods.</td>
<td>3.74</td>
</tr>
<tr>
<td>The organization of screens in the system makes my work in the system easier</td>
<td>2.72</td>
</tr>
<tr>
<td>I am satisfied with the time needed to complete tasks in the system.</td>
<td>2.86</td>
</tr>
<tr>
<td>The system provides me with a way to use many teaching methods.</td>
<td>3.11</td>
</tr>
<tr>
<td>The organization of functions in the system helps me to use a variety of teaching methods.</td>
<td>2.90</td>
</tr>
<tr>
<td>I am satisfied with the navigation of the system.</td>
<td>2.55</td>
</tr>
<tr>
<td><strong>General average</strong></td>
<td><strong>3.00</strong></td>
</tr>
<tr>
<td>Percentage of participation in the sample*</td>
<td>50.32%</td>
</tr>
</tbody>
</table>

*2.55% of participation came from the degrees not listed in the survey (other).
The table No (29) shows that only lecturers with a PhD at UL have a neutral view of the LMS design on teaching methods used while other groups believe that the design contributes positively to the teaching method used. The following bullet points discuss the views of each group and provide a comparison of group beliefs.

- Individuals with a PhD at UL have a neutral view of the Sulis system design’s impact on teaching methods. They believe that it is possible for the system to allow many teaching methods to be employed. The table also shows that individuals with this educational background have some reservations about many parts of the system design. For example, the system requires an excessive amount of time to complete tasks. Those with PhDs also believe that the system can be accessed from anywhere and at any time which helps with the adoption of many teaching methods. This particular feature is rated as the best feature of the system. The same group of people at NU also showed a high level of satisfaction regarding the Blackboard design and believed that the system successfully created a virtual environment which allowed them to employ many teaching methods.

- Lecturers with a Master’s degree at NU and UL had a high level of satisfaction with the LMS design and how it allowed them to use many teaching methods. The survey responses showed that lecturers at UL felt that the navigation of the Sulis system was adequate, something which differed from the beliefs of those who had PhDs or Bachelor’s degrees.

- Lecturers who had a Bachelor’s degree provided only 14% of the survey responses in UL and 4.6% in NU. The teachers at UL viewed the Sulis system design features positively with the exception of the time to complete tasks and system navigation. Overall, the respondents felt that the system design had a limited impact on teaching methods that could be used. This belief was also held by those who had PhDs. The Blackboard design seemed acceptable from those who had the same background at NU.

5.3.1.5.1 Conclusion
At UL, faculty members with a Bachelor’s or PhD degree believed that the Sulis system design had a limited impact on teaching methods used. In addition, teachers from different backgrounds believed that the Sulis system helped them to use many teaching methods. At NU, all groups with different academic qualifications agreed that the Blackboard design could play a role in their teaching methods. In addition, these individuals showed a high level of satisfaction about the system design.
5.3.2 Evaluation of the LMS (Sulis & Blackboard) user interface

The interface of any system plays a critical role in the success or failure of the system. The user is not able to communicate with the system if there is not an effective interface that provides the use with information in a logical manner. The evaluation of the interface is very important and the system must be acceptable to users to be considered “good” (Moseley and Ajani, 2015, Guntupalli, 2008). In this part of the study, the research will work to provide answers to the following questions:

- How do lecturers critically view the LMS system user interface?
- How does the current LMS help lecturers employ a variety of teaching methods?

The study prepared the following hypothesis that was presented in Chapter 1:

- LMS user interface has an impact on the pedagogical performance of academic staff in terms of teaching methods.

The researcher prepared six survey questions designed to obtain information that would help to measure the relationship between LMS user interfaces and teaching methods used by faculty members at UL and NU. All questions were based on Likert scales which were discussed in Section 5.3.1. The participants were asked to choose one of the following five options: strongly agree, agree, neutral, disagree, and strongly disagree. The study used a weighted average to determine the overall opinion of participants regarding the LMSs.

Table No. (30) contains a score for each issue as determined by a weighted average and provides a general average for all questions

<table>
<thead>
<tr>
<th>Issue</th>
<th>weighted average</th>
</tr>
</thead>
<tbody>
<tr>
<td>The label names in the Sulis system are clear and understandable.</td>
<td>3.22 3.76</td>
</tr>
<tr>
<td>I am satisfied with the font used in the Sulis system screens.</td>
<td>3.35 3.73</td>
</tr>
<tr>
<td>I am satisfied with the colours used in the Sulis system screens.</td>
<td>3.18 3.55</td>
</tr>
<tr>
<td>I am satisfied with the icons used in the Sulis system screens.</td>
<td>3.16 3.62</td>
</tr>
<tr>
<td>The overall layout of the Sulis system user interface allows me to use a variety of teaching methods.</td>
<td>3.02 3.53</td>
</tr>
<tr>
<td>I am satisfied with the overall layout of the Sulis system user interface.</td>
<td>2.95 3.58</td>
</tr>
<tr>
<td>General Average</td>
<td>3.15 3.62</td>
</tr>
</tbody>
</table>

Table 30. Scores of the relationship between the LMS user interface and the teaching methods

The table above shows that, on average, the Sulis and Blackboard system user interface was viewed somewhat positively by users. Some questions had a score that was barely under or above 3, especially in relation to the Sulis system. These questions were analysed more closely by the researcher and linked to a particular demographic. The issue was then examined from a different point of view using the same model employed in the first part of the study, Figure No. (34), explained in Section 5.3.1.
### 5.3.2.1 Evaluation of the LMS user interface from the viewpoint of different specializations

The researcher worked to analyse how a person’s specialization and educational background impacted his or her beliefs and views of the LMS user interface. The results of the information gathered on this topic are presented in the Table No. (31).

<table>
<thead>
<tr>
<th>Questions</th>
<th>Specialization</th>
<th>Sulis / UL</th>
<th>Arts</th>
<th>Eng</th>
<th>Sci</th>
<th>Lang</th>
<th>Edu</th>
<th>Bus</th>
<th>Blackboard / NU</th>
<th>CI</th>
<th>Eng</th>
<th>Sci</th>
<th>Lang</th>
<th>Edu</th>
</tr>
</thead>
<tbody>
<tr>
<td>The label names in the system are clear and understandable.</td>
<td></td>
<td>3.00</td>
<td>3.48</td>
<td>3.08</td>
<td>3.33</td>
<td>3.32</td>
<td>3.33</td>
<td>3.20</td>
<td></td>
<td></td>
<td>3.78</td>
<td>3.73</td>
<td>3.89</td>
<td>4.00</td>
</tr>
<tr>
<td>I am satisfied with the font used in the system screens.</td>
<td></td>
<td>2.83</td>
<td>3.52</td>
<td>3.38</td>
<td>3.75</td>
<td>3.37</td>
<td>2.67</td>
<td>3.40</td>
<td></td>
<td></td>
<td>3.81</td>
<td>4.09</td>
<td>3.67</td>
<td>4.09</td>
</tr>
<tr>
<td>I am satisfied with the colours used in the system screens.</td>
<td></td>
<td>2.67</td>
<td>3.26</td>
<td>3.54</td>
<td>3.67</td>
<td>2.89</td>
<td>2.80</td>
<td>3.32</td>
<td></td>
<td></td>
<td>3.88</td>
<td>3.60</td>
<td>3.50</td>
<td>3.40</td>
</tr>
<tr>
<td>I am satisfied with the icons used in the system screens.</td>
<td></td>
<td>2.58</td>
<td>3.30</td>
<td>3.23</td>
<td>3.52</td>
<td>3.17</td>
<td>3.00</td>
<td>3.10</td>
<td></td>
<td></td>
<td>3.73</td>
<td>3.80</td>
<td>3.67</td>
<td>3.50</td>
</tr>
<tr>
<td>The overall layout of the system user interface allows me to use a variety of teaching methods.</td>
<td></td>
<td>2.58</td>
<td>3.26</td>
<td>3.00</td>
<td>3.35</td>
<td>3.21</td>
<td>2.50</td>
<td>2.90</td>
<td></td>
<td></td>
<td>3.56</td>
<td>3.73</td>
<td>3.33</td>
<td>3.36</td>
</tr>
<tr>
<td>I am satisfied with the overall layout of the system user interface.</td>
<td></td>
<td>2.33</td>
<td>3.15</td>
<td>3.00</td>
<td>3.35</td>
<td>3.05</td>
<td>2.50</td>
<td>3.15</td>
<td></td>
<td></td>
<td>3.67</td>
<td>3.73</td>
<td>3.44</td>
<td>3.45</td>
</tr>
<tr>
<td>General average</td>
<td></td>
<td><strong>2.66</strong></td>
<td><strong>3.22</strong></td>
<td><strong>3.20</strong></td>
<td><strong>3.49</strong></td>
<td><strong>3.16</strong></td>
<td><strong>2.8</strong></td>
<td><strong>3.17</strong></td>
<td><strong>3.73</strong></td>
<td><strong>3.78</strong></td>
<td><strong>3.58</strong></td>
<td><strong>3.63</strong></td>
<td><strong>3.49</strong></td>
<td></td>
</tr>
<tr>
<td>Percentage of participation in the sample</td>
<td></td>
<td>8%</td>
<td>19%</td>
<td>12%</td>
<td>19%</td>
<td>13%</td>
<td>4%</td>
<td>15%</td>
<td></td>
<td>39.5%</td>
<td>13.58%</td>
<td>12.35%</td>
<td>13.58%</td>
<td>12.35%</td>
</tr>
</tbody>
</table>

|---|

# 10% of participation was from a specialization not listed in the UL survey and 8.64% of participation was in a specialization not listed in the NU survey.
Table No. (31) provides evidence of the main participant views at UL or NU. The many views caused the researcher to analyse the answers on a department-by-department basis and compare all departments to determine similarities and differences.

The lecturers who have a degree in computing and informatics at UL believe that the user interface of the Sulis system adversely impacts teaching methods used and that the system does not provide a good platform for conveying information to students about computing and informatics topics. In addition, the teachers believe that the system’s user interface has somewhat unacceptable icons, fonts, and colours. On the other hand, computer lecturers at NU were satisfied with the Blackboard user interface. Some studies tended to give more weight to the teachers with a computer specialization rather than other specializations regarding the evaluation of E-Learning systems. This view can be valid regarding the testing of technical issues, especially LMS design. However, user satisfaction should be provided by users from all specializations with additional weight being given to no particular group.

Lecturers with a degree in the arts at UL had a positive view of the Sulis user interface and believed that the user interface of the system allowed them to use multiple teaching methods. In addition, this group of lecturers had a high rate of satisfaction regarding the user interface and were satisfied with the label names, font choices, and icons. Overall, individuals with this background believed that the Sulis user interface can play a positive role in the teaching methods used. There were no NU art teachers involved in the survey.

Lecturers in the engineering department in both parts of the study viewed the LMS user interface positively regarding its impact on teaching methods. The lecturers at UL were satisfied with the colours, fonts, and icons used in the Sulis user interface, but did have some reservations regarding the language(s) available in the system and the overall layout of the system user interface. The engineering teachers at NU were happy with all Blackboard user interface elements.

Lecturers with a science background at NU and UL had a positive view of the LMS user interface and believed that the system allowed them to use multiple teaching methods. The science department at UL reported the highest levels of satisfaction with the Sulis system based on how the user interface works with teacher needs. The individuals in this department were also content with the font and colours used by the system.

Lecturers with a background in language in UL had a positive view of the Sulis system user interface and its impact on teaching methods. The survey participants with this background believed that the Sulis system had a good user interface, but stated that the colour choices could have been improved. Those with the same background at NU had a positive rating for all Blackboard user interface elements.

There were very few participants from the education department in UL. For this reason, their impact on the overall survey results from this group was small. The responses received showed that the user interface had a poor choice of colours and that the fonts were unclear. In general, the users in the education department felt that the user interface did not allow them to use many teaching styles. At NU, the participants with a background in education
contributed 13% of responses and showed a high level of satisfaction with Blackboard user interface elements.

The business department contributed in UL by 15% of all survey data. The lecturers in this department had a positive view of the Sulis system user interface, however, they felt that the system had a neutral role in supporting the teaching of students.

5.3.2.1.1 Conclusion
The researcher believes that there are many similarities in the way that respondents with different specializations at NU feel about the Blackboard user interface. Users of all specializations liked the system’s interface which indicates that the system meets user expectations. For those at UL working with the Sulis system, the system seems to meet the expectations of some departments, but not all. This fact enhances the Sclater (2008) claim that most universities use an LMS just as storage for “lecturers notes and PowerPoint presentations”. The researcher believes that when the users are not satisfied with the system, they are going to use it in a limited manner.

The following list provides conclusions regarding the similarities and differences about the views of various UL lecturers regarding the Sulis user interface.

- When lecturers in UL were asked about the overall layout of the Sulis user interface and how it can influence teaching methods, the lecturers with a background in computing and informatics and education believed that the system’s user interface did not play a role in the teaching methods used. In contrast, those who had a background in the arts, sciences, and languages, believed that the layout of the system was effective in helping them use many teaching methods. Lecturers from the business and engineering departments felt that the user interface had a limited impact on teaching methods.
- Lecturers at UL believe that the label names in the Sulis system were clear and easily understandable.
- With the notable exceptions of the lecturers in the computer and education departments, lecturers reported an acceptable level of satisfaction about the fonts and icons used in the Sulis system.
- The colours used on the Sulis system screens are acceptable to all lecturers at UL except those in the computer, language, and education departments.

According to Moseley and Ajani (2015), small details in the interface of any software such as choice of colours, font, icons and the layout could make the user experience completely different. The results of this study reinforce this claim as the Blackboard interface received great user satisfaction feedback while the Sulis system did not.
5.3.2.2 Evaluation of the LMS user interface based on user experiences with the system

The survey divided the respondents into three categories based on experience with the system. This method was created to determine if a user’s prior experience with the LMS influenced how much the user liked or disliked the LMS user interface. Table No. (32) contains a weighted average of respondent answers for each issue. According to Venkatesh and Davis (2000), the experience using technology is one of the critical factors that can cause a person to accept or not accept the technology. Moseley and Ajani (2015) state that the user experience with a system can impact the success or failure of any software and form the foundation of user experience over a period of time. Any software developer should be aware of how user differences and system details can enhance user experience in a positive or negative manner. In addition, small details of the interface including colors, font, language and icons could lead to users utilizing or not utilizing many parts of the system.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Experience of using the LMS system</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sulis / UL</td>
</tr>
<tr>
<td></td>
<td>Less than 1 year</td>
</tr>
<tr>
<td>The label names in the system are clear and understandable.</td>
<td>3.59</td>
</tr>
<tr>
<td>I am satisfied with the font used in the system screens.</td>
<td>3.64</td>
</tr>
<tr>
<td>I am satisfied with the colours used in the system screens.</td>
<td>3.48</td>
</tr>
<tr>
<td>I am satisfied with the icons used in the system screens.</td>
<td>3.59</td>
</tr>
<tr>
<td>The overall layout of the system user interface allows me to use a variety of teaching methods.</td>
<td>3.38</td>
</tr>
<tr>
<td>I am satisfied with the overall layout of the system user interface.</td>
<td>3.52</td>
</tr>
<tr>
<td><strong>General average</strong></td>
<td><strong>3.53</strong></td>
</tr>
<tr>
<td>Percentage of participation in the sample</td>
<td>23.23%</td>
</tr>
</tbody>
</table>

Table 32. Scores for evaluation of the LMS user interface based on the user’s experience with the system.
Table No. (32) shows that there is user diversity for both systems. The diversity is clearer for Sulis users than in the Blackboard users. Based on the general average displayed in the table, both systems received positive evaluations. However, there are some issues with both systems, especially for the Sulis interface elements. The research provides analysis of the data presented in Table No. (32) in the following bullet points:

- Teachers who have used Sulis or Blackboard for less than a year have a high level of satisfaction with the user interface. These individuals also believe that the system can play a major role in allowing teachers to use many teaching methods.
- Teachers who have used the LMS for more than a year, but less than four years, show a high level of satisfaction with the user interface. These individuals also believed that the system could play a major role in allowing teachers to use many teaching methods.
- Teachers who have used the LMS for more than a year, but less than four years, in the first part of the study, especially those at UL, reported satisfaction with the system’s colours, font options, icons, and labels. However, these teachers did not like the overall layout of the system’s interface and believed that the interface would not help them adopt many teaching methods. On the hand, the same group in NU seems accepted the LMS interface, namely Blackboard.
- Lecturers who have used the Sulis system for more than four years believe that the system’s user interface did not play a role in allowing many teaching methods to be used. In addition, individuals with this level of experience had reservations about the system’s label names, icons, and colours and had a high level of dissatisfaction about the overall layout of the system.
- Lecturers who have used the Blackboard system for more than four years believe that user interface of the system is clear. Moreover, they show a good level of satisfaction regarding all elements of Blackboard user interfaces.

5.3.2.2.1 Conclusion
The participant responses show that experience with the LMS whether Sulis or Blackboard is related to the way that a user feels about the system. Specifically, as a user works with the system for a longer period of time, the individual’s overall level of satisfaction with the system tends to decrease. This result indicates that both systems fail to build a good user experience. Many studies show that a good software system should make users progressively happier and more satisfied with greater use. In contrast, the results of this study show that those who have worked with the system for a short period of time have a high satisfaction with certain aspects of the system such as the user interface. This result is consistent with the result of study done by Alharbi and Drew (2014) which found that inexperienced LMS users tended to be more optimistic about the role that the LMS could play in the education process.
5.3.2.3 Evaluation of the LMS user interface based on the lecturer’s teaching experience

The researcher explored the relationship between teaching experience and how it impacts a person’s opinion of the LMS user interface. Table No. (33) uses a weighted average to quantify teacher responses with varying degrees of teaching experience. Teaching experience could include online education or experience working with blended learning. The research will only focus on the number of years teaching regardless of the type.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Teaching experience</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sulis/ UL</td>
<td>Blackboard/ NU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Less than 3 years</td>
<td>Between 4 to 9 years</td>
<td>Greater than 10 years</td>
<td>Less than 3 years</td>
<td>Between 4 to 9 years</td>
<td>Greater than 10 years</td>
<td></td>
</tr>
<tr>
<td>The label names in the system are clear and understandable.</td>
<td>3.54</td>
<td>3.03</td>
<td>3.13</td>
<td>3.67</td>
<td>3.94</td>
<td>3.59</td>
<td></td>
</tr>
<tr>
<td>I am satisfied with the font used in the system screens.</td>
<td>3.85</td>
<td>3.09</td>
<td>3.16</td>
<td>3.60</td>
<td>3.84</td>
<td>3.76</td>
<td></td>
</tr>
<tr>
<td>I am satisfied with the colours used in the system screens.</td>
<td>3.59</td>
<td>3.03</td>
<td>2.96</td>
<td>3.53</td>
<td>3.50</td>
<td>3.68</td>
<td></td>
</tr>
<tr>
<td>I am satisfied with the icons used in the system screens.</td>
<td>3.59</td>
<td>2.94</td>
<td>2.98</td>
<td>3.60</td>
<td>3.64</td>
<td>3.65</td>
<td></td>
</tr>
<tr>
<td>The overall layout of the system user interface allows me to use a variety of teaching methods.</td>
<td>3.42</td>
<td>2.74</td>
<td>2.93</td>
<td>3.47</td>
<td>3.72</td>
<td>3.34</td>
<td></td>
</tr>
<tr>
<td>I am satisfied with the overall layout of the system user interface.</td>
<td>3.49</td>
<td>2.71</td>
<td>2.73</td>
<td>3.53</td>
<td>3.72</td>
<td>3.52</td>
<td></td>
</tr>
<tr>
<td><strong>General average</strong></td>
<td><strong>3.58</strong></td>
<td><strong>2.92</strong></td>
<td><strong>2.98</strong></td>
<td><strong>3.56</strong></td>
<td><strong>3.72</strong></td>
<td><strong>3.59</strong></td>
<td></td>
</tr>
<tr>
<td>Percentage of participation in the sample</td>
<td>34.39%</td>
<td>26.11%</td>
<td>39.49%</td>
<td>23.8%</td>
<td>41.7%</td>
<td>34.5%</td>
<td></td>
</tr>
</tbody>
</table>

Table 33. Scores for evaluation of the LMS user interface based on lecturer’s teaching experience.
Table No. (33) shows that there are different evaluations of both systems. There are certain parts of the *Sulis* interface that have a greater impact on teaching methods than others. However, for *Blackboard*, the level of satisfaction is consistently high. The following is a summary of the key points contained in Table No. (33):

- Lecturers who have fewer than three years of experience in the educational field had a score of 3.58 for *Sulis* and 3.58 for *Blackboard* regarding the role of the system’s user interface on teaching methods. This score shows that these individuals were satisfied with the user interfaces and indicates that new teachers have the same expectations about the LMS. After a period of time, the type of LMS that a university uses can increase or decrease the level of user satisfaction and shown in some of the following points.

- Lecturers with more than four years of experience have a negative view of the *Sulis* user interface. People with this experience level believe that certain elements of the interface negatively impact the teaching methods that can be employed. For example, some lecturers felt that the icons used on the *Sulis* screens were unclear. In addition, the lecturers with this background had a high level of dissatisfaction with the overall layout of the *Sulis* system which was reflected in the group’s average score of 2.72. The teachers at NU were happy about the *Blackboard* interface.

- The level of satisfaction with the LMS user interface and how it impacts teaching methods decreased as teachers worked longer in the educational field at UL. However, the level of satisfaction with the *Blackboard* interface was stable even with teachers who have more experience.

- There was no statistically significant difference between lecturers who taught for four or more years when analysing the study problem.

**5.3.2.3.1 Conclusion**

The *Blackboard* interface is successful and plays a role in the teaching methods used. All groups at NU were satisfied with the *Blackboard* interface, a sharp contrast to the groups at UL where most of the teachers were not as happy about the *Sulis* interface. According to Lawrence and Lentle-Keenan (2013), there is a link between teaching practices and technology, however, this relationship can be impacted by many factors such as institution priorities, support, and expectations.
5.3.2.4 Evaluation of the LMS user interface based on lecturer’s age
Age is a primary factor which could impact users in many ways including how technology is implemented. The rates of the phenomenon increased as individuals age and is a challenge for system developers who are tasked with creating a user interface that is satisfactory for users of all ages (Mynatt et al., 2000, Zajicek, 2004). Table No. (34) presents information about lecturer age and how it impacts the view of LMS user interfaces. The table uses a weighted average to analyse participant responses.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Age (years)</th>
<th>Sulis/ UL</th>
<th>Blackboard / NU</th>
</tr>
</thead>
<tbody>
<tr>
<td>The label names in the system are clear and understandable.</td>
<td>3.36</td>
<td>3.34</td>
<td>3.28</td>
</tr>
<tr>
<td>I am satisfied with the font used in the system screens.</td>
<td>3.86</td>
<td>3.50</td>
<td>3.23</td>
</tr>
<tr>
<td>I am satisfied with the colours used in the system screens.</td>
<td>3.64</td>
<td>3.39</td>
<td>2.92</td>
</tr>
<tr>
<td>I am satisfied with the icons used in the system screens.</td>
<td>3.43</td>
<td>3.42</td>
<td>3.00</td>
</tr>
<tr>
<td>The overall layout of the system user interface allows me to use a variety of teaching methods.</td>
<td>3.29</td>
<td>3.05</td>
<td>3.02</td>
</tr>
<tr>
<td>I am satisfied with the overall layout of the system user interface.</td>
<td>3.21</td>
<td>3.26</td>
<td>2.93</td>
</tr>
<tr>
<td>General average</td>
<td>3.46</td>
<td>3.32</td>
<td>3.06</td>
</tr>
<tr>
<td>Percentage of participation in the sample</td>
<td>13.29%</td>
<td>30.38%</td>
<td>31.65%</td>
</tr>
</tbody>
</table>

Table 34. Scores for evaluation of the LMS user interface based on lecturer age.
Table No. (34) shows a divergence in the views of the different groups and provides evidence that age is a factor in a person accepting or not accepting an LMS user interface. The following points provide a summary and analysis of the main points shown in the table.

For teachers who were 22 to 25 years old, the general average is 3.46 for the Sulis user interface and 3.79 for the Blackboard user interface. Those values are considered high and mean that the individuals in the group believe that the user interface has a positive impact on teaching methods used. The group has a positive view of all elements of the user interface including label names, colours, font, and icons. In addition, the group was satisfied with the overall layout of the LMS user interface.

For teachers who were 26 to 35 years old, a positive view of the LMS user interface’s impact on teaching methods used was observed. This group also found all aspects of the LMS to be positive and useful with the exception of the overall layout of the Sulis system which was “neutral.”

For the lecturers who were between 36 and 46 years old, the general average was 3.06. This group had a neutral view of the Sulis user interface and the role that the system played in teaching methods used. In addition, the group viewed the label names positively while finding other elements such as the colours to be negative. The group also found the overall layout of the system to be unacceptable. Those in this age group at NU considered the Blackboard user interface to be good and found all elements of it to be acceptable.

The teachers who were between 47 to 55 years old at UL had an average score of 3.04. This score indicates that the group was generally neutral about the Sulis user interface. The group believed that the Sulis user interface negatively impacted teaching methods used. The group had a positive view of some system user interface aspects such as the colours used on the system screens. Users in this age range at NU had a score of 3.67, which evidences a far more positive view of the system than those at UL.

The teachers who were between 56 to 65 years old recorded the lowest general average of all groups whether in UL or NU with a score of 2.76 for Sulis and 2.66 for Blackboard. This group believed that the system’s user interface did not help them to use many teaching methods and that the colours, icons, and language options did not add to the system in a meaningful way.

5.3.2.4.1 Conclusion
The following bullet points describe the similarities and differences of the groups analysed in this section:

- The average score of each group showed that as individuals age they tend to believe that the system user interface has a decreasing impact on teaching methods.
- All individuals except those older than 56 years of age believe that the system allows them to use many teaching methods.
- The label names and icons in the Sulis system are acceptable to all teachers except those who are 56 years or older.
All groups in UL believe that the best element of the Sulis user interface is the font options provided.

Elements of Blackboard interface as well as the overall layout are accepted by teachers of all ages at NU except the teachers older than 56 years.
5.3.2.5 Evaluation of the LMS user interface based on the lecturer’s academic qualifications

Table No. (35) displays information about the highest level of education obtained by a lecturer. The table uses a weighted average to draw conclusions about each category.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Academic qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sulis/UL</td>
</tr>
<tr>
<td></td>
<td>PhD</td>
</tr>
<tr>
<td>The label names in the system are clear and understandable.</td>
<td>3.03</td>
</tr>
<tr>
<td>I am satisfied with the font used in the system screens.</td>
<td>3.04</td>
</tr>
<tr>
<td>I am satisfied with the colours used in the system screens.</td>
<td>2.94</td>
</tr>
<tr>
<td>I am satisfied with the icons used in the system screens.</td>
<td>2.94</td>
</tr>
<tr>
<td>The overall layout of the system user interface allows me to use a variety of teaching methods.</td>
<td>2.84</td>
</tr>
<tr>
<td>I am satisfied with the overall layout of the system user interface.</td>
<td>2.71</td>
</tr>
<tr>
<td><strong>General average</strong></td>
<td><strong>2.91</strong></td>
</tr>
<tr>
<td>Percentage of participation in the sample</td>
<td>50.32%</td>
</tr>
</tbody>
</table>

Table 35. Scores for evaluation of the LMS user interface based on the lecturer’s academic qualifications.
Table No. (35) shows that differences in academic qualifications are related to different LMS assessments. The following points provide a comparison of different groups.

- Individuals with a PhD have a negative view of the Sulis user interface and how it impacts teaching methods. These individuals believe that the system user interface does not help them employ many teaching methods. The table shows that the individuals with this educational background have reservations about many aspects of the system, in particular, the colours and icons used. These individuals have expressed a high level of satisfaction with the Blackboard user interface and the role it plays in teaching methods used.

- Lecturers who have a Master’s degree reported a high level of satisfaction with both user interfaces and believed that the interfaces allowed them to use many teaching methods. The survey responses indicated that the colours, fonts, icons, and language options in both systems fit the needs of all individuals with this level of education.

- Lecturers with a Bachelor’s degree at UL viewed the user interface of Sulis positively with the exception of the language options. Despite liking many of the interface’s features, these individuals believed that the user interface of Sulis had a negative impact on the teaching methods that could be used. Those at NU felt that the Blackboard user interface had a neutral impact on teaching methods used and found the Blackboard user interface to be acceptable.

5.3.2.5.1 Conclusion

The faculty members with a Bachelor’s or PhD degree at UL believe that the Sulis system interface has a limited impact on teaching methods used and showed reservations about the overall system interface layout. In addition, teachers who had a Master’s degree believe that the Sulis interface helps them to use many teaching methods and showed a high level of satisfaction with interface elements such as colours, icons, and languages.

At NU, groups with various academic qualifications agreed that the Blackboard user interface could positively impact teaching methods. In addition, the teachers at NU had a high level of satisfaction regarding the system interface including the overall layout.
5.4 Conclusions for this Chapter

The differences in the designs of various LMSs can have a marked difference in the effectiveness of the system. The data collected by the survey provided significant evidence of how system differences can impact the user experience. The Blackboard system used at NU contributed effectively to the education process at NU while the Sulis system was not as effective at UL. The survey results provided an answer to the hypothesis presented in Chapter 1 regarding how the positive and negative aspects of the Sulis or Blackboard system impacted teaching methods used. The researcher noticed that some teachers in both parts of the study still had doubts about the role of any sort of technology in the educational system regardless of how “good” it is. These teachers feared the role that technology would play in the educational process and felt that introducing technology could make students feel lazy, distracted, and not learn new skills effectively from the instructor. Teng and Allen (2005) believed that those who are less confident in the use of technology in the educational process may be the individuals who work at universities which built technology centres instead of learning centres. The decision to pour significant resources into technology centres can be seen as threatening to some educational professionals as it signifies the commitment of the university to technology, possibly at the expense of those who teach.

When the results of the questions are connected with the preferred teaching methods that were discussed in sections 5.2.1.7 and 5.2.2.7 and combined with the information gathered from the open-ended questions, the result is that the majority of teachers still prefer face-to-face communication. However, the use of a good LMS at NU resulted in 40% of the teachers at NU approving of the idea of blending learning. In contrast, at UL, only 30% of teachers approved of the blending learning. The researcher believes that these percentages are reflective of the learning systems that were employed. If UL had a better system than its current Sulis system, the researcher believes that a higher percentage of individuals at UL would have approved of blended learning. In a study done by Moseley and Ajani (2015), the researchers found that when a university used an LMS that had not been thoroughly tested or did not receive high satisfaction ratings from users, the university risked the system being a failure. By connecting the results from the work of Moseley and Ajani to a statistic presented in Chapter 4 which related to the Blackboard system being used in the majority of Saudi universities for a long time, it is reasonable to conclude that the Blackboard system has been put through extensive testing that has helped it to become more effective. The results of this study confirm that Blackboard has been developed more effectively as it received higher user satisfaction ratings. In contrast, the Sulis system used at UL is relatively new and has not been developed as extensively as the Blackboard system. Given more time, UL should be able to develop the Sulis system to better fit the needs of its teachers and students.
Chapter 6.0: Results, Analysis and Discussion

6.1 Introduction

In this chapter, the researcher will provide an analysis of the data collected through interviews conducted with lecturers at the UL and NU along with data collected from open questions in the online questionnaire. The analysis of the data will provide qualitative support for the issues discussed in Chapter 3. In addition, the analysis of the data using a qualitative method will reinforce the results of the data analysis performed on the questionnaire which used both qualitative and quantitative methods as discussed in Chapter 5.

For the purpose of analysing the data, the research followed several steps as outlined in the following table.

<table>
<thead>
<tr>
<th>Date</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>23/09 to 26/12/2015</td>
<td>Interviewing faculty members in UL and NU</td>
</tr>
<tr>
<td>16-25/01/2016</td>
<td>Transcribing the interviews</td>
</tr>
<tr>
<td>2-6/03/2016</td>
<td>Classification the respondents answered for the open questions</td>
</tr>
<tr>
<td>10-13/03/2016</td>
<td>Classification the interviewers answered</td>
</tr>
</tbody>
</table>

In this chapter, the study will examine lecturers’ opinions about the LMS and how the LMS impacts the teaching methods used. The following issues will be discussed:

- Evaluation of the LMS design from the lecturers’ point of view in terms of time, navigation, system ease of use, and system access
- Evaluation of the LMS user interface from the lecturers’ point of view in terms of colours, fonts, icons, language, and overall layout.

Performing these evaluations will provide a clear image of the role of the LMS in the education process based on the teaching methods available to teachers and the differences between the Blackboard and Sulis systems. The following study hypotheses presented in Chapter 1 will also be examined:

- LMS design has an impact on the pedagogical performance of academic staff in terms of teaching methods.
- LMS user interface has an impact on the pedagogical performance of academic staff in terms of teaching methods.

According to Gediga et al. (2002) evaluating any software program from the user point of view could provide the following three benefits:

- Determining which system is better by comparing the systems after the evaluation of both
- Clarification of the positive aspects of the system being studied
- Clarification of the negative aspects of the system being studied
The evaluation process is a very important process which can contribute to the development of any software. The data used in the evaluation will be either quantitative or qualitative. There are many techniques involved with evaluating software to ensure proper qualitative data. These techniques include survey, observation, and interviews. The study used a mixed method of research as discussed in Chapter 3 to ensure that the proper interview techniques were used. The researcher used the same strategy when conducting interviews of lecturers who used Blackboard or Sulis. The lecturer conducted semi-structured interviews to ensure that the comparison of the systems would be fair.

The study has received approximately 302 responses to the open questions on the survey distributed to various individuals about the Sulis and Blackboard systems. The researcher also interviewed 15 teachers who used one system or the other. The data were tabulated using NVivo software, one of the most common program for analysis of text-based data. According to (Auld et al., 2007) NVivo is able to enhance the qualitative research process by making the process of analysing the data faster than the traditional way of examining textual data which is done manually.

The chapter will discuss the way that teachers feel about each feature of the Sulis or Blackboard system and provide information regarding the user interfaces for both systems. The results of the data analysis will relate to the general theories as well as the results of the study. In turn, this analysis will enhance the study’s results and provide greater clarity regarding the similarities and differences between this study and other similar studies.

6.2 Evaluation of the LMS Based on Lecturer Perspective
Speaking with lecturers about their experience with the LMS will allow the researcher to determine the teaching methods used by lecturers and the impact of the LMS on those decisions. The researcher believes that to achieve its aims, the study must determine the general level of lecturer satisfaction with the Sulis or Blackboard system. The researcher started the interview with a general question about the role of the LMS in the educational process, especially in the way that the system aided in the teaching methods that were possible.

The researcher has asked the interviewee at either NU or UL the following question:

Do you think the LMS provides you with a way to use many teaching methods?

The answer to the question varied throughout the study. For the most part, the teachers at UL were not able to see the link between their current LMS, Sulis, and the teaching methods used and tended to state that the system had a relatively small role in the teaching practices used. In contrast, those at NU were more optimistic about their LMS, Blackboard, in the teaching methods used. Some of the responses are listed below:

“I do think it is….in lots of ways. A lot of my teaching is at night, sometimes on campus. I am able to do most of the things that I need to do online using Sulis. So for example, I post links to YouTube video that I made.” -Sulis user 1
Based on the responses above, the Sulis system has tools which can help lecturers employ many teaching methods. There are varying levels of user satisfaction as reported by the lecturers at UL. Many researchers including Davis and Fill (2007), Herrington et al. (2005), and Malikowski et al. (2007) believe that most LMSs focus on delivering information to users instead of improving the teaching process. Heirdsfield et al. (2011) claimed that an LMS could help teachers, but the users of the system may not be experienced or confident enough with the system tools which limits the use of the system. The study showed that the Sulis system has tools which can help teachers use more teaching methods, however, some teachers showed reservations about using these tools. This belief reinforces the theory presented by Norman (2005) which stated that system design is more important than the tools or layout of the system. The following quotations show some of the statements made about the Blackboard system:

“it is very helpful to combine the teaching method.” -Blackboard user
“Yeah, it provides you know a big variety of teaching methods. You can use it in a different way. You can give assignments, you can give tests, and different kinds of tests and multipole choice options and fill in the blank.” -Blackboard user 2
“Yes, it gives great power. A variety of teaching methods, especially you can use lecture, question and answer and problem solving, new approaches, you can utilize the technology to serve teaching methods.” -Blackboard user 3
“In this….it is. It is if you can say….a matter of practice, a matter of experience, a matter of the user himself. I can use Blackboard in any way you want. In any way you like, but it depends on how much you are skilful, what is your ability to use Blackboard. But a teacher who is not that much skilful in using Blackboard he would be he would be in one style of teaching. He could not apply. That again is a matter of the user himself.” -Blackboard user 4

Based on these quotations, the Blackboard system has many tools that can help teachers to use a variety of teaching methods. The system does require training to be used efficiently and properly. Bradford et al. (2007) stated that the key to using an LMS such as Blackboard efficiently is to deal with its difficulties. The Blackboard system has the ability to meet the needs of many learners and can be effective in teaching both visual and observational learners. One teacher at NU stated that the Blackboard system “can remove geographical barriers and accommodate multiple learning styles.” This statement reinforces Bradford’s claim.

The researcher received the following response from an interviewee at NU in response to a question about the quality of training that was received prior to using the Blackboard system:

“In fact, it is nice to have such sessions because they help as much to use the program and system easily.” Blackboard user 6
The interviewee’s answer shows that the University was aware of the difficulty that users had when working with Blackboard and tried to address the issue through training. Not all of the teachers at NU felt that the training sessions were good enough. One interviewee described the training as follows:

“Yeah, we did have some kind of training. I don’t think that it was enough, I don’t think it was in-depth enough and I don’t think there were sufficient practical examples demonstrated as to how to use the system. I think perhaps that a lot more practical examples could have been given. But generally, we received pretty basic training, yeah.” Blackboard user 10

The responses above show that both Sulis and Blackboard have tools that allow teachers to employ different methods of teaching. The role of both systems is different and supports the researcher’s claim that the LMS design plays a major role regarding efficiency. Prior to employing any software, McConnell (1993), Guntupalli (2008) believed that the organization should ask the following question:

- Does the software system suit and properly address client needs and aspirations?

Many studies advise that an educational institution should choose an E-Learning system carefully. Colace et al. (2002) said the price and features of E-Learning system should not be the only factors considered when choosing the system. Universities should evaluate any system before implementing it. The researcher believes that the evaluation should be ongoing and involve all users including lecturers, students, and administrators.

The results of the survey were covered in Chapter 5 and showed that there was a disparity in the level of satisfaction regarding Sulis system design. In addition, the impact of the Sulis system design was considered limited in the opinion of some groups and high in the opinion of others. While Blackboard was considered a good system by some teachers at NU regarding its system design and user interface, some users had reservations about its technical specifications including its limited storage space; the study received many responses that expressed dissatisfaction with Blackboard’s technical issues. According to Culatta (2004), issues such as wasting bandwidth is likely to have occurred with Blackboard when users try to download the materials instead of viewing them through the system.

The following chapter will present information regarding how lecturers at NU and UL viewed the design issues of the system. The differences in the system will be analysed and some of the study questions first presented in Chapter 1 will be answered:

- How do lecturers critically view the LMS system design?
- How do lecturers critically view the LMS system user interface?
- How does the current LMS help lecturers employ a variety of teaching methods?

6.2.1 Evaluation of LMS Design

Badawood and Steenkamp (2013), Alturki and Aldraiweesh (2016) argued that system specifications such as the ability to control user system functions, remote access, receiving and sending materials through the system, and the interaction between system functions and
users. These factors should be considered design issues. The researcher focused on four features of the system, namely the time required by the system, navigation within the system, system ease of use, and system accessibility. Each of these points will be defined and the importance of the feature will be discussed. The study will also examine the level of satisfaction with each feature from the lecturers’ point of view and will determine if the feature positively or negatively impacts the teaching methods that can be used. In addition, the study will determine if there are any differences between the Sulis and Blackboard system regarding each feature.

6.2.1.1 Evaluation of LMS Design in Terms of Accessibility

According to Benyon et al. (2005), there are differences between the concept of access and acceptability. The authors define access as “removing the barriers that would otherwise exclude some people from using the system.” Acceptability refers to “fitness for purpose in the context of use.” To consider a system good in terms of acceptability, the system must fit all user needs while not creating barriers for others.

Based on the definition of accessibility above, the study showed that the Sulis and Blackboard systems did not achieve the full meaning of accessibility since they did not have a design that fit everyone’s needs. For example, the systems did not meet the needs of older individuals. In other demographics, there was an acceptable level of satisfaction regarding access to the system. The results have been boosted through an analysis of the text. The study received many positive comments about access to the system. Some of the statements regarding access are listed below:

“making material available to students online, being able to grade the material away from the desk” -Sulis user
“Off-campus access to various tools (forums, chat room, assignments, resources, etc.)” -Sulis users
“Easy to access” “communication and remote access” -Sulis users
“It is very good for both student and teaching staff, so they can easily access the course related data from anywhere.” -Blackboard user
“We can teach from any location it is the main advantage of using Blackboard” -Blackboard user

Based on the quotations above, both the Blackboard and Sulis systems allow users to access the educational resources they need. Many researchers argue that the primary benefit of an LMS is the availability of educational resources to all users which allows all learning and teaching styles to be used. An LMS system cannot work well if the network is poor. An inadequate network will result in users being unable to reach the resources that they need. According to Salmon (2013), users require good, consistent remote access to a system. Access is a problem for users at NU which has its network in Najran City. This network is not high quality and is generally unstable. This issue directly impacts the way that NU’s system works and can lead to user dissatisfaction. In an interview, one lecturer from a senior member of the Department of Computer sciences at NU stated:
“The other side that I want to talk about is that the Blackboard itself with the back end. The Blackboard itself as a software is mature. It is a very good system that has been developed over the years and they close all the security issues so it is very good. But then you have the servers at the back end. You will have the network bandwidth. All these will affect how long it will take to upload the material. So let’s say in our case, the whole university is online and the bandwidth is limited or the servers are not very strong servers, then everything will be slowing down. So it is not the Blackboard’s fault. But the people who are supposed to set the environment for the Blackboard. As an end user it not my problem, but this is supposed to be a university problem or the provider. If I want to provide the Blackboard, then I have to work on all these issues and I have to study it before I just put in Blackboard’s and available servers and start using it.” Blackboard user 1

Based on his statement, it is clear that NU’s network is detrimental to its LMS performance. Network deficiencies can render any LMS useless. As a result, the study received a lot of negative feedback from teachers at NU about this issue.

At UL, the Sulis system is supported well by a network. Ireland is a country which has some of the best network services.

Based on an analysis of the data collected from interviews with both Sulis and Blackboard users, access from any location and at any time remains one of the best features of the system. Teachers enjoy being able to access student homework and assignments at any time and make announcements remotely instead of having to wait for the next class. Heirdsfeld et al. (2011) found that students felt that accessing materials remotely is the best feature of an LMS and that this feature could enhance their learning experience. In addition, teachers enjoy some of the students’ favourite features almost as much as students. For example, teachers like the email, announcement, and learning resource features and feel that students are sometimes more enthusiastic about using the video record feature that allows teachers to stream their lectures or record their lectures for later use by students using the LMS. Most teachers continue to prefer face-to-face teaching rather than any teaching method, but other methods are catching on.

According to De Lange et al. (2003), making materials available online contributes to student motivation. Cader and McGovern (2003) argue that making all materials available online would cause students to attend fewer lectures and make the communication between students and teachers less efficient. The study uncovered some of these concerns from teachers who stated the following:

“As I said in the beginning, face to face we don’t want to lose that. If everything is online, then we will lose a lot of things that will tell the teacher. I am talking from the teacher perspective.” Blackboard User 1

“I train teachers, so they have to reflect on their teaching and we get them to do blogs and we get them, they used to have a portfolio and they would type up everything and submit the portfolio, now we get them to do an online portfolio like create a little website. So I do that with MA and PHD students so they come to class, I give them the theory, I give them the content and then they go away and they create the blog or the portfolio. So I use basically,
basically what I use online for communication. So it is either them reflecting where it is personal, them having conversations in a forum, or sometimes a chatroom where it is synchronous. But it is mostly communication that I use technology for” -Sulis User 2

An experiment performed by Rodi et al. (2013) about the effect of the LMS on student attendance was performed in two American universities. The researchers found that when the LMS allowed students to easily access all course materials, there was a significant drop in attendance. When not all material was provided through the LMS, attendance returned to normal levels. There was no difference in grades between those who relied on the LMS for all materials and those who attended class regularly.

6.2.1.2 Evaluation of LMS Design in Terms of Navigation

Benyon et al. (2005) defined navigation as "finding out about, and moving through, an environment". Navigation involves many elements including the access that the user has. Navigation allows the user to explore and look for things using the tools available.

To consider the system as user friendly, it should clearly guide users (Benyon et al., 2005). According to Dennis et al. (2008), system navigation should meet user expectations and users should work in the system without having to put much thought into the actual system use. Navigation should allow users to know when they are successful with an action. Dennis et al. (2008) also believes that a good system design should not require a lot of effort for users to complete tasks and should allow users to reach various parts of the system with very few mouse clicks or keystrokes.

The navigation in both systems in the study was different. The Sulis system was seen as one which had “bad” navigation while the Blackboard system had acceptable navigation. The study will discuss the navigation in the systems based on the interviews and the responses to open-ended questions.

Two teachers at UL complained about the difficulty they faced when navigating the Sulis system. In the open-ended questions that were part of the online survey, 20 negative comments were received about Sulis navigation. Teachers at UL describe the navigation in Sulis as “tricky”, “painful”, “terrible”, and “not user-friendly”.

The follow are some quotations from Sulis users:

“the system is very difficult to navigate which puts me off using it” -Sulis user
“The navigation is confusing for staff and students and could be simplified” -Sulis user
“There is a bit of learning curve involved in order to get used to navigate” -Sulis user
“I have put my PowerPoint presentations and reading into our resources folder and I put podcasts into the podcast folder and discussions into the discussion folder and then students had to go from one to other within a week, during the week, to find anything. And that is really awkward, it is poor navigation” -Sulis user 1
“So what I think it is easy to navigate because I am used to it” -Sulis user 2
The difficulty in navigating the system could lead the users to use the system less as well as lead to bad user experience regarding the system (Moseley and Ajani, 2015). This result boosts the findings presented in Chapter 5 which stated that navigation of the Sulis system was one of the worst features.

By analysing the transcript of the interviews that the researcher conducted with teachers at NU, the study found that most teachers described the navigation in the Blackboard system with terms such as “good”, “easy”, “okay”, and “straight forward”; however, some teachers have reservations about the navigation in Blackboard and they described the system as "cumbersome" or "not intuitive". The following quotations are from interviewees in NU:

“Navigation is okay. I have no problem. I started with something, I finish it quick, no problem.” - Blackboard user 11

“Yeah, I am satisfied because it is easy to use, it is straight forward.” - Blackboard user 7

“It is not straight forward. It is not intuitive, but it is not completive. Simple thing. Not very good.” - Blackboard user 9

“It is a little bit…I do get confused sometimes. But like I said, I haven’t really started using every little bit of it. So, therefore, maybe that is why I find it a bit confusing at times when I try to go into certain areas. And sometimes I get a bit confused and I go into the wrong sort of area.” - Blackboard user 10

These quotations show that some teachers struggle to use the Blackboard system. One teacher who was interviewed mentioned the following point:

“to say that you have to have a workshop, a little training on how to use Blackboard and how to navigate before you can use, but as soon as someone gives you training, it is easy to use because it is pretty straight forward and you can see…” - Blackboard user 7

This teacher had used the Blackboard system for over a year and had specific training regarding how to properly navigate the system:

“We have been using Blackboard, I believe, for 2 years. But over the time we have had more and more training on Blackboard so I am comfortable using Blackboard from this year, so about 1 year…How to use Blackboard. Navigate through Blackboard, where to go, how to use” - Blackboard user 7

The quote above shows that good training could solve the issues that users feel about the Blackboard system. In addition, the fact that the Blackboard system requires that users receive training show that the system is generally difficult to use and cannot be learned intuitively. This issue was mentioned earlier in Section 6.2. The researcher believes that each system must have an excellent user guide to show individuals how to properly operate the system and how to deal with problems that may occur. Sharing this information is important and the user guide should be a part of any training session.

The link between the navigation and ease of using the system does not always mesh. If a user is able to navigate through a system easily, then they feel that the system is easy to use. Alharbi and Drew (2014) have found that when the users find the system easy to use, they
view the system as something that is helpful and will typically have a positive attitude about it.

The results of analysing the text relied on qualitative methods to enhance the results of the analysis. The results showed that the navigation in the Sulis system is not user friendly and does not help the teachers employ many teaching methods. If this is the case, it is possible that teachers may use the system less or limit its use. The navigation of the Blackboard system is considered an advantage for most NU staff members. Some at NU feel that there are still issues related to a lack of training.

6.2.1.3 Evaluation of LMS Design in Terms of Time

According to Edling (2000), using technology in education along with a traditional teaching methods may allow teachers to benefit from online learning and face-to-face learning. Afshari et al. (2009) said that the availability of technology is not the key to success in the education field. The researchers believe that E-Learning systems are going to be used if universities feel that it will boost the learning process. There are many reasons why technology is not part of the education process including not having the software, having the wrong software, or wanting to avoid technical issues (Bauer and Kenton, 2005).

Moseley and Ajani (2015) believe that the users of any system are aware of the amount of time that they have to spend to get the information out of the system. The system design should help to make the retrieval of information as efficient of possible. Spending too much time planning to use an E-Learning system could make teachers and students less excited about the system and could cause the system use to be very limited (Bauer and Kenton, 2005). The researcher believes that a system that not help teachers save time will be used little or possible avoided altogether.

During the interviews, the researcher asked teachers who used both the Blackboard and Sulis systems if the use of the system helped to save time. The opinions of UL teachers will be discussed first and the opinions of the NU teachers will be discussed second.

By analysing the transcripts of the interviews with UL teachers, the researcher found that there was great diversity in the answers received. The following quotations were collected from UL teachers:

“Generally, I don’t have a problem with time expect for assignments section and grading. So when I am uploading assignments, that seems to take a very long time, especially if they are larger, if I am uploading feedback for students, that seems to take a lot of time.” -Sulis user 1

“I am, I suppose I am used to it as well as I don’t have a problem.” -Sulis user 2

“Overall I say its fine. It is working well in that sense for uploading.” -Sulis user 4

“Alright, it is fine. Like sometimes there are some…that were having an experience that much and I don’t know if that has to do with the network structure here, but some people used to complain a lot” -Sulis user 3
Many of the teachers who were interviewed had worked with the Sulis system for more than eight years with the exception of one teacher who had only worked with the system for two years. This experience showed that the teachers were experienced users.

The study received many negative comments in the open-ended questions regarding the use of the Sulis system. Some of these points discussed the time it takes to upload files and other materials.

“it can take time to upload documents/slides.” -Sulis users
“uploading files is problematic. Some time too.” -Sulis users
“not nearly as fast as email.” -Sulis user

If small jobs such as uploading educational materials into the system take a long time, it could lead to users having a negative view of the system. The researcher believes that other design features have a strong link to the time it takes to use the system. For example, the navigation of the system directly impacts the amount of time the user uses the system since the user must go through multiple steps to get to the proper area. In Section 6.2.1.2, the Sulis system received poor scores in navigation. The result of the survey presented in Chapter 5 showed that the Sulis system is considered time consuming. For the most part, the use of the system was considered time consuming for most users with the exception of those who were very experienced.

For Blackboard users, the system was generally efficient and an excessive amount of time was not needed to operate the system. Many of the users felt satisfied and felt that the time-saving qualities of the system was useful. The following quotations come from interviews with NU teachers during the open-ended part of the survey:

“it saves a lot of time. I think if you prepare some material on the computer beforehand, while teaching and while using the Blackboard saves a lot of time” -Blackboard user 2
“Yeah, the time it takes to… It doesn’t take very long. It is pretty straight forward. It takes just a matter of couple of minutes. Couple of minutes to upload the assignments. So you have the assignment, practice test, whatever you want on Word, Microsoft Word or PowerPoint, however you like and you just upload it up to Blackboard. Like sending an email 5 minutes or something. Upload it to Blackboard.” -Blackboard user 7
“Applied technology and save time” -Blackboard user
“keeping time and reachable” -Blackboard user

Some teachers felt that the system would save them time and they actually preferred using the Blackboard system instead of other programs such as email.

“It is okay, actually. It depends on how you look at Blackboard. Is it a tool? As a tool, I find it is practical and you save a lot of time. Save time. For example, instead of sending, I mean, getting emails from the traditional way, it would take time of collecting those emails and sorting, organize them. But in the Blackboard, when you send assignments to the students via the Blackboard, they return the assignments via the Blackboard, you are not cluttered with these things, you can just open the Blackboard system and then you see all these things
organized with the student ID, student information, all information about the students. So it saves a lot of time in terms of communication with the students.” -Blackboard user 8

These results from Blackboard users enhance the belief of Moseley and Ajani (2015) that users would be sensitive to the amount of time needed to retrieve information from the system. Since the Blackboard system allows users to efficiently retrieve information, it could lead to users utilizing the system more. However, some, like the user quoted below, fear that they will lose time and be less efficient by using the system:

“Because as I said earlier, I only really started using a fraction of its capability, and I have only used it primarily to upload assignments for students and then to mark and grade those assignments, I have also used it to send information to students in terms of lessons and stuff like that, but there are a whole host of other things that I know and are available there which I haven’t yet gotten into and perhaps the reason for that is that I haven’t had time yet to really go through it thoroughly” -Blackboard user 10

Overall, the result of analysing the transcripts of the interviews supports the data obtained through the surveys. The Sulis system is consider time consuming and does not help teachers to employ many teaching methods. In contrast, Blackboard has received a good level of satisfaction and helps users employ several teaching methods.

6.2.1.4 Evaluation of LMS Design in Terms of Ease of Use

One of the most important factors in adopting and implementing educational software is to find a system that users consider easy to use and maximizes the software’s advantages. If users find the system difficult to use, they will typically benefit from it less (Laskaris, 2016). De Smet et al. (2012) found that the ease of use of an LMS is considered one of the strongest factors leading to user acceptance of the LMS.

The study used open-ended questions to gather data about what lecturers felt were the greatest advantages and disadvantages of the LMS. The study found that teachers had a variety of opinions. The study also discussed how the lecturers viewed the Sulis and Blackboard systems and how they worked with these systems on a daily basis.

For the Sulis system, some teachers believed that the system was easy to use while others felt that it was difficult. The majority of people felt that the system was easier to use. Some of the terms used to describe Sulis were “ease”, “simple”, and “directly integrated”. The following shows some of the statements made by teachers about the system:

“Ability to upload material that is available to students without any accessibility issues that email would have” -Sulis user
“Easily accessed by all and simple to use” -Sulis user
“it is fully integrated with the SI system so modules are set up and students registered automatically”
“Ease and timely communication and feedback” -Sulis user

These quotations show that many users considered the Sulis system to be easy to use and that some teachers at UL even preferred to use the system to communicate with others instead of using more established tools such as their email programs. One of the advantages of an LMS
is that it is integrated fully into the school’s educational system (Noud, 2016). Sulis was fully integrated into UL’s Student Information System which many considered to be an advantage as it made working with the system easier.

There was a group of teachers who felt that Sulis was hard to use and described it as “difficult”, “not intuitive”, “clumsy”, and “frustrating.” The following are some quotations form UL teachers who disliked the Sulis system:

“it is incredibly difficult to use” -Sulis user
“not very intuitive to use at first” -Sulis user
“it’s unclear how to use some functions and it’s easy to make mistakes” -Sulis user

The quotations show that there is some concern regarding the efficient use of Sulis. Many researchers who studied failed information systems mentioned the importance of having a good user manual which will help users learn the role of various system functions.

Based on an analysis of the text, the majority of the UL teachers considered the Sulis system as generally easy to use. This finding was in line with the survey results presented in Chapter 5. Shroff et al. (2011) found that a system that was considered an easy system to use had a marked effect on users’ attitudes toward the system and the system’s “perceived usefulness.” The meaning of perceived usefulness is “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989). Waheed and Jam (2010) found that the ease of use of an E-Learning system has a strong influence in the implementation of E-Learning technology by teachers due to three particular constructs: perceived usefulness, facilitating conditions, and computer efficacy.

It is critical to find an LMS easy to use as this will allow teachers and students to benefit the most from the system. Based on the analysis of the text, many UL teachers considered the Sulis system as a generally easy system to work with. This finding was in line with the results of the survey. As a result, the chance that users would see great benefits from the Sulis system would be relatively high. Although many users liked the Sulis system, there were some who were dissatisfied with system features such as the navigation and the time to use the system. These features are a major part of any system and a failure in something important such as navigation could cause the system to be used sparingly.

The study found that NU teachers believe that Blackboard is a great system with great capabilities; however, the study also found that the system is difficult to use. Some terms that were used to describe Blackboard are “cumbersome”, “complicated”, and “extensive”. The following are some quotations from NU teachers:

“Most of the students don’t know who to use it especially low levels and also lots of staff” - Blackboard user
“I must admit I haven’t managed yet to go through everything. It is quite a complicated system” -Blackboard user 10
“The program is a bit complicated” -Blackboard user
Based on the quotations above, NU teachers considered Blackboard to be a system which required effort to work with. The first quote mentions that users who were not experienced using technology would suffer when working with Blackboard for the first time. This result was compatible with the results of the study performed by Alturki and Aldraiweesh (2016) which found that lack of experience with Blackboard would lead to users giving the system a negative rating while those who were experienced with the system would rate it positively. A teacher at NU who was interviewed stated that “once you get used to it, it is not a big problem, If you have training, if you have experience, then you understand.” This statement shows how Blackboard is not something that a user can quickly pick up and that the system takes some time to operate adequately.

The quality of training plays a significant role in the implementation of any system and will allow system features to be maximized. A teacher at NU stated that “I have stuck to the particular areas that I need. So I haven’t really played around it.” The teacher stated that there was some training, but the training was not in-depth enough and did not do a good job explaining the system to a new user. Another NU teacher stated “we need deep training, we need hard training, we need follow up training.” This statement shows the marked need for Blackboard training by teachers.

As mentioned in Section 6.2, there is a difference in the way that NU teachers feel about the training that they received prior to using the Blackboard system. There is a consensus about the importance of training prior to using the Blackboard system. This result is similar to the result of study conducted by El Zawaidy (2014) which found that many lecturers at three different Saudi Universities needed special training on the Blackboard system to improve their knowledge regarding the system. In a study by Carnevale (2003), 730 Blackboard users (students, teachers, and staff) at the University of Wisconsin were surveyed. The study found that most of the Blackboard users believed that the system is not an easy system to learn (Bradford et al., 2007).

6.2.2 Evaluation of the LMS User Interface
Dennis et al. (2008) defined the user interface as "the part of the system with which the user interact." One of the challenges that designers face with the user interface is working to space the pages correctly and find the right balance between simplicity and the presentation of information. A good user interface should be “pleasing to the eye” and “simple to use.” It should also be designed in a way that allows users with and without experience to benefit equally (Dennis et al., 2008). Users control the software through the user interface and a good interface allows users to interact with the system in a natural and intuitive way. The primary goal of the interface is to be use friendly. If the interface is difficult to use, it has not been designed properly (Christensson, 2016). A poorly designed user interface could hurt the way that a system operates. Some users tend to generalize the problems related to a poor interface into “computer problem(s)” which could lead to users using the software less (Stone et al., 2005).

The process of evaluating the user interface of any system is important as it allows companies to understand how users interact with the system. This process should help companies learn
what areas of the product are difficult and make adjustments accordingly (Stone et al., 2005, Dennis et al., 2008).

The concept of the user interface is broad and could refer to many things. This study will focus on five main components of the user interface: colours, font, icons, language options, and overall layout. The study will define each component and examine the level of satisfaction that the lecturers have about each component. The study will also work to determine if teachers view the component positively or negatively and if the component helps or hurts the ability to use a variety of teaching methods. Stone et al. (2005) believes that changing the user interface components including text, colours, and images is easy and cheap. If these components are properly built during the design phase, they could contribute to the overall success of the system and aid in usability.

6.2.2.1 Evaluation of Colours in the LMS User Interface

Colours are a fundamental component of the user interface and play a significant role in user acceptance of the system. The designers of the system use colours to allow users to enjoy navigating through the system and to display system information clearly. In addition, the system can be organized using colours that are displayed in an attractive and aesthetic manner (Stone et al., 2005).

According to Stone et al. (2005) colours appear different on a computer screen than they do on a piece of paper. For this reason, designers of software systems should prioritize creating the appropriate user interface colours and be aware of the differences in the way that users view the colour schemes due to age and cultural background. To examine the level of satisfaction with the colours in the LMSs studied, the researcher asked interviewees if they were satisfied with the colours used in either the Sulis or Blackboard system.

For the Sulis system, almost all the lecturers who were interviewed stated that the colours could be improved or changed. They described Sulis’ colours wish words like “dreadful”, “boring”, and “too much black”. The following are some quotations from UL teachers during the interview:

“The colours are boring, it is like green and yellow, it is boring” -Sulis User 2
“I think the colours are dreadful” -Sulis User 1
“Yeah, I don’t like the colours” -Sulis users
“So there is a green, an olive-green kind of banner and a darker green font on top of that, and then a beige background.” -Sulis user 1

The quotations show that the Sulis interface has limited colour choices and options. As a result, users are not satisfied with the system. In fact, one user stated that she had worked with both Moodle and Sulis and she preferred to work with Moodle because of the better colour choices. When asked why she would prefer to work with Moodle, the teacher responded by saying:

“I just…the colouring on it, it looks nicer, you can kind of do more with it. You get more options. I think at times it can nearly look a little more interactive on Moodle whereas Sulis it
is very much black and it looks kind of the same all the time whereas Moodle has a nicer look to it.” -Sulis user 2

The teachers at NU seemed to be content with the Blackboard system. The study received only one complaint regarding the Blackboard system’s colours. The teachers at NU who were interviewed stated that the system was colourful and that the colours did not inconvenience or bother them. The following are some quotations from NU teachers:

“Yes, it is pleasing. Green and it is pleasing to the eye. I think that you can change that.” - Blackboard user 1
“The colours are okay. I have no problem with the colours. I find the colours alright” -Blackboard user 10
“The colours I think is okay. Matching with the colour of the university” -Blackboard user 11

Based on the above quotations, the colours in the Blackboard system were widely accepted by the users. The lecturers found the system to be colourful and stated that there were more than enough colour options. In contrast, the Sulis system had very limited colour choices.

6.2.2.2 Evaluation of Icons and Fonts in the LMS User Interface

The primary role of the icons and font in any user interface is to present text to users clearly. Users generally like to read text on paper instead of on computer screens since computers do not always have high resolutions. The user interface should present text in a way that emphasizes the relevant text. Text can be presented in many ways such as through bullet points. Users typically read pages of text quickly so it is important that the user interface have headings, subheadings, and use the appropriate font and colours to display information. In addition, data should be divided into the appropriate sections and not presented as long blocks (Stone et al., 2005). COUSINS (2013), Cronin (2009) discussed the importance of making web text have greater “readability.” If text is easy to read, users will gain greater information without a lot of effort. In contrast, if the text is difficult to read, the users may choose not to read it or may not return to the website.

The study found that lecturers at UL who were interviewed believe that the Sulis system does not provide them with many options to manipulate text the way that they want to make the text clearer for students. Some of the following quotations show their thoughts:

“So even if it is something like visuals, graphics, if we could be allowed to kind of play around with the formatting, a little bit more, that would be nicer. Because even if, for example, I put an announcement in, and I type in my text, you can make something bold or italics, but you can’t do much more with it.” -Sulis user 2
“The fonts, there is nothing. Basically, the options are small, medium and large, and sometimes I don’t know, this is another problem.” -Sulis user 2

Another issue with the Sulis system that a user mentions is the way that the system displays information differently in different format. In the system, the information is presented clearly, but if that information is emailed, the system generated email is not as clear. The lecturer stated:
“I send an announcement and I don’t know what, if you choose small, on Sulis, it looks okay, and when the students get the email it is tiny tiny in the email. And for me, I think “did they read it?” “did they even see it?” so I don’t think there is enough scope with the fonts.” -Sulis user 2

This quote shows that teachers experience some problems with the way that the Sulis system displays information and that these difficulties make some teachers distrust the system. The size of the font is something that impacts legibility along with typeface, letter spacing, line spacing, line length, justification, and line breaks (Stone et al., 2005).

Many of the teachers at NU who were interviewed believe that the Blackboard system provides them with many display options. These options contribute to user satisfaction with the system since these options help to reduce the costs associated with printing educational materials. In this way, the system has made the University more cost effective and has reduced the use of printers and copiers. The following are some quotations from NU teachers:

“It is always under control, you can use what you want, you can change the font, you can change the space, you can do all you want to. It is just as you are using Office program or Word program. The choice is not as wide as when you are using Word program, but it is good.” Blackboard user 5

“It is fine, but most of the time I use my own files from Microsoft word and I upload them so I don’t really use the fonts much from Blackboard, I use it from Microsoft Word and then I copy and paste it onto.

I find it easier to use Microsoft word because obviously you don’t need internet connection whereas Blackboard you have to use internet connection wherever you are. So with Word I can just do a bit of work in my office, do it at home, do it somewhere else without internet connection. So it is easier for me to do it on Microsoft Word and the copy and paste onto Blackboard when I do have internet connection.” Blackboard user 7

The Blackboard system received a high level of satisfaction for NU teachers while the Sulis system failed to receive the same response from teachers at UL.

6.2.2.3 Evaluation of Languages in the LMS User Interface

The language that is used on the interface of any software system should be understandable for all users and should be clear and natural (Dennis et al., 2008). Benyon et al. (2005) said “a design language is how the designers build the meaning into objects enabling people to understand what things do and to make distinctions between different types of object”. Making the text beautiful and legible cannot guarantee that it is understandable. As a result, designers should think carefully about the words and expressions that they use in the system to make sure that it adds to usability (Stone et al., 2005).

Both systems use English as the primary user interface language. The researcher did not receive any complaints about the languages in the systems and the researcher believes that the language used in both systems was clear and understandable. The following quotations show that teachers at NU and UL were satisfied with the language used in the system:
“As in the language, how the stuff is explained? Yeah, I think it is clear enough, that isn’t an issue for me personally” Sulis user 2
“The way the English is presented? I never had complaints from students about that.” Sulis user 1
“I do teach some international students every year and they haven’t complained about the text labels or the language, the way the English language is presented in Sulis.” Sulis user 1
“I am satisfied with the language used. What about the label names? Yeah, very clear. And easy for anyone to read.” Blackboard user 6
“What do you think about the language capabilities? That is perfect. All is okay” Blackboard user 11

This Sulis system only uses English while the Blackboard system uses both Arabic and English. The Blackboard system is not always clear in the way that it translates Arabic into English. This fact is detailed in the following quote from an NU instructor:

“The language is not bad, of course, we have an issue where we got two languages in use here, Arabic and English and in some cases there isn’t the appropriate translation. And so for a user like me, I can’t read certain messages, they aren’t translated. And if they are translated they are not translated accurately enough. But if I stick to just the English part of it, I am okay with the language that is used on it, in English.” Blackboard user 10

Roth (2015) believed that every LMS should support many languages as not all users speak the same language. Roth called this “language localization.” In the current study, Blackboard’s support of Arabic is critical, however, the translation from one language to the other is not as accurate as it could be. The ability of the Blackboard system to support two languages allows teachers to use all parts of the system.

6.2.2.4 Evaluation of the Overall LMS User Interface Layout

Making the user interface of any software system as good as possible is critical as it can lead to user acceptance or rejection of the overall system. As the study has mentioned in point number 6.2.2 there are many experts in the field of human-computer interaction such as (Benyon et al., 2005, Dennis et al., 2008, Stone et al., 2005) who believe that the user interface of any software should be created in a way that best meets user expectations. The interface should be aesthetically appealing and usable.

To determine if the overall layout of the user interface is attractive, the researcher asked teachers the following question:

“Are you satisfied with the overall design of the user interface?”

The following sections discuss the answers received in response to the question about the user interface.

There were many opinions about the user interface from UL teachers. Three of the teachers had worked with the Sulis system for more than nine years and two of them felt that the system did not look nice. The other teacher felt that the user interface was acceptable compared to the old version which she felt was “terrible.” The following are some statements made by the teachers who used the Sulis system:
“Sulis just doesn’t look nice and that is something that makes it work worse” -Sulis user 1 (nine years of experience)
“It isn’t the prettiest of interfaces, I think there are nicer ones out there, but it is what we have, so…” -Sulis user 2 (nine years of experience)
“At the moment it’s okay, as I was saying to you the other day, we started with pretty terrible version of Sakai … that we use here. That is, there was about 3 years and it has become way more stable and reliable.” -Sulis user 3 (nine years of experience)

The researcher did interview a teacher who had worked with Sulis for two years. This teacher described the user interface of the system as user friendly.

“I am actually. I find it quite user friendly” -Sulis user 4 (two years of experience)

Her opinion was not shared by many. In fact, the researcher asked for opinions about the worst and best parts of Sulis. The researcher received 33 negative comments about the system’s user interface with no positive comments about the interface. Many of the individuals who complained about the user interface used terms such as “old fashioned”, “not user-friendly”, and “poorly designed”. In fact, they considered the user interface to be one of the worst parts of the platform. Some of the comments included the following:

“The appearance of Sulis is dated and not very attractive” -Sulis user
“It looks really old fashioned, but also doesn’t match anything else in the university” -Sulis user
“It is hideous looking screen” -Sulis user

The Blackboard system was viewed far differently by the teachers at NU who believed that the user interface contributed positively to the overall system. Only one individual was not pleased with the user interface. This person felt that the interface could be simpler and have fewer icons. This individual relayed his message as follows during his interview with the researcher:

“We would like to have a simpler interface for the Blackboard system” -Blackboard user 5
“What do you mean by simpler” -researcher
“Less icons and concentration on the basic jobs” -Blackboard user 5

The overall layout of the Sulis system was not satisfactory to the majority of users at UL. In contrast, the overall layout of the Blackboard system received a high level of satisfaction from the majority of users at NU.

6.3 A Comparison of the Sulis and Blackboard Systems Based on an Analysis of Survey and Interview Results

After reviewing the study problem from a variety of viewpoints, the researcher believes that the Sulis or Blackboard system impacts upon the teaching methods used. The extent of this impact depends on the respondent and the specific system. Some believe that the system has a limited impact while others believe that the impact is significant. The effectiveness and profitability of any LMS system is heavily dependent on end-user acceptance of the system (Lawson-Body et al., 2015). This current study found that the Blackboard system is more
widely accepted then the Sulis system. At NU, Blackboard has helped lecturers enhance their teaching methods and improve the overall educational process. This result provides evidence that the Blackboard system is an effective LMS while also supporting the argument that LMSs can have limited roles (Lawson-Body et al., 2015).

Users of the Sulis system have some reservations based on the shortcomings of the system’s design and interface. This result supports the claim of Alelaiwi and Hossain (2015) which states that most LMSs have design and interface issues because many institutes do not evaluate systems properly and may not select systems that are best suited to the needs of employees.

The following study will discuss the benefits and drawbacks of the Sulis and Blackboard system designs and user interfaces, respectively. The study will obtain information through an analysis of the data collected in the survey and analysing the transcripts of the interviews. These analyses will allow the researcher to make as fair a comparison of the systems as possible.

6.3.1 The Positive Aspects of the Sulis system

Based on the results of Chapter 5 and the results presented in this Chapter, the Sulis system received a high level of satisfaction from users regarding the ability of users to access the system remotely and use the system easily. These features allow users to access resources from any location and at any time (Coates, 2007). When teachers or students are able to access the system online on a consistent basis, distance or blended education becomes possible. Heirdsfield et al. (2011) believed that an LMS should provide an environment where students, staff, and lecturers can learn or teach online and could also create the ability for educational institutions to use a hybrid of in-person and online education. If all parties are not able to consistently access the LMS, the system would not be able to fulfil the needs of all parties. In addition, DeNeui and Dodge (2006) stated that creating an environment where students and teachers can communicate with one another and access resources easily will help individuals master the process of online teaching and learning. The role of an LMS is to manage the learning process and support different types of learning by providing individuals with necessary functions and access (Wang, 2010). The researcher believes that making resources easily accessible and providing a way for students to contact teachers directly does not mean that the system can effectively support different learning and teaching methods.

The analysis of the text allows the researcher to present information about how the teachers at UL view the Sulis user interface. By connecting the results in this Chapter to the results in Chapter 5, it becomes evident that not all elements of the Sulis user interface help the system work efficiently. Certain elements such as colours and font options have negative impacts and result in less user satisfaction with the system. The users did approve of the language options available through Sulis.
6.3.2 The Negative Aspects of the Sulis system

The Sulis system design is based on the analysis of data collected through the surveys and interviews. Based on these results, UL lecturers had the following three complaints about the system:

- The navigation of the Sulis system was considered the worst feature of the system and did not help the lecturers employ many teaching methods in the education process.
- The time to complete tasks in the system took longer than expected and did not provide the opportunity for staff to adopt many teaching methods.
- The order of the Sulis system’s screens was somewhat cluttered and disorganized and did not provide a way for lecturers to use different teaching methods.

The bulleted list above shows that the Sulis system design did not garner positive user satisfaction ratings. Each of the issues can cause several problems. For example, placing the system functions in illogical places can cause users to access the proper functions less or even ignore them completely. In addition, time-consuming navigation processes can be inefficient for users and may result in users choosing to not use the system at all. One lecturer at UL stated that the system is “incredibly difficult to use and navigate especially when going back to a previous page. It takes far far too long to refresh a page making its use virtually redundant.” The lecturer went further by stating that the system was “by far the most unusable VLE I have ever encountered and I would actively do my best to not use it.”

A small fix such as adding a “back” button to the system could have fixed the issues that users experienced. Moseley and Ajani (2015) believe that LMS issues that involved navigation could quickly lead to good or bad user experiences and are considered a critical design issue. The researcher believed that availability of functions such as a discussion board, ability to send emails within the system, and capacity to provide students with online assessments will not be successful if the system is not designed well. One of the teachers at UL was asked about the user interface and responded that there was great “time wasting due to the awful user interface. There is a lack of consistency across the tools. Correcting assignments is Sulis is slow and painful”. The teacher’s statement shows how the system’s navigation hinders users from using parts of the system that are beneficial.

Important system functions, in particular, the ability to follow up with students on homework, is one of the most beneficial aspects of the LMS. This function is mitigated by the poor design of the Sulis system to the point where the lecturers considered the feature a drawback due to the delays and frustration created by the poor design. System developers have to be mindful that the key to their success is creating beneficial software that allows users to have full access to all functions while avoiding time-consuming or overly complex processes. Developers must think of the end users and ensure that the software is enjoyable, fun, and easy to work with (Moseley and Ajani, 2015).

In general, users are not satisfied with the overall layout of the Sulis user interface. This dissatisfaction was shown through the results of the surveys and the interviews. The Sulis
layout received a score of 2.95 (presented in Table No. (23)) in Chapter 5, Section 5.3.2. The layout also scored poorly as shown in Section 6.2.2.4 of this Chapter.

It is possible that the system is somewhat out of date and not as advanced as it could be. Overall, the Sulis system has features that positively and negatively impact teachers and the teaching methods that they can use. The researcher believes that the Sulis system is in need of additional improvements to reduce the time needed to complete tasks. A part of these improvements would include creating a new screen order in the system and enhancing the general navigation of the system to make it easier and more intuitive. In addition, the current features which already have a high level of user satisfaction should be updated to accentuate existing strengths. In addition, the overall interface should be updated and modified in response to user comments and criticisms.

6.3.3 The Positive Aspects of the Blackboard System

Based on the survey and interview results, the Blackboard design successfully met the needs of NU lecturers and allowed them to employ many different teaching methods. All of the design issues with the system were acceptable and received a high level of satisfaction from NU teachers. These results indicate that the Blackboard system design achieved the goal of creating an effective LMS for a learning institution. A properly designed LMS would be a system which adds a new virtual dimension to the traditional campus, something which would change the way that teaching and learning occurs (DeNeui and Dodge, 2006). Coates et al. (2005) stated that the “LMS suggest(s) a means of increasing the efficiency of teaching.” Based on the results of the survey and interviews, the Blackboard system did a very good job of accomplishing this goal at NU.

The study conducted at NU was impacted by the war that was occurring on the southern border of Saudi Arabia. Due to these circumstances, the University made all lectures available online and used the Blackboard system to accomplish this task. Some of the best and worst parts of the Blackboard system are presented in the following quotations:

“Blackboard makes the education available although security conditions in the region”
“When students cannot come for on campus classes it is the best option”
“The Blackboard gives me a new experience through teaching online”

The above statements were responses to questions that the researcher asked NU lecturers. They show that some lecturers believe that Blackboard has done a very good job helping NU overcome the obstacles that impact students in a variety of classes. It has also helped to solve issues that involve students of different genders needing to be in physically separate classes. One teacher said that “Blended and can be used greatly in distance education. For example, I used it before to teach female students; and now I am using it to teach them online instead of having to teach them on closed circuit. Now the female students do not have to come all the way to the college to attend lecture.” Another teacher stated that the LMS is the “best method to teach girls by male teachers.” According to (Hackos and Redish, 1998), cultural environment is one of the most important factors for any system and is something that could greatly influence the usefulness of the system. The right LMS can provide cultural, educational, and economic benefits. A teacher once stated that one of the greatest benefits of
an LMS is that it would “reduce (the) use of printers and photocopy of study materials.” The researcher believes that these benefits could not occur if the LMS did not have a good system design that allows lecturers to save time while also placing educational resources in a very accessible online repository.

The survey in Chapter 5 showed that the Blackboard interface is generally acceptable to all lecturers with the exception of the older teachers. The analysis of the interview transcripts and open-ended survey questions enhance the results of Chapter 5. These results differ from the study conducted by Alelaiwi and Hossain (2015) entitled “Evaluating and testing user interface for E-Learning system.” The authors found that Blackboard users felt that the interface should be redesigned as it currently had issues that reduced user satisfaction. The researcher believes that the complaints regarding the system’s interface resulted in Blackboard providing universities with the ability to customize the interface to best suit their needs. The Blackboard system can be customized and made unique to each institution even if the software starts with the same initial system.

6.3.4 The Negative Aspects of the Blackboard System

The Blackboard system is a web application and requires a good network to be effective. According to Moseley and Ajani (2015), most LMS users will use other web-based technologies including blogs and wikis and will compare the performance of the LMS to these technologies. The researcher believes that the availability of software on the Internet may cause LMS usage to vary based on user preferences. In addition, the LMS may be at risk if it is being hosted on a server that is not part of the educational institution. As a result, the data contained on the LMS may not be fully secure. One of the ways to mitigate the risks associated with using an LMS is to ensure that the system has the proper security protocols, updates, and uses modern web technology.

The study obtained information from lecturers through responses to open-ended questions. These responses showed that there were technical issues which impacted the system including network and storage limitations. The following quotations are statements regarding these issues:

“Technical limitation such as small bandwidth, limited availability and functionality of tools, incompatibility of program”
“Technical issue”
“Due to the net connection speed, some time unknown reasons it not worked”
“it problem, internet problem”
“Because of poor net connection sometime unable to access”
“Bad storage errors when upload new files and when open it”

Based on the above statements, certain issues regarding the network and other technical issues could cause the system to fail and result in user dissatisfaction. Alturki and Aldraiwesheh (2016) stated that any E-Learning system must have a good design that effectively connects to the Internet.
Another concern is the lack of technical support for the Blackboard system. The results of this study were consistent with a study conducted by Al-Khalifa (2010) which measures user satisfaction regarding the LMS system used at King Saud University in Saudi Arabia. This study found that the system was user friendly, but was plagued by technical problems that caused user dissatisfaction (Alturki and Aldraiweesh, 2016). These issues were not able to be solved easily by the University’s technical support personnel or by contacting the makers of the system.

6.4 LMS perception by lecturers in UL and NU

By reviewing the transcripts of interviews conducted with NU or UL teachers and the answers to the open-ended questions. The researcher concluded that most teachers who participated in the study believed that the LMS could play a role in the educational process. In addition, the individuals who participated believed that the LMS provided them with a way to easily communicate with students by providing a platform that included all necessary study materials. Some teachers did have reservations about the system, but not about the concept of having an LMS. The following are some responses from NU or UL teachers:

“IT IS an added way of communicating with students and provide them with more autonomy.” - Sulis user
“Communication is made faster with students.” - Sulis user
“Centralized location for distributing resources and messages to students.” - Sulis user
“SULIS is very useful because it's a central place where I can upload course material, have students submit assignments and quizzes, and most especially be able to provide personalized/confidential feedback to students. I have also found it very helpful in recent years when SULIS has been linked with Turn-it-in. also like that material can be imported and then edited from year to year.” - Sulis user
“Centralized repository for material and for projects.” - Sulis user
“I think it's not suitable for online lecturing. I prefer Moodle. I like the idea of a platform but I am not convinced that Sulis is the most suitable or user friendly.” - Sulis user
“Online teaching method.” – Blackboard user
“Communication with the students easy.” – Blackboard user
“The greatest advantage is that at a basic level Sulis is good for the sharing of lecture notes and materials but I think more could be done to make the interface easier to use and also to allow for more 'advanced' approaches to shared teaching and learning (i.e. use of video, posting of lectures / links). As it stands, the navigation is confusing for staff and students and could be simplified. Overall it's a good system but it could use some tweaking through student/ staff feedback on the interface and navigation and also training on some of the more advanced features.” - Sulis user

As shown by the above quotations, the teachers did not resist the idea of the LMS and saw some advantages to using this type of system. The system needed to be one which would fulfill their needs and expectations. Teachers viewed the LMS as a basic part of the education system, but the extent of its usage relied on several factors.
One Sulis user stated that “While I don’t love Sulis, I’ve learned to live with Sulis.” This quotation shows that there is user agreement with the Sulis system. In addition, another user stated the following:

“No, I suppose, and I think it has probably come across, that there are lots of good things about Sulis. I think that the fact that it is robust and it is scalable and you can add lots of people to is. And it has lots of tools. I think those are all really positive things about it. And the negatives are mostly superficial things that could easily be changed and they are more about the implementation of Sulis here at UL than about the Sakai system itself. So I think it would be easy to fix a lot of the issues.”- Sulis user 4

6.5 National culture influence on teaching practice:
The study was conducted in two areas which had different educational cultures. This set up allowed the study to differentiate if the results could have been the same if the national cultures were different.

As mentioned in Chapter 2 of Downey et al. (2005), individuals in a culture similar to Saudi culture are more likely to be satisfied with LMS use than those from a western culture. The results of this study support this claim.

The study also found that individuals with Saudi culture are more willing to be trained about LMSs and provided with guidance than individuals with an Irish cultural background. The results of this finding are in line with the work of Swierczek and Bechter (2010) which found that users from cultures that have high power distance and collectivism expect to receive thorough training about the system.

The study found that selecting the proper LMS can allow an institute to overcome many cultural obstacles. For example, the Saudi education system splits students into classes based on gender as a result of cultural norms. One teacher stated the following:

“Blended learning can be used greatly in distance education. For example, I used it before to teach female students; and now I am using it to teach them online instead of having to teach them on closed circuit. Now the female students do not have to come all the way to the college to attend one lecture.” – Blackboard user

Another teacher also said:

“Best method to teach girls by male teacher” –Blackboard user

Not all teachers at NU believed that the Blackboard system plays a critical role in the education process and some feel it may even play a negative role. One teacher gave the following response when asked about the disadvantages of the Blackboard system:

“1- The lack of students' sense of responsibility to drive their way of the learning journey. 2- Students lack the proper digital literacies needed in the digital world (that involves both the simple how-to, and the deeper online-identity preservation)” - Blackboard user
Based on this statement, the teacher was afraid of the LMS giving students more freedom. In cultures similar to Saudi culture, teachers generally prefer the idea of guiding students in class. In addition, the teacher felt that most students were not ready for the transition to the LMS. This quotation clearly shows the role of culture in the educational institution. Teachers at NU preferred the idea of communicating with students in a face-to-face manner as discussed in Chapter 5. Some teachers at NU saw the role that Blackboard played in making online teaching available as a disadvantage. One teacher stated that one of the disadvantages of using the Blackboard system was that he “missed face-to-face communication.”

Fourth, despite employing an LMS like Sulis, which was generally considered as an inconvenient system by most UL teachers, many stated that the system would be inconvenient to many in western culture since these users would expect the system to be more responsive, clear, and updated. These feelings are communicated in the following statements:

“Where do I start with the disadvantages- It is too hard to pick one! It is a hideous looking screen, very awkward to navigate for both students and tutors, and I would prefer not to use it as there are some many better options available for online teaching supports.” - Sulis user

“It is dreadful. It should be discontinued and the university adopt a modern integrated IS system” - Sulis user

Based on these quotations, the Sulis system can cause serious inconveniences for users. The system could also be considered unusable based on the following quotation:

“by far the most unusable VLE I have ever encountered and I would actively do my best to not use it.” - Sulis user

One of the advantages of having an LMS in an educational organization is the ability to communicate with teacher and students easily while maintaining the quality of teaching. Once teachers feel that the system is not useful in enhancing communication, they will stop using the system and may work to find alternatives as shown in the following statement:

“Doesn't completely replicate the speed and efficiency of face-to-face teaching and communication”- Sulis user

The fear of losing effective communication has been expressed by UL teachers as shown below:

“I do not realistically see a disadvantage. Possibly one disadvantage might be that if we were to use it as the only source of communication with students it might be a disadvantage, as students need face-to-face communication with lecturer/tutor. Not everything can be learnt without some human element of explanation” - Sulis user

“Having all material online may have an impact on lecture attendance/ face-to-face participation” - Sulis user

Once teachers feel that an LMS does not help in the education process, their perception about the system becomes very negative. One Sulis user stated “It (Sulis) adds nothing to teaching and learning.”
Fifth, western culture is generally an individualistic culture. As mentioned in Chapter 2, western culture generally expects a system to be clear and to be something that does not require ongoing training. Users consider ongoing training as a disadvantage. One Sulis user made the following comment about LMS use:

“It's unclear how to use some functions and it’s easy to make mistakes.”

### 6.6 Conclusion

Analysing the interview data in this Chapter using qualitative methods provided new results which enhanced the findings of the current study. By analysing the survey results in Chapter 5 using quantitative and qualitative methods and also analysing the interview data presented in this Chapter using a qualitative method, the study has achieved its goal of using a mixed-method of research as discussed in Chapter 3.

The results of the survey presented in Chapter 5 show the difference in LMS design that caused users to evaluate the systems differently. In particular, Section 5.4.5 of Chapter 5 showed that the Blackboard system contributed effectively to the education process at NU. In contrast, the Sulis system did not contribute effectively to the education process at UL. Both of these findings were based on the opinions of teachers who contributed to the survey.

The above results are supported in the current Chapter through the analysis of textual data from the interviews or open-ended survey questions using a qualitative method. The results from the analysis of the text showed the strengths and weaknesses of both systems. These strengths and weaknesses are discussed in Sections 6.3.1, 6.3.2, 6.3.3, and 6.3.4.

The following table shows the differences between the two system designs based on the results of this study:

<table>
<thead>
<tr>
<th>Sulis system</th>
<th>Blackboard system</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Easy to access</td>
<td>· Easy to access</td>
</tr>
<tr>
<td>· Hard to navigate</td>
<td>· Easy to navigate if proper training has been provided</td>
</tr>
<tr>
<td>· Easy to use</td>
<td>· Hard to use if proper training has not been provided</td>
</tr>
<tr>
<td>· Time consuming</td>
<td>· Time saving properties</td>
</tr>
<tr>
<td>· Bad layout of user interface</td>
<td>· Good layout of user interface</td>
</tr>
<tr>
<td>· Limited colours</td>
<td>· Variety of colours</td>
</tr>
<tr>
<td>· Limited tools for writing text</td>
<td>· Variety of tools for writing</td>
</tr>
<tr>
<td>· Clear language (English only)</td>
<td>· Clear language that directs users in both Arabic and English (exception: some translations from Arabic to English could be clearer)</td>
</tr>
<tr>
<td>· Limited role in teaching methods</td>
<td>· Good role in allowing many teaching methods to be used</td>
</tr>
</tbody>
</table>
Chapter 7.0: Conclusion and Recommendations

7.1 Introduction

Based on the discussion of the research questions in Chapter 5 and Chapter 6, the current Chapter aims to provide answers for the following questions:

- How do lecturers critically view the LMS system design?
- How do lecturers critically view the LMS system user interface?
- How does the current LMS help lecturers employ a variety of teaching methods?

In Chapter 5, the study relied on the study model to analyse the research survey data. The study model divided the lecturers into different groups based on differences in their characteristics including age, qualifications, specialization(s), teaching experience, and experience using the system. The study model was designed in this way to allow the study to uncover the similarities and differences between the different groups regarding the study issues. In addition, it allows the study to identify how external variables like age or teaching experience impact a user’s view of LMS design. Chapter 6 focused on the properties of the Sulis or Blackboard system and how those at NU or UL felt about those properties. The Chapter also examined how the system functioned and how the layout of the system helped lecturers employ a number of teaching methods. Focusing on the system properties allowed the researcher to determine the strengths and weaknesses of each system.

In this Chapter, the researcher seeks to provide an answer for the original research questions based on the study findings from both the survey and interview sources. The researcher mentions the most important points in the study based on his point of view.

7.2 Research questions

7.2.1 How do lecturers view the LMS system design?

Based on the findings of the study presented in Chapters 5 and 6, there are clearly diverse opinions regarding the issue of LMS design. The diversity is due to the users themselves and the systems that are used.

The researcher highlighted the most important points as follows:

Based on the findings of Chapter 5, it is evident that personal factors make a difference in the way that teachers feel about the systems. In general, teachers had stronger personal opinions about the system used at UL as opposed to the system used at NU. The Blackboard system design achieved a high level of satisfaction from most teachers regardless of how long they had used the system or their educational background. Older teachers were the exception as they had a high level of dissatisfaction regarding Blackboard design features.

The Computer Science Department and the Education Department at UL believed that the Sulis system design played a negative role in the success of the system with the exception of
remote access to the system which was viewed as a positive feature. The researcher believes that the failure of the Sulis system to satisfy these particular users is a bad sign since these groups could have helped to diagnose system deficiencies and worked to make the system more successful through the implementation of constructive criticism.

Satisfaction with the Sulis system was lower for older individuals and those who had used the system for a longer period of time. This decline indicates that users had some expectations about the system initially, but were generally disappointed with the way that the system operated. In contrast, the Blackboard system received good levels of user satisfaction from all user groups except those older than 56 years old.

The feature in both the Sulis and Blackboard systems that allows remote access is something that all users appreciate. This feature is fundamental to any LMS and is a requirement to engage in online teaching. Both systems did not require special equipment and could be operated using a typical computer without any special capabilities or software. There were some reservations regarding difficulty using the Blackboard system as mentioned in Chapter 6. Users reported that the Blackboard system required extensive training to properly use. The navigation of the Sulis system was considered a negative while this feature was a positive in the Blackboard system. The difficulty navigating the Sulis system was something which impacted some of the system’s other features and caused user frustration as users tried to perform tasks.

7.2.2 How do lecturers view the LMS system user interface?

The user interface of any system plays a major role in the acceptance or rejection of a system. The results of this study supported this notion. Based on the findings of the study, the user interface of the Sulis system was considered old and outdated. In addition, Sulis did not provide users with the flexibility to customize the system. In contrast, the Blackboard system had a better user interface and users generally preferred it. The researcher feels that the Blackboard system user interface received high levels of satisfaction from NU teachers since the system allowed users to customize it to a certain degree in order to fit their needs.

The researcher identified the following points regarding the evaluation of the user interface:

Both systems used English as the primary language. Blackboard also provided Arabic language capabilities, however, the ability of the Blackboard system to switch from English to Arabic or Arabic to English was not always accurate. To avoid these issues, the researcher believes that the system should utilize “language localization” to ensure that the translations provided to users are accurate.

Due to the flexibility that the Blackboard system provides to users through the ability to customize the system to best meet their needs, users were generally pleased with the system colours, icons, fonts, and other user interface elements. In contrast, the Sulis system was considered colourless and a system that did not have effective tools to present for example text. The researcher believes that users prefer different colour options and a system should work to meet user needs by being flexible and providing users with a variety of options.
including the ability to choose colours. This type of flexibility would make the use of the system more enjoyable for users.

The overall layout of the Sulis system was considered outdated by the teachers at UL. The researcher believes that system users should be able to compare systems relatively quickly. As a result, a system that is not routinely updated by the developer may not be used often if it is not as up to date as other systems on the market.

7.2.3 How does the current LMS help lecturers employ a variety of teaching methods?

From the researcher’s point of view, allowing teachers to use a variety of teaching methods is the primary aim of having any LMS is an educational organization. The way that the system is employed in the classroom by the teacher contributes to its usefulness. In addition, teachers must have some level of enthusiasm regarding the use of an LMS to employ several teaching methods. The study found that both systems contributed in making various teaching methods available, however, the level of contribution from each system to the teaching methods used was not equal.

The lecturers at NU were satisfied with the tools and layout of the Blackboard system and the teaching methods that the use of the Blackboard system allowed. The system allowed all lectures to be made available online and the school has decided to make in-class attendance optional for all students. In contrast, many teachers at UL were highly dissatisfied about the role of Sulis and many teachers who filled out the survey said that they engaged in limited use of the Sulis system.

7.3 Final Reflections

The following reflections show the origins of the research process and final thoughts on the conclusions to the basic and still important questions covered in our research domain, which are:

Are E-Learning management systems similar and do different systems play the same role in the teaching methods used?

There are many LMSs throughout the world that are used in educational institutions. The LMS has become a fundamental part of most colleges due to the development of online courses and an increasing number of students, some of whom are online-only students. Many LMSs have generally the same tools to handle the educational process, however, the design and the layout of the systems are completely different. These differences can play a major role in the ultimate acceptance of the system, but other factors can play a role in the benefits that an LMS can provide such as user age, experience, and specialisation and how these factors interact with system functions, layout, and capabilities.

Based on the results of the study, most teachers prefer face-to-face teaching over blended or online teaching. The researcher believes that changing the way that teachers feel about the role of ICT in education will be difficult and that the ICT system used in an educational
organization will play a role in the response to a system. Each educational institution has its own needs and requirements. For an LMS to play a positive role in an educational setting, it must be customised for the particular needs of the institution. For example, the Computer Science Department may need a different system from the History Department because of the various needs of the teachers in each specialisation. Employing many LMSs, however, could cause conflicts between departments since the various platforms may not be compatible with one another.

Many UL teachers had worked with the Sulis system for more than four years, a relatively long time. Despite a somewhat high level of experience and familiarity with Sulis, the system continues to disappoint. Moreover, the users’ perceptions about the Sulis are not good and the researcher believes that changing these perceptions will be difficult since the perceptions are based on many years of negative experiences. The researcher believes that the University should make several decisions regarding Sulis such as updating the system to meet user expectations. At the time of writing this thesis, the old system had been used for ten years before the University began implementing a much-needed update. Future updates should be made at least once a year, but ideally would be made on an ongoing basis in response to user feedback and particular needs.

In contrast, most of the participants at NU have worked with the Blackboard system for less than three years and report a high level of satisfaction with it due to the system’s easy and logical design. The researcher believes that both systems are not easy to master and that users must spend a significant amount of time with the system to become familiar with it. In particular, the Blackboard system requires a significant amount of training to become familiar with all aspects of the system.

The statistics presented in Chapter 4 stated that the Blackboard system was the most used system in Saudi Arabia and provides universities with the ability to customize the system to best suit the educational environment. Twenty-three percent of NU teachers in the study stated that they had worked with the Blackboard system prior to working at NU. This prior experience could explain why many teachers adopted the system so quickly. Blackboard provides users with flexibility as it allows users to customize the user interface. The results of the study show that Blackboard failed to achieve “language localization” due to the system’s limited Arabic language capability and the inability of the system to translate from Arabic to English accurately. The researcher believes that providing institutes with the right to customize the user interface is a good feature of any LMS, but does not guarantee that a system will succeed. To guarantee success, a system would have to be customised specifically for the university to ensure that it suits most user needs regardless of past experience, age, or language preference. The systems should be customizable and adaptable to help ensure success.

One third of participants in both institutions in the study had been teaching for more than ten years. The researcher believes that this experience could be used to enhance LMSs that universities employ if the LMS is flexible enough to be modified significantly to meet user
needs. Alternatively, an educational institution could establish lines of communication with the developers of the LMS and request the necessary modifications to improve the system.

The researcher believes that some of the issues that were seen in the *Sulis* system such as the difficult navigation, the lack of colours, and the confusing overall layout are not difficult to fix and could be addressed relatively easily by the system developer. Ignoring these details could lead to the collapse of the system or at least the limited use of the system. The researcher feels that *Sulis* could incorporate some of the flexibility seen in the *Blackboard* system and other LMSs to better fit the demands of UL staff.

The researcher believes that NU’s decision to expand its online and blended learning classes will greatly impact *Blackboard* use since teachers will need to use the system more. The increased use of *Blackboard* will provide many more individuals with experience using the system and could contribute to greater system success.

### 7.4 Recommendations

The researcher reviewed the study findings and created several recommendations. These recommendations are aimed at three different parties: LMS developers, educational organizations, and future educational researchers.

#### 7.4.1 Recommendations for LMS developers

The study results show that different personal characteristics along with university culture and policies play a significant role in the acceptance of an LMS. The researcher believes that LMS developers should create LMSs with the following ideas in mind:

Firstly, users should be divided into target groups based on different personal characteristics including age, experience, and qualifications. An analysis of each user group must ensure that the system design is dynamic and fulfils most of user needs. The user interface should also be fully customisable and provide users with the right to select all user interface elements including colours and fonts.

Secondly, the system developers must also be aware of the institutional culture where the system will be implemented. The developers should work closely with the IT department of an institution to enhance the chances for system acceptance and success.

Thirdly, an LMS should be flexible and be able to be easily integrated into existing institutional systems and other technology solutions. For example, an LMS should be able to access social media networkers and play YouTube videos instead of being limited to software only provided by the LMS designers. This compatibility will help the system to be used more.

Fourthly, there should be an extended functionality in both LMSs to produce an electronic “Portfolio” which would include all graduating students’ assignments, grades and studied module descriptions. This could lead to increased graduate employability via an increased visibility of competencies for prospective and potential future employers.
Fifthly, a similar recommendation may be made for teaching staff, showing and recording their pedagogic experiences within a “staff Portfolio”.

Sixthly, Sulis is closely integrated into the UL Student Administration system for module registration purposes. Lecturers are able to use Sulis for calculating and inserting grades from different assessment mechanisms, with a final grade easily calculated. However, this does not allow module leaders to then submit a student’s final grade into the UL Examination System. Therefore, there remains a frustrating gap in the full integration of grade submission. This gap obviously needs to be filled.

Seventhly, extending the previous recommendation, Sulis calculates the final grade for each student upon insertion of the different percentage marks. However, Sulis only uses the official UL Grading Scale System and does not allow the localisation to different grading scales as used by various Departments within UL, e.g. the School of Modern Languages and Applied Linguistics equates a B3 grade as 60% - 63% whereas the UL scale for a B3 is 55% - 59%. Again, the recommendation for localisation of this feature and others must be made.

Eighthly, as shown by the study results, institution location and national culture could play a significant role in LMS acceptance. The LMS should be designed to overcome cultural obstacles. Moreover, LMS developers should be aware of institutional rules and procedures along with societal norms. Awareness of culture and the characteristics of others contribute positively to the success of the LMS. The researcher believes that LMS design should be dynamic to suit all cultures

Finally, the system should be designed to work with the university’s infrastructure. System developers should analyse the capability of the university and build a system in accordance with these capabilities.

7.4.2 Recommendations for Education Organizations

The study results demonstrate the importance of selecting an LMS that best suits an educational institution’s needs. The selection of an LMS is a critical decision that can have long-lasting consequences. The researcher believes that the individual(s) tasked with selecting an LMS should take certain factors into account before choosing a system.

There should be an existing E-Learning centre at the institution that will be responsible for several issues including training employees and students about LMS use. If there is no existing E-Learning centre, then one may need to be built. The centre should work with the IT department of the institution and provide them with user feedback about the system. The IT department should take this feedback into account when making changes to the system.

The educational institution should also update its infrastructure to ensure that it is suitable for the new LMS. Policies may also need to be updated to regulate the way that online and blended learning takes place. Additionally, the institution could also add more online and blended learning classes to take advantage of the new LMS.
If the LMS is outsourced instead of built by the institution itself, then the institution should ensure that the system is tested for a sufficient time before it is officially adopted. The testers should be various individuals including students, staff, and teachers of multiple ages, experience levels, and qualifications to ensure that the system is able to meet all under expectations.

7.4.3 Recommendations for Education Research

The research has provided significant information regarding various aspects of LMS use and has also created new questions which could be investigated in the future. The following issues could be studied in additional research projects.

The study found that teachers in the Computer Science Department and the Education Department at UL had the lowest levels of contribution to the study. These groups also expressed the highest dissatisfaction about the role that Sulis played in allowing multiple teaching methods to be used. In contrast, the computer science and education department at NU were some of the highest contributors and were satisfied about the role that Blackboard played. The researcher feels that the low participation in the survey from the groups that were most dissatisfied with the system could indicate annoyance with the LMS. This claim should be investigated further in the future.

The results of the study found that the LMS may or may not have contributed to the number of teaching methods used. The contribution of the LMS depends on the type of LMS used. The researcher assumes that the availability of teaching methods could increase teaching efficacy. This claim requires more investigation. In theory, a greater number of available teaching methods would increase learning efficiency since more teaching methods would be able to effectively address more learning styles and strategies.

The results of the study show that teachers with more seniority are generally disappointed with the role of the LMS in the education process. Further research could be conducted to find reasons behind these findings and to determine how an LMS could be made better for teachers who have greater seniority. These improvements could include adding tools or other system features to make the LMS more effective. Investments into an LMS including updating the system to automate various mechanisms could save lecturers many hours of potential delays and issues. For example, when UL adopted the MCQ&A VLE application on a module with 300 students, the new application helped to increase the effectiveness of the system greatly.

The results of the study found that the Blackboard system did not achieve “language localisation” and the researcher believes that conducting more research about the importance of language support in an LMS is needed. In addition, research could be conducted to determine how users should respond to situations in which a system does not properly support their native language. The research could include determining how to improve the multilingual aspects of the system and what particular phrases or issues are problematic.

Due to the limitations of the current study which focus on the role of the LMS in making teaching methods available, the researcher suggests engaging in further research about the
role of the LMS in the support of various learning styles. Learners change over time and the
effective learning styles from one era may not translate to another era. More research is
needed to identify other types of emerging VLE styles and to determine the actual impact of
LMS on student achievement since VLEs have become more prevalent.

7.5 Methodological considerations

Chapter 1 discussed the importance of the study, the study questions, and the study hypotheses. Chapter 3 explained the methods that have been followed to conduct the study. The study worked to find the relationship between the LMS and teaching methods, a topic which has very little research.

The study evaluated only two LMSs, Blackboard and Sulis. These two systems were chosen for a variety of reasons. First, the statistics show that these are the most used LMSs in Saudi Arabia and Ireland. The results of Chapter 4 highlighted the way that Blackboard is widely used in Ireland and Saudi Arabia and how Sulis is only used in one university in Ireland. These facts caused the researcher to conduct further research on both systems including analysis of the different system features. Both systems are considered commercial systems build by an outside provider. Studying Blackboard at NU and Sulis and UL allowed the researcher to see how systems worked in different educational environments. The policies that NU has regarding expansion of its online education programs has encouraged the researcher to choose the Blackboard system.

The study examined an older version of the Sulis system. The UL upgraded the Sulis system last year after the data phase of the collection was complete. The new system is a version of Sakai 11 as described in Chapter 2. According to the official Sakai website, the new version solved many of the issues present in the old version. The new design allowed users to work with any device including tablets, computers, or mobile phones to access the system. The new design is more modern and added new functions. For example, the text editor feature and other icons were updated as these issues were particularly problematic as presented in Chapter 6. The new system allows developers to customize the user interface to meet organizational needs and desires. The researcher believed that allowing the organization to customize the user interface is a step in the right direction. The study found that users had their own expectations about the system that caused them to dislike the user interface. The study found that the Sulis system was difficult to navigate and time consuming. The new design of the Sakai 11 system will hopefully solve these issues or at least make them better the researcher believes that users need to report on the operation of the Sakai system to ensure that it meets user needs. If it does not, the users should contact the system helpdesk to obtain the assistance or solutions that they need.

The study used surveys and interviews to collect data. Due to the differences in the percentages of participants at UL and NU, the researcher had to take additional data collection steps. For the survey, there were more UL participants than NU participants. For this reason, the researcher interviewed more NU lecturers to make the amount of data
collected from both universities relatively equal. The use of MMR to conduct the study helped the researcher obtain the data needed.

7.5 Summary
The primary goal of the study was to determine the role of the LMS in allowing several teaching methods to be used. To obtain the study’s main goal, system evaluation and the measurement of teacher satisfaction regarding the system tools was carried out. The study’s goals were achieved and could form the basis for future research regarding user involvement with LMSs and ways to improve the systems. The changes to educational and learning systems must be effectively evaluated to determine how teachers and by extension, learners can ultimately benefit.
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Appendix A

1. Email to participants (UL)

Yasser.Aljuhney

From: Liam.Murray
Sent: 05 December 2015 09:35
To: zz.Everyone.in.Kenny Business School; zz.Everyone.in.Irish World Academy of Music and Dance; zz.Everyone.in.Faculty of Science & Engineering; zz.Everyone.in.Faculty of Education and Health Science; zz.Everyone.in.Faculty of Arts, Humanities and Social Sciences
Cc: Yasser.Aljuhney
Subject: Your thoughts about SULIS and €100 voucher for participating

Follow Up Flag: Follow up
Flag Status: Flagged

Dear colleagues,

May we extreat upon your time to ask you to complete a very short survey about our VLE, SULIS? This is for a PhD research project evaluating and comparing the different features and functions of SULIS and Blackboard. We would be most grateful for your participation and help in this matter.

URL: https://www.surveymonkey.com/r/sulis

We are fortunate enough to be able to offer a prize/gift of a €100 "One for All" credit voucher for participating in the survey. The draw will be made in January when the survey will close and the winner duly announced.

Thank you for your attention.
Yasser Aljuhney, PhD researcher,
Dr Liam Murray, supervisor.
University of Limerick
2. Email to participants (NU)

Attention of: Najran University
Re: Field research completion and elicitation of data.
To Vice President for Graduate Studies and Scientific Research,

My name is Dr Liam Murray and I am currently supervising Yasser Aljuhney for his PhD research at my university, the University of Limerick. We are working in the relatively new field of Human-Computer Interaction and Yasser is at the cutting edge of this research.

We would be most appreciative if Yasser could perform a field research in Najran University, from 01/11/2015 to 03/12/2015. Yasser has correctly chosen to employ the research methodology known as mixed method research and it is therefore most imperative that he be present during his data elicitation period. I cannot emphasise enough the essential importance of this field research within Yasser’s PhD work and to his ultimate success therein. If you require any additional information, please do not hesitate to contact me. I look forward to hearing from you soon.

Yours faithfully,
Dr Liam Murray
Associate Head of School.

[Signature]
تأقيد جامعة نجران أنه لا مانع من قيام الطالب المذكور عندها أعلاه بدارسة ميدانية في مقر الجامعة في مدينة نجران وتتعلق بمجال بنائه في مجال التعليل الإلكتروني في جامعة ليمبرك في إيرلندا.

هذا وقد تم إصدار هذا الخطاب بناءً على طلب منه، وذلك لتقديمه إلى الملحقية الثقافية السعودية في دبلن.

التوفيق
yasser <yassersj@gmail.com>

Fwd: استذكاري للباحث ياسر الجهني

To: yassersj@gmail.com

Tue, Feb 23, 2016 at 9:53 AM

من: Mesfer Hussain Alwally <Mesfer@nu.edu.sa>
التاريخ: 14 جمادى الأول 1437 هـ 22-2-2016 م حسب ميزانية
عن: "Nhmi777@hotmail.com" <Nhmi777@hotmail.com>
الموضوع: تحويل: استذكاري للباحث ياسر الجهني

Yours sincerely,

Mesfer Hussain
Deputy Technical Manager
ITC Deanship - Najran University
Phone: +966-17-5428996
Fax: +966-17-5428994
Mobile: +966 545550655
Website: www.nu.edu.sa

Begin forwarded message:

From: جمعية نجران <info@nu.edu.sa>
Date: February 2, 2016 at 14:48:36 GMT+3
Subject: استذكاري للباحث ياسر الجهني

سامح الله
سلام عليك ورحمة الله وبركاته وبعد

بناءً على موافقة وكيل جامعة نجران للدراسات العليا والبحث العلمي بشأن طلب الباحث ياسر صغير الجهني ننشر رابط استيفاء لبحثه المتعلق بنظام البلاك بورد.

https://mail.google.com/mail/u/0/?ui=2&ik=5d86b25cf2&view=pt&msg=1530d8c346... 02/05/2017
فنامل من سعادتكم الحرص على المشاركة بهذا الاستبيان من خلال الرابط التالي:

https://www.surveymonkey.com/r/Blackboard-NU

شكرًا نكم لمساعدتنا.

-------------
جامعة نجران
Najran University
Tel: 0175428888
Fax: 0175428887
Website: www.nu.edu.sa

This message (including any attachment) is intended only for the use of the individual or entity to which it is addressed and may contain information that is non-public, proprietary, privileged, confidential, and exempt from disclosure under applicable law or may constitute as attorney work product. If you are not the intended recipient, you are hereby notified that any use, dissemination, distribution, or copying of this communication is strictly prohibited. If you have received this communication in error, notify us immediately by telephone and (i) destroy this message if a facsimile or (ii) delete this message immediately if this is an electronic communication.
Appendix B (Survey: Open-ended questions answered)

1. **Sulis**

Sulis system and teaching methods used

<table>
<thead>
<tr>
<th>Q23 What in your opinion is the greatest advantage of using Sulis?</th>
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## Sulis system and teaching methods used

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<thead>
<tr>
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<th>SurveyMonkey</th>
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<tbody>
<tr>
<td>67</td>
<td>Circulation of readings, provision of feedback.</td>
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<tr>
<td>68</td>
<td>Communication with students on a single platform.</td>
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<tr>
<td>69</td>
<td>Store and share a variety of teaching resources; announce results; students submit coursework</td>
</tr>
<tr>
<td>70</td>
<td>Can put everything in one place. Can use quizzes for automated testing and feedback.</td>
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<tr>
<td>71</td>
<td>The collaborative aspect</td>
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<tr>
<td>72</td>
<td>Being able to upload resources and assignments for my students.</td>
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<td>73</td>
<td>Ability to provide lecture slides/tutorial slides to a large class.</td>
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<td>74</td>
<td>The communication with the students is easier.</td>
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<td>75</td>
<td>Reaching many students at once and have a central location to upload information.</td>
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<tr>
<td>76</td>
<td>Material available in one central location for students.</td>
</tr>
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<td>77</td>
<td>It allows me to make material available to students quickly and relatively easily, and allows them access to this material from anywhere.</td>
</tr>
<tr>
<td>78</td>
<td>The system is good for providing resources to students. The discussion forum is useful for dealing with queries and having them be visible for all students.</td>
</tr>
<tr>
<td>79</td>
<td>Flexibility of access for teachers and students.</td>
</tr>
<tr>
<td>80</td>
<td>The ease of sharing resources with students.</td>
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<tr>
<td>81</td>
<td>It provides a common platform for students and lecturer</td>
</tr>
<tr>
<td>82</td>
<td>Assessment of large groups via tests and quizzes function</td>
</tr>
<tr>
<td>83</td>
<td>Facilitates self-directed learning</td>
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<tr>
<td>84</td>
<td>Being able to rapidly send documents and announcements to the entire class list, statistics.</td>
</tr>
<tr>
<td>85</td>
<td>SULIS has allowed me to post my lecture notes &amp; powerpoints allowing for students who have missed class to see what was covered. I was able to upload material (songa/listening comprehension/wed talks etc) to SULIS folders that were mentioned worked on in class - students could then listen/watch as many times as they liked in their own time. It also made revision for exams easier as all students needed to do was refer to SULIS to see what was covered in each week.</td>
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<tr>
<td>86</td>
<td>Centralized repository for material and for projects.</td>
</tr>
<tr>
<td>87</td>
<td>That you can upload the data all at once for the 12 weeks of the semester but hide it from the students and then make it available as you wish.</td>
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<tr>
<td>88</td>
<td>Students being able to access material</td>
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<td>89</td>
<td>Online tool</td>
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<td>90</td>
<td>Distribution of notes and documentation</td>
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<tr>
<td>91</td>
<td>Ease of use</td>
</tr>
<tr>
<td>92</td>
<td>Instant, and easy communication directly with students</td>
</tr>
<tr>
<td>93</td>
<td>Communication</td>
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<tr>
<td>94</td>
<td>It is a useful facility for posting additional information and saves on photocopying!</td>
</tr>
<tr>
<td>95</td>
<td>The ability to send students messages, feedback etc instantly at the same time</td>
</tr>
<tr>
<td>96</td>
<td>Distributing notes, slides and exam questions etc to students. Collecting of student project submissions online in some subjects.</td>
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<tr>
<td>97</td>
<td>The multiple choice exams that auto correct</td>
</tr>
<tr>
<td>98</td>
<td>Like any such system it enables posting of reading requirements, announcements, lecture notes, announcements</td>
</tr>
<tr>
<td>99</td>
<td>Communication and remote access</td>
</tr>
<tr>
<td>100</td>
<td>On line access to student details, and uploading of exam results</td>
</tr>
<tr>
<td>101</td>
<td>To be able to communicate with students</td>
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<tr>
<td>102</td>
<td>I can post course notes on it for students to access</td>
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<tr>
<td>103</td>
<td>None.</td>
</tr>
<tr>
<td>104</td>
<td>that files are accessible from anywhere</td>
</tr>
<tr>
<td>105</td>
<td>File repository</td>
</tr>
<tr>
<td>106</td>
<td>Students are always on Sulus so it is their platform as much as ours, we can connect, share, test, receive, assess etc. on Sulus</td>
</tr>
<tr>
<td>107</td>
<td>Distance learning, notes can be read before lecture</td>
</tr>
<tr>
<td>108</td>
<td>Using it as a data repository to provide access to documents or files. Is does not support &quot;learning&quot; but does support access to learning materials.</td>
</tr>
<tr>
<td>109</td>
<td>It is a great asset to have all the material for the module in one place for the students</td>
</tr>
<tr>
<td>110</td>
<td>There is none. It is difficult to use and a VERY typically poor tool, yet another layer, of UL. There is none. It is difficult to use and a VERY typically poor tool, yet another layer, of UL.</td>
</tr>
<tr>
<td>111</td>
<td>None. While the system has been &quot;prescribed&quot; by UL, the usability is atrocious. I can get more and better functionality and good usability with for example Wordpress.</td>
</tr>
<tr>
<td>112</td>
<td>Being able to give quick feedback</td>
</tr>
<tr>
<td>113</td>
<td>Uniform interface/presentation of varied teaching techniques/information to students across multiple modules</td>
</tr>
<tr>
<td>114</td>
<td>Easy and timely communication and feedback</td>
</tr>
</tbody>
</table>
### Q24 What in your opinion is the greatest disadvantage of using Sulis?

<table>
<thead>
<tr>
<th>#</th>
<th>Responses</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>the interface and user experience is very poorly designed and unintuitive. The system is very difficult to navigate which actually puts me off using it.</td>
<td>1/13/2016 12:42 PM</td>
</tr>
<tr>
<td>2</td>
<td>Navigation is not user-friendly</td>
<td>1/13/2016 9:11 AM</td>
</tr>
<tr>
<td>3</td>
<td>Some navigation could be improved and if module names were given at the start page instead of course only it would help if you have 30 plus per semester</td>
<td>1/12/2016 3:15 PM</td>
</tr>
<tr>
<td>4</td>
<td>It's navigation system is terrible. While I obviously don't do this, I could easily use Sulis to illustrate terrible design</td>
<td>1/12/2016 12:22 PM</td>
</tr>
<tr>
<td>5</td>
<td>it can be slow at times. I cannot upload long podcasts.</td>
<td>1/12/2016 11:30 AM</td>
</tr>
<tr>
<td>6</td>
<td>The greatest advantage is that at a basic level SU LIS is good for the sharing of lecture notes and materials; but I think more could be done to make the interface easier to use and also to allow for more 'advanced' approaches to shared teaching and learning (i.e. use of video, posting of lecture/links). As it stands the navigation is confusing for staff and students and could be simplified. Overall it's a good system but it could use some tweaking through student/staff feedback on the interface and navigation and also training on some of the more advanced features.</td>
<td>1/12/2016 11:51 AM</td>
</tr>
<tr>
<td>7</td>
<td>Too cumbersome - especially having to add extra students</td>
<td>1/11/2016 6:53 PM</td>
</tr>
<tr>
<td>8</td>
<td>Crashes with excess users</td>
<td>1/11/2016 6:03 PM</td>
</tr>
<tr>
<td>9</td>
<td>While it is possible to integrate audio, photos and videos, it is not easy to do so. Overall it is clunky and frustrating to use...</td>
<td>1/11/2016 6:03 PM</td>
</tr>
<tr>
<td>10</td>
<td>I think it's not suitable for online lecturing. I prefer moodle. I like the idea of a platform but I am not convinced that Sulis is the most suitable or user friendly.</td>
<td>1/11/2016 5:58 PM</td>
</tr>
<tr>
<td>11</td>
<td>Interface is not user friendly</td>
<td>1/11/2016 4:55 PM</td>
</tr>
<tr>
<td>12</td>
<td>Having to add e-assignments students manually</td>
<td>1/11/2016 4:49 PM</td>
</tr>
<tr>
<td>13</td>
<td>The appearance of Sulis is dated and not very attractive. For students using social media sites, it often proves to be somewhat unattractive (or so I'm told)</td>
<td>1/11/2016 3:48 PM</td>
</tr>
<tr>
<td>14</td>
<td>can be difficult to manage a large class size through sulis</td>
<td>1/11/2016 3:17 PM</td>
</tr>
<tr>
<td>15</td>
<td>the navigation is not satisfactory</td>
<td>1/11/2016 3:13 PM</td>
</tr>
<tr>
<td>16</td>
<td>Doesn't completely replicate the speed and efficiency of face-to-face teaching and communication</td>
<td>1/11/2016 3:11 PM</td>
</tr>
<tr>
<td>17</td>
<td>Very poor interface - very difficult to navigate, not intuitive, students find the fact that modules are linked by code rather than name very confusing and offputting</td>
<td>1/11/2016 3:11 PM</td>
</tr>
<tr>
<td>18</td>
<td>Online only</td>
<td>1/11/2016 3:13 PM</td>
</tr>
<tr>
<td>19</td>
<td>Not having access to the 'lessons' tool (yet) that enables 'chunking' of tools</td>
<td>1/11/2016 3:07 PM</td>
</tr>
<tr>
<td>20</td>
<td>It is slow, awkward, and not a very 'nice interface' - everything is difficult to figure out and slow</td>
<td>1/11/2016 3:07 PM</td>
</tr>
<tr>
<td>21</td>
<td>Overall, it is not user-friendly</td>
<td>1/11/2016 3:03 PM</td>
</tr>
<tr>
<td>22</td>
<td>can be confusing</td>
<td>1/11/2016 3:02 PM</td>
</tr>
<tr>
<td>23</td>
<td>Layout and interface are poor. Not very simple or intuitive</td>
<td>1/11/2016 3:00 PM</td>
</tr>
<tr>
<td>24</td>
<td>Students often find it hard to look up there grading as there is different windows it may appear in.</td>
<td>1/11/2016 3:03 PM</td>
</tr>
<tr>
<td>25</td>
<td>Module codes and layout could be cleaner to students, navigation can sometimes be timely</td>
<td>1/11/2016 2:59 PM</td>
</tr>
<tr>
<td>26</td>
<td>Difficult to navigate</td>
<td>1/11/2016 2:59 PM</td>
</tr>
<tr>
<td>27</td>
<td>SU LIS is counter-intuitive and frustrating. I use it in only the minimal way.</td>
<td>1/11/2016 2:57 PM</td>
</tr>
<tr>
<td>28</td>
<td>Students are over reliant on Sulis and feel that because information/material is available on Sulis they do not need to attend class or take notes.</td>
<td>1/11/2016 2:57 PM</td>
</tr>
</tbody>
</table>
29. It can take time to upload documents/slides.
30. It is dreadful. It should be discontinued and the university adopt a modern integrated E system.
31. Sometimes, students may not be able to complain on feedbacks.
32. It takes a while to get used to the navigation.
33. The interface is bulky, taking too many clicks for certain actions. The students do not always take the time or read carefully, occasionally causing problems with assignment uploads.
34. It looks like a mid 1990’s AOL page. In the era of Web 2.0, AJAX, DHTML etc., with all that entails in terms of functionality, it’s hard to take it seriously because it looks so old.
35. No major disadvantages.
36. I don’t like the way essays are submitted and graded. I think turnitin by itself is a better system.
37. Not very intuitive interface, it’s difficult to find the necessary function. Uploading files is problematic some time too.
38. It is incredibly difficult to use and navigate especially when going back to a previous page. It takes far too long to refresh a page making its use virtually redundant. It is by far the most unusable VLE I have ever encountered and I would actively do my best to not use it.
39. The interface is a little clunky; sometimes it can be awkward to navigate backwards and forwards between pages. An app version of SULIS at some point in the future would be a fine innovation.
40. Getting students access.
41. The interface is clunky and looks out of date, and the layout and navigation is often needlessly difficult. That Turnitin and SULIS are not completely compatible, and that the gradebook in SULIS cannot accommodate the kinds of tools I need as a teacher who uses written assignments, multiple drafts, peer editing, and other methods to do with writing, makes my work more difficult than it needs to be.
42. It’s kind of user-unfriendly and is unappealing to look at.
43. Generally, the system will fail and become inaccessible to students during high-traffic times i.e. christmas exams, summer exams.
44. If the system is down, the class does not follow the planned format.
45. Where do I start with the disadvantages? It is too hard to pick one! It is a hideous looking screen, very awkward to navigate for both students and tutors, and I would prefer not to use it as there are some many better options available for online teaching supports.
46. No real disadvantage.
47. None so far.
48. The layout is not very user-friendly nor is it aesthetically pleasing. It could use a sleeker, cleaner interface. Sometimes uploading documents is a bit laborious.
49. It doesn’t look very appealing and it very passive oriented.
50. I don’t think there is a disadvantage in using SULIS, although I suspect that the system could be more functional as an online learning resource.
51. Not attractive for students, not easily personalized
52. The implementation of SULIS at UL is not user-friendly.
53. No disadvantage as such, but I would prefer if it had greater capacities and if it were more user-friendly.
54. It is very cumbersome and I don’t use the gradebook at all as it is too difficult and I actually don’t trust it 100%. Some functions are really counter-intuitive.
55. The system is not terribly intuitive.
56. I probably don’t fully understand all of the functions of SULIS. May not be using it to its full advantage. I used to do quizzes etc. on it but found that students didn’t engage. I also find students are slow to engage in discussion forums on SULIS.
57. Copy and paste function is problematic when sending announcements.
<table>
<thead>
<tr>
<th>Number</th>
<th>Comment</th>
<th>Date/Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>Takes too long to set up online tests etc. System is very slow at times.</td>
<td>12/7/2015 11:34 AM</td>
</tr>
<tr>
<td>59</td>
<td>For me, when running timed tests and quizzes, there are frequent issues with connectivity, which means having to re-set tests for particular students affected. This re-setting takes quite a long time.</td>
<td>12/7/2015 10:27 AM</td>
</tr>
<tr>
<td>60</td>
<td>Me</td>
<td>12/7/2015 10:14 AM</td>
</tr>
<tr>
<td>61</td>
<td>Some of the interfaces could be more user friendly</td>
<td>12/7/2015 9:59 AM</td>
</tr>
<tr>
<td>62</td>
<td>The functionality is not great. It is extremely difficult to edit material - everything has to be done one file at a time. I also find creating quizzes not to be very intuitive. The navigation is pretty poor.</td>
<td>12/7/2015 9:54 AM</td>
</tr>
<tr>
<td>63</td>
<td>Having multiple subjects and removing/adding them can be confusing.</td>
<td>12/7/2015 9:53 AM</td>
</tr>
<tr>
<td>64</td>
<td>It is cumbersome, non intuitive and difficult to use</td>
<td>12/7/2015 9:21 AM</td>
</tr>
<tr>
<td>65</td>
<td>The system has been unavailable at times. As recently as this semester the system was down the day I has assigned as a deadline for student work.</td>
<td>12/7/2015 9:15 AM</td>
</tr>
<tr>
<td>66</td>
<td>None, except that some students see it as a substitute for face-to-face contact.</td>
<td>12/7/2015 9:10 AM</td>
</tr>
<tr>
<td>67</td>
<td>Sometimes it takes a bit of steps to complete one task - not very intuitive to use at first, but one gets pass this fairly easily</td>
<td>12/6/2015 10:49 PM</td>
</tr>
<tr>
<td>68</td>
<td>Blended learning and automated response / collation of data.</td>
<td>12/6/2015 6:46 PM</td>
</tr>
<tr>
<td>69</td>
<td>I have some difficulty in manipulating the site.</td>
<td>12/6/2015 4:04 PM</td>
</tr>
<tr>
<td>70</td>
<td>I do not realistic see a disadvantage. Possibly one disadvantage might be that if we were to use it as the only source of communication with students it might be a disadvantage as students need face to face communication with lecturers/facilitators. Not everything can be learnt without some human element of explanation.</td>
<td>12/6/2015 3:20 PM</td>
</tr>
<tr>
<td>71</td>
<td>It can enable the students to think that they don’t need to take part in the course with the professor.</td>
<td>12/6/2015 2:19 PM</td>
</tr>
<tr>
<td>72</td>
<td>Not nearly as fast as email.</td>
<td>12/6/2015 1:09 PM</td>
</tr>
<tr>
<td>73</td>
<td>Having all material online may have an impact on lecture attendance/face-to-face participation</td>
<td>12/6/2015 12:40 PM</td>
</tr>
<tr>
<td>74</td>
<td>It is incredible difficult and clumsy to use. One of the features that should be a major benefit is the gradebook, allowing me to provide feedback and grades to students. It is ridiculous that I need to go into each student individually and enter their grades then come back out to grade the next. A simple Web 2.0 (AJAX based) interface could allow the system to either navigate to the next student from the grade entry screen or to enter each student from the class list page. Why this hasn’t been done baffles me. A lot more work on usability is needed to make this system useful. If it can be made easier for the lecturers to interact with the system you will see a higher uptake of use.</td>
<td>12/6/2015 11:42 AM</td>
</tr>
<tr>
<td>75</td>
<td>From a design perspective the site is incredibly clunky. In my opinion it should operate smoothly as seamlessly as sites such as Blackboard, which takes design cues from social networking.</td>
<td>12/6/2015 11:26 AM</td>
</tr>
<tr>
<td>76</td>
<td>Uploading large files is limited</td>
<td>12/6/2015 9:59 AM</td>
</tr>
<tr>
<td>77</td>
<td>Students expect the lecture overhand to be up there and will ask for them even though they do not constitute lecture notes or a replacement for missing lectures.</td>
<td>12/6/2015 12:04 AM</td>
</tr>
<tr>
<td>78</td>
<td>It is clunky, counterintuitive, stylized, slow, poorly designed and is only barely adequate to the task.</td>
<td>12/5/2015 10:16 PM</td>
</tr>
<tr>
<td>79</td>
<td>Students feel that because material is on sulis there is no need to attend lectures and tutorials</td>
<td>12/5/2015 10:14 PM</td>
</tr>
<tr>
<td>80</td>
<td>Tricky to navigate, e.g. when trying to move material from one module to another, or when using the online grading system.</td>
<td>12/5/2015 6:57 PM</td>
</tr>
<tr>
<td>81</td>
<td>All of my students were on the system and there was a delay of a number of weeks before they had GULIS access. This meant I had to collate email files and send out lecture notes this way. Or do them manually, which was time consuming.</td>
<td>12/5/2015 5:23 PM</td>
</tr>
<tr>
<td>82</td>
<td>Time wasting due to the awful user interface. There is a lack of consistency across the tools. Correcting assignments in Sulis is slow and painful. Inadequate UL support commitment.</td>
<td>12/5/2015 4:59 PM</td>
</tr>
<tr>
<td>83</td>
<td>I believe the fact you cannot just press back to get where you were is the biggest disadvantage.</td>
<td>12/5/2015 4:47 PM</td>
</tr>
<tr>
<td>84</td>
<td>It is an outdated ugly tool that many students don’t take the time to interact with</td>
<td>12/5/2015 4:06 PM</td>
</tr>
<tr>
<td>85</td>
<td>Sometimes confusing</td>
<td>12/5/2015 3:30 PM</td>
</tr>
<tr>
<td>86</td>
<td>Navigation of area could be improved</td>
<td>12/5/2015 3:05 PM</td>
</tr>
<tr>
<td>87</td>
<td>None</td>
<td>12/5/2015 3:04 PM</td>
</tr>
<tr>
<td>No</td>
<td>Comment</td>
<td>Date/Time</td>
</tr>
<tr>
<td>----</td>
<td>-------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>08</td>
<td>complex interface</td>
<td>12/5/2015 3:09 PM</td>
</tr>
<tr>
<td>09</td>
<td>As above</td>
<td>12/6/2015 1:28 PM</td>
</tr>
<tr>
<td>90</td>
<td>User friendliness and functions - e.g. It should be easier to record a video or record a voiceover via the functions on SULIS</td>
<td>12/5/2015 1:23 PM</td>
</tr>
<tr>
<td>91</td>
<td>I find the interface rather cumbersome and frustrating to use at times. The ability to upload multiple files at once would be a great advantage. Getting up groups for project submissions is tedious and formatting ID numbers in an excel file and uploading is not always possible. It can be very time consuming when you have a class of 200 students</td>
<td>12/5/2015 1:14 PM</td>
</tr>
<tr>
<td>92</td>
<td>The length of time it takes to upload all the essays</td>
<td>12/5/2015 1:03 PM</td>
</tr>
<tr>
<td>93</td>
<td>Its clunky and awkward design and the absence of any form of helpful support - courses don't work as they are not well delivered and the system itself is not user friendly. The absence of on-call back up or help desk makes it very frustrating</td>
<td>12/5/2015 11:44 AM</td>
</tr>
<tr>
<td>94</td>
<td>Horrible clunky 1970's software, completely unintuitive, someone had to show me how to use it, &quot;run process&quot;... yeeech...</td>
<td>12/5/2015 11:11 AM</td>
</tr>
<tr>
<td>95</td>
<td>Sometimes, you have to wait for students to see their scores before expecting their reactions</td>
<td>12/5/2015 11:11 AM</td>
</tr>
<tr>
<td>96</td>
<td>Not as user friendly as Moodle not as visual</td>
<td>12/5/2015 10:59 AM</td>
</tr>
<tr>
<td>97</td>
<td>It adds nothing to teaching and learning</td>
<td>12/5/2015 10:54 AM</td>
</tr>
<tr>
<td>98</td>
<td>No particular disadvantage.</td>
<td>12/5/2015 10:52 AM</td>
</tr>
<tr>
<td>99</td>
<td>Slow to load.</td>
<td>12/5/2015 10:26 AM</td>
</tr>
<tr>
<td>100</td>
<td>Not always user friendly. Some features are malfunctioning (right now to submit an assignment in one of my modules). We will need to receive training again when the update version is introduced in spring as not to waste time with new format!</td>
<td>12/5/2015 10:26 AM</td>
</tr>
<tr>
<td>101</td>
<td>No practical interaction</td>
<td>12/5/2015 10:25 AM</td>
</tr>
<tr>
<td>102</td>
<td>Layout from a design/usability perspective makes it difficult to navigate with ease.</td>
<td>12/5/2015 10:24 AM</td>
</tr>
<tr>
<td>103</td>
<td>Not all students will be registered or have access from the beginning.</td>
<td>12/5/2015 10:23 AM</td>
</tr>
<tr>
<td>104</td>
<td>It is difficult to use and a VERY typically poor tool, yet another layer of difficulty added to an ordinary simple job, yet another load on the increasingly burdensome UCL system.</td>
<td>12/5/2015 10:20 AM</td>
</tr>
<tr>
<td>105</td>
<td>Low usability</td>
<td>12/5/2015 10:18 AM</td>
</tr>
<tr>
<td>106</td>
<td>It's unclear how to use some functions and it's easy to make mistakes.</td>
<td>12/5/2015 10:07 AM</td>
</tr>
<tr>
<td>107</td>
<td>It is quite set and not all functions (e.g. publishing a site) are easily found</td>
<td>12/5/2015 10:04 AM</td>
</tr>
<tr>
<td>108</td>
<td>None</td>
<td>11/11/2015 12:02 AM</td>
</tr>
</tbody>
</table>
## 2. Blackboard

Blackboard system and teaching methods used

<table>
<thead>
<tr>
<th>Q23. What in your opinion is the greatest advantage of using Blackboard?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>#</strong></td>
</tr>
<tr>
<td>1</td>
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<tr>
<td>31</td>
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<tr>
<td>Blackboard system and teaching methods used</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Organization of teaching resources and making these available to the students at most times. Collecting students' work, quizzes, homework assignments, and discussion forums are also advantages.</td>
</tr>
<tr>
<td>Blended learning</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>Easiness to contact students</td>
</tr>
<tr>
<td>Saves time flexible</td>
</tr>
<tr>
<td>Let the students to have a great experience in using such system in learning process.</td>
</tr>
<tr>
<td>Flexibility</td>
</tr>
<tr>
<td>Flexible use ... time, place</td>
</tr>
<tr>
<td>RMة الاتصال مع الطلاب</td>
</tr>
<tr>
<td>Availability and have many tools to improve the teaching methods.</td>
</tr>
<tr>
<td>Save time</td>
</tr>
<tr>
<td>Fast to send tests, homeworks and subject contents to students - easy use</td>
</tr>
<tr>
<td>The blackboard gives me a new experience through teaching online</td>
</tr>
<tr>
<td>Saving time Sending anything at any time showing students their results</td>
</tr>
</tbody>
</table>
Blackboard system and teaching methods used

Q24 What in your opinion is the greatest disadvantage of using Blackboard?

<table>
<thead>
<tr>
<th>#</th>
<th>Responses</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Technical issues</td>
<td>2/4/2016 9:38 PM</td>
</tr>
<tr>
<td>2</td>
<td>Due to the net connection speed, some time unknown reasons if it not worked.</td>
<td>2/4/2016 11:58 AM</td>
</tr>
<tr>
<td>3</td>
<td>Nothing worth to be mentioned</td>
<td>2/4/2016 10:28 AM</td>
</tr>
<tr>
<td>4</td>
<td>Blackboard is unique medium is not the best for every situation. No single tool will be equally effective for solving all learning problems. Technical Limitations such as small bandwidth, limited availability and functionality of tools, incompatibility of programs.</td>
<td>2/4/2016 8:01 AM</td>
</tr>
<tr>
<td>5</td>
<td>N/A</td>
<td>2/2/2016 10:10 AM</td>
</tr>
<tr>
<td>6</td>
<td>It problem, internet problem</td>
<td>2/3/2016 9:51 AM</td>
</tr>
<tr>
<td>7</td>
<td>تفاعل الرسائل الدائرة بطلاق، وبإمكانك أن تراجع هنا الرسائل من خلال كل رقم، مثل الرسائل الحالية للمستقبلة</td>
<td>2/3/2016 8:48 AM</td>
</tr>
<tr>
<td>8</td>
<td>can't download files from web directly</td>
<td>2/3/2016 7:32 AM</td>
</tr>
<tr>
<td>9</td>
<td>BECAUSE OF POOR NET CONNECTION SOMETIMES UNABLE TO ACCESS.</td>
<td>2/3/2016 7:31 AM</td>
</tr>
<tr>
<td>10</td>
<td>bad storage errors when upload new files and when open it.</td>
<td>2/3/2016 7:05 AM</td>
</tr>
<tr>
<td>11</td>
<td>need good quality of technical support tool (need good quality of internet provider (good speed, size, ...))</td>
<td>2/3/2016 6:15 AM</td>
</tr>
<tr>
<td>12</td>
<td>Missed communicate face to face. Most people not open Microphone and camera.</td>
<td>2/2/2016 5:57 AM</td>
</tr>
<tr>
<td>13</td>
<td>There are some technical issues and the communication between a teacher and the students is not strong.</td>
<td>2/2/2016 4:10 PM</td>
</tr>
<tr>
<td>14</td>
<td>students' lack of seriousness and interest</td>
<td>2/2/2015 3:46 PM</td>
</tr>
<tr>
<td>15</td>
<td>N/A</td>
<td>2/2/2016 1:36 PM</td>
</tr>
<tr>
<td>16</td>
<td>1- The lack of students’ sense of responsibility to drive their way of the learning journey. 2- Students lack the proper digital literacy needed in the digital world (that involves both the simple how-to, and the deeper online identity preservation)</td>
<td>2/2/2016 12:23 PM</td>
</tr>
<tr>
<td>17</td>
<td>This is a disadvantage is due to the bad connectivity to the internet. It is this is a disadvantage is due to the bad connectivity to the internet it is not related to blackboard itself it is the related to the teaching through blackboard sometimes could be disconnected and the teacher also can get disconnected and the class get interrupted. More serious problem if the teacher himself get disconnected due to bad connectivity the class will get interrupted</td>
<td>2/2/2016 11:59 AM</td>
</tr>
<tr>
<td>18</td>
<td>Its design and interfaces are terrible</td>
<td>2/2/2016 11:52 AM</td>
</tr>
<tr>
<td>19</td>
<td>layout</td>
<td>1/4/2016 7:06 PM</td>
</tr>
<tr>
<td>20</td>
<td>lessons the interaction between a teacher and a student.</td>
<td>1/4/2016 4:14 PM</td>
</tr>
<tr>
<td>21</td>
<td>1) Take to earn the echo recordings 2) Less secure - Online Exams where the students copy paste the answers.</td>
<td>1/3/2016 5:31 AM</td>
</tr>
<tr>
<td>22</td>
<td>For exams it is not realistic to use it</td>
<td>1/2/2016 5:22 PM</td>
</tr>
<tr>
<td>23</td>
<td>student don learn skills from instructor</td>
<td>1/2/2016 9:18 AM</td>
</tr>
<tr>
<td>24</td>
<td>It was very hectic for me when I found that my uploaded contents were missing at the middle of the semester.</td>
<td>1/1/2016 5:09 PM</td>
</tr>
<tr>
<td>25</td>
<td>When the students are not trained qualified it is not efficient to learn them online.</td>
<td>12/20/2015 10:01 AM</td>
</tr>
<tr>
<td>26</td>
<td>1- The sometimes confusing tutorials and ambiguous instructions in the help section. 2- Not including main student's phone numbers to communicate or to send announcements to.</td>
<td>12/20/2015 12:50 PM</td>
</tr>
<tr>
<td>27</td>
<td>interface of the program might be difficult for student to deal with.</td>
<td>12/20/2015 11:15 AM</td>
</tr>
<tr>
<td>28</td>
<td>Most of the students don't know how to use it especially the low levels, and also lots of staff.</td>
<td>12/20/2015 11:32 AM</td>
</tr>
<tr>
<td>ID</td>
<td>Description</td>
<td>Date/Time</td>
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<td>------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>26</td>
<td>Difficulties to access the system.</td>
<td>1/22/2015 6:43 AM</td>
</tr>
<tr>
<td>30</td>
<td>No interesting from students and their mental straining</td>
<td>1/22/2015 2:09 PM</td>
</tr>
<tr>
<td>31</td>
<td>Neither the student nor the instructor has the proper facilities for scanning, capturing, or recording scientific content for uploading at the workplace. Also, it is not uncommon to find the server down several times a month.</td>
<td>1/22/2015 1:21 PM</td>
</tr>
<tr>
<td>32</td>
<td>Technical issues come in the way of learning and teaching</td>
<td>1/22/2015 12:13 PM</td>
</tr>
<tr>
<td>33</td>
<td>-</td>
<td>1/22/2015 12:11 PM</td>
</tr>
<tr>
<td>34</td>
<td>Effort it takes to deliver information Students may not follow up</td>
<td>1/22/2015 11:42 AM</td>
</tr>
<tr>
<td>35</td>
<td>System down</td>
<td>1/22/2015 11:30 AM</td>
</tr>
<tr>
<td>36</td>
<td>Losing time to explain every point in each class</td>
<td>1/22/2015 11:19 AM</td>
</tr>
<tr>
<td>37</td>
<td>Technical problems</td>
<td>1/22/2015 11:10 AM</td>
</tr>
<tr>
<td>38</td>
<td>It makes students lazy</td>
<td>1/22/2015 11:08 AM</td>
</tr>
<tr>
<td>39</td>
<td>Not stable at some times Storage Storage Storage</td>
<td>1/21/2015 5:48 PM</td>
</tr>
<tr>
<td>40</td>
<td>No interaction</td>
<td>1/21/2015 5:43 PM</td>
</tr>
<tr>
<td>41</td>
<td>The system needs development</td>
<td>1/21/2015 5:13 PM</td>
</tr>
<tr>
<td>42</td>
<td>Some complicated procedures Some strong constraints</td>
<td>1/21/2015 2:13 PM</td>
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Appendix C (Interviews transcripts)

A. Sulis users

1. Sulis user 1

Thank you so much for giving me the chance to do the interview with you, I really appreciate it. First of all, how long have you worked with the Sulis system?

So I have been using it since we had it in the US, I think that must be 8 or 9 years.

2007, maybe 2008?

I would say that we had a pilot version of Sulis in 2006, 7, and I started using it back then. And so I have been using it in all my classes since then. Before Sulis I used Blackboard because we have a distance learning course and we needed some sort of platform and the university didn't have any learning management systems so I paid for a subscription for Blackboard so I could use that as a way for managing my online classes up until we got Sulis. So I was really enthusiastic about having a university supported system and I was actually on the committee, the e-learning committee when Sulis was selected. Not that I was part of the decision making, but I was on committee. The decision was pretty much unilaterally made. One person on the committee made the decision, it that the whole committee made the decision. So I have been using it right from the start.

You said you have used Blackboard before. Can you make a comparison between the user interface of Blackboard and...?

So I tell you, it is a long time since I used Blackboard and the version I used was cheap so it wasn’t like it was a fully functional version. In terms of user interface, even back then, Blackboard looked nicer. So I don’t like the user interface for Sulis. I know that you have other questions as they come up. So I can talk a little bit more about that when we have more specific questions. But I suppose Sulis has more functionality than the version of Blackboard that I was using. And it is tied into the student record system so all of my students get registered in it automatically whereas when I was using blackboard, I had to do a lot of admin work myself. Because it wasn’t university supported. But like I only have a vague recollection of the user interface and there was nothing done to the scheme as they call it. It was a black and white kind of an interface. And it was very clean, I don’t remember it that well to be honest.

Are you satisfied with the overall design of the user interface?

No.

Can you explain why?

There are a few things that bug me about the interface. First of all, the color scheme. There is a UN color scheme that they use in logos and branding and then their own website, the university website and Sulis looks nothing like that. So there is a green, an olive green kind of banner and a darker green font on top of that, and then a beige background. It looks really old fashioned, but it also doesn’t match anything else in the university. So there isn’t a sense of an identity, a university identity at all in Sulis apart from the logo in one corner and the logo doesn’t even look good in the banner, it’s kind of jagged. So I don’t like anything about how it looks, just from an aesthetic point of view and even from a functionality...I think that aesthetics makes us, when something looks nice we feel differently about using it and Sulis is very off-putting to use. So from an emotional design perspective, I don’t know if you know any of Donald Norman’s work, but he talks about emotional design, and he says that when something looks nice it works better. Sulis just doesn’t look nice and that is something that makes it work worse.
Do you think it is a good idea to give the user, I mean the teacher the right to fully customize the user interface?

I suppose up to a point. I don’t know.

If we give the end user the right to customize the user interface as they like?

I think it would be better if the interface just worked. For example, Facebook doesn’t need to give users the right to look different, everybody’s interface looks the same, but it looks good. It is usable, it is unobtrusive and it works. I don’t think that teachers need to be able to change the interface in order to use a nice system and attractive system. That is just my opinion. Some teachers would love to be able to change the user interface, but most wouldn’t. And for most of us, it shouldn’t be something that we need to be able to do.

Do you think the Sulis system provides you with the way to use many teaching methods?

I do think it is …… in lots of ways. A lot of my teaching is at night, sometimes on campus. I am able to do most of the things that I need to do online using Sulis. So for example, I post links to YouTube videos that I made. No, it would be better if I could embed them in the system. I could put up podcasts. I could put up any learning objects that I make. And there is this lesson building that I am using more now that enables me to kind of create a narrative around content so I can explain in text what each piece of content is doing and give a structure to it rather than just putting items in folders which is the only thing that I could do previously. So that is good. What I would like to see is more interaction between Sulis and say things like Twitter or Facebook feeds and even if, you know, you had a feed for students so they could see what is the new content this week, at a glance, without having to be here, I have to go into resources. I have to go into the chat. I have to go into the discussion to see what is going on. The feed which is kind of what students expect now. It is what they are seeing on other media, especially social media. I think that would be a better way of presenting the content. But I can do everything that I need to do on it. It is just that it is not a very attractive way of doing things and sometimes it is not very user friendly.

How satisfied are you with the time to complete tasks using the system?

Generally, I don’t have a problem with time except for the assignment section and grading. So when I am uploading assignments, that seems to take a very long time, especially if they are larger, if I am uploading feedback for students, that seems to take a lot of time.

What are your thought about the font options and the colors available in the system?

Yeah, I don’t like the colors. I think the colors are dreadful. But I don’t think that we should need to have to change those. I think those should be system colors that are corporate colors, that are university colors, that match, give a sense of identity to the thing and make it feel like it is part of the university and having said that, I don’t think that we should have to change that, it should be fixed. And there should be a skin on Sulis that matches what UI wants it to do, how it wants it to fit in with other tools that are available.

What about the language capabilities?
I can't say that is a problem that I have. I only teach through English and mostly I only use English. I have colleagues in other languages who have problems with the interface. So I know for example that a colleague in Japanese talks about how it doesn't speak Japanese and she has to do extra work. So I don't think the interface is available in Japanese and that is something that she has a problem with, but it is not something that I can speak to actually.

**Do you think the language is clear for a non-native speaker?**

The way the English is presented? I never had complaints from students about that. Do you mean the labels or... yeah, I haven't had complaints from students about what the labels mean or how to use them. I do teach some international students every year and they haven't complained about the text labels or the language, the way the English language is presented in Sulis.

**What about the navigation on the system?**

Yeah, the navigation is a problem. The biggest problem is the back button doesn't work and so most of the time when you click back, it doesn't go back to the previous page and it sometimes takes you to another part of the site entirely and that is a big problem because the back button is the main way that most users navigate when they are using any internet site, it is just what we have become used to so we think that the button is how to get to one place to another online and it doesn't work on Sulis and that is really bad. Otherwise, navigation, the lesson builder has improved navigation as it allows students to see pathway through content and that is something that is not visible if you are just clicking. Like the way that I have used it up to now, I have put my PowerPoint presentations and readings into our resources folder and I put podcasts into the podcast folder and discussions into the discussion folder and then students had to go from one to the other within a week, during a week, to find anything. And that is really awkward, it is poor navigation. But the lesson builder improves that. It means that I can just point them to all of these resources about a single topic on one page. And that is a good thing.

**Which aspects do you prefer the most in the system?**

So I like that it is really robust. I have access to so many sites on it. I can set up sites for student groups which I do regularly, I can add students from outside UL, so one of the projects I use it for is we have a project for our students who work with students from Florida and students from Paris and our students and the students from Florida create documents and then the students in Paris translate them. And they are all able to work together on Sulis using a site for their team. So we have 5 or 6 people on a team, 2 at UL, 2 at Florida, 2 in Paris, they are all using Sulis. And that is just a great feature that we can add people from outside and they have their own spaces. So from that point of view it is very scalable. And I think that is its best feature.

**Which aspects do you prefer the least?**

The least, yeah, I think it is just old fashioned, it is the idea of the design not being attractive and I think that if it were more attractive, learning would just be so much more fun. And I think that is a big thing. Students don't want to, it is not something that you think "oh, I'm going onto Sulis now." It could be like Facebook where people look forward to going onto it, but it is the opposite. It is a drain when you have to use it because it looks so bad. And that is a shame because it actually has a lot of really good features. It is just the design; the appearance is really demotivational for students.
What is your preferred method for teaching?

So I teach, I teach a lot of postgrads and I teach online, I teach blended, and I teach face to face with all of the post grad groups actually. So I teach on an MA which is online and on campus so that is why there is such a mix. I have my lecture face to face but students who can’t be on campus they hear a podcast version of the lecture and I do a lot of learning resources. So if students don’t understand how to do something, I make a little video explaining it and I put it on YouTube and I use PowerPoints along with the podcast for my presentation, I put readings up. And we do a lot of online discussions. So nearly every week there will be a topic that I will give to students to discuss and they will spend the week discussing it and weave in and out, that kind of thing. There is a big variety in the way that I teach I suppose. I use the platform a lot, but I also do face to face teaching. I don’t know which I prefer, but I really like the flexibility. I couldn’t imagine just using face to face teaching and not having any online platform, I think it is really important that there is a space where everyone can discuss things. It is a hugely important part of my teaching.

Would you like to see anything changed or be added in the system?

Would you like to see anything changed?

Or added.

Yes. Well I think something that would be really, apart from the design which I have already talked about, I think if there was a feed so students could see what is new today. A feature like that, I think that would be really good. So they wouldn’t have to go wading through the system to see what has been added, you know, they would know when something is updated with this kind of feed without me having to make an announcement to say ‘hey, look, I put this here, I put that there,’ that it would just automatically appear, I think that would be a really good addition.

Would you like to add something to the interview?

No. I suppose, and I think it has probably come across, that there are lots of good things about Sulis. I think that the fact that it is robust and it is scalable and you can add lots of people to is. And it has lots of tools. I think those are all really positive things about it. And the negatives are mostly superficial things that could easily be changed and they are more about the implementation of Sulis here at UL than about the Sakai system itself. So I think it would be easy to fix a lot of the issues.

Thank you so much
2. Sulis user 2

Thank you.
No problem.

How long have you worked on Sulis system?
Oh, I started in 2007 so about 8 years yeah. I think it had just started when I started using it. We had just got it at the university.

Are you satisfied with the overall design of the user interface?
It is okay. I might know any different only that I worked at a different institution and they used Moodle and I preferred the look of Moodle and what you could do with Moodle. I don't have a problem with Sulis, I get used to it. It isn't the prettiest of interfaces, I think there are nicer ones out there, but it is what we have, so...

Can you explain more why you prefer Moodle than Sulis?
I just...the coloring on it, it looks nicer, you can kind of do more with it. You get more options. I think at times it can nearly look a little more interactive on Moodle whereas Sulis it is very much black and it looks kind of the same all the time whereas Moodle has a nicer look to it.

Do you think the Sulis system provides you with a way to use many teaching methods? Online, face to face, this kind of stuff.
Does it allow me to kind of apply different teaching methods? I don't think so, no. I think that we can push it so a lot of it is for sharing, sharing resources, the majority ways that I use it is for sharing resources and for sending announcements to students. So it is good for communication and sharing and I know there is a Wiki on it, I don't like the Wiki, I wouldn't use the Wiki. I know there is a blog on it, I use Blogger instead. So some of the tools that are in Sulis are tools I use with my student teachers, but I don't use the Sulis ones because I don't like them. So I think the tools are there to allow me to play with teaching methods, but I don't like certain tools and I.........and to use similar tools. I have used the discussion forums and the chatrooms and they are good to have discussion with students synchronously and asynchronously, but as in really playing with my teaching methods, no.

Do you think the organization of screens of the Sulis system has an effect on how you work?
When you say the organization of screens, what do you mean Yasser?
For example, the first screen you have to put your user name and password, after that, for example, just to upload some materials you have to follow many steps.
And what was the question about that?
Do you think this kind organization has any effect on how you work because some people they are fed up with the...?
No, I don't mind it actually, that is one of the things that I like because it is very easy for students also to get familiar with it because it is the same. Once you login, it is the same all the time. So if you want to add something, regardless if it is a resource or a discussion topic or a chatroom, it is always add or
modify or amend so I actually like the structure in terms of it being repetitive because I think it is easier. That is my opinion.

**How satisfied are you with the time to complete tasks using the system?**

How satisfied am I with the...?

**Time to complete tasks? Any task, for example, a simple one, upload the material, how satisfied are you with time?**

I am, I suppose I am used to it as well so I don't have a problem. I know sometimes people often ask, might email me a question on how do I do this and how do I do that; I use Suis for my own PhD so maybe that has an impact on why I am saying this. I used it, I had to learn how to use all the functions because I was getting students to use it and I had to answer their questions. So for me, the time isn't a factor.

**What about the navigation on the system?**

I think it's easy. That is one of the things. While I don't think it is pretty, I think it is easy to navigate.

**What about 2008 and 2009, was it easy?**

It didn't really change. I haven't noticed any major change other than maybe some new tools have been added. I remember there was no Blogger when I started in 2007, there is a blog there now so some of the tools weren't available. But I don't think it has changed that much. Maybe the color has changed slightly, but nothing major.

**Which aspects do you prefer the most in the system?**

Between the old and the new?

Yeah.

I suppose the new because there is more available, the newer version.

**Which aspect exactly, which features?**

Probably, there was a glossary. I wanted to use a glossary with students so they could share terms. That wasn’t available in the old system and it is available now. So that is one of the main things. The blog is now available, but I don't like the blog so that's not good to me. Again the wiki is available, but I don't like the wiki either. I think the wiki is actually very difficult to use on Suis. If you use web 2.0 wiki, it is much more straightforward.

**Which aspects do you prefer the least?**

In the whole of Suis? Ooo, that's a tricky one. What do I, alright. Let me see. What do I prefer the least? The discussion forum actually. Sometimes the way the threads are organized, it can get a bit messy. So I can start a discussion topic and if somebody creates, rather than saying reply, they click on new, a thread doesn't become a thread anymore and it becomes hidden in other topics. So actually the discussion forum can become quite messy. And sometimes I make that mistake myself. That is probably what I prefer the least.
What is your preferred method for teaching? Face to face communication, online, blended?

I would like the blended. I like the face to face, I love me some students, but I get my students to do a lot of online work.

Can you explain why?

I get them, I train teachers, so they have to reflect on their teaching and we get them to do blogs and we get them, they used to have a portfolio and they would type up everything and submit the portfolio, now we get them to do an online portfolio like create a little website. So I do that with MA and PhD students so they come to class, I give them the theory, I give them the content and then they go away and they create the blog or the portfolio. So I use basically, basically what I use online for communication. So it is either them reflecting where it is personal, them having conversations in a forum, or sometimes a chatroom where it is synchronous. But it is mostly communication that I use technology for.

Overall, would you like to see anything changed or added in the system?

In Sollis? I would like the blog and the Wiki to be better. There is a problem with the blog where I think it has to be individual and I like to use collaborative blogs. I like those to change. I also think how it could look, they could make it look better. So while I think it is easy to navigate because I think I am used to it, I also think that, you know, it is not very attractive. It is not attractive for lectures and I don’t it is attractive for students either. So even if it is something like visuals, graphics, if we could be allowed to kind of play around with the formatting, a little bit more, that would be nicer. Because even if, for example, I put an announcement in, and I type in my text, you can make something bold or italics, but you can’t do much more with it. So you can’t kind of push how it looks too far. So I think they could do something like that.

Allow me to ask you what are your thought about the language capabilities, font options, and colors available in...?

The colors are boring, it is like green and yellow, it is boring. They are all the same. That’s why Moodle is different in that way.

Yes, absolutely. The fonts, there is nothing. Basically the options are small, medium and large, and sometimes I don’t know, this is another problem. I send an announcement and I don’t know what, if you choose small, on Sollis, it looks okay, and when the students get the email it is tiny tiny in the email. And for me, I think “did they read it?” “did they even see it?” so I don’t think there is enough scope with the fonts. So the color is boring, the fonts, I think they could do more with.

What about the space between the lines?

That can go strange sometimes. So if you hit the “return” the spacing is too big actually. So yeah, there are all the issues I am talking about when I say it doesn’t look nice.

What about the language capabilities?

As in the language, how stuff is explained? Yeah, I think it is clear enough, that isn’t an issue for me personally.
For native speaker, I think it is fine.

For non-native speakers, maybe not. And I don’t know, there is a Help menu, but I’m not sure if it is in other languages, I think it is in English. And while I don’t have a problem with the Help menu, I have had other lecturers. When I started using Suls, I was working on a project where I was helping people to learn about Solis. And because that used to be what I did, people still email me and one of the main things people email me for now, is they don’t understand the Help menu. So they have a question, “how do I send an announcement?” or something like that and the way the Help menu is written, it doesn’t make it easy for them to follow. Now that isn’t an issue that I have, but it is an issue that people have said to me before.

Thank you so much for your time, I really appreciate it.

Thank you. And if you want to do a follow up or anything or if you have a question or anything that was unclear, pass me an email.

For sure

Okay…that is a really interesting project

Thank you

While I don’t love Solis, I’ve learned to live with Solis.
3. *Sulis* user 3

Thank you so much for giving this chance.

No problem.

How long have you worked with the system?

Are you satisfied with the overall design of the user interface of the system?
At the moment it's okay, as I was saying to you the other day, we started with pretty terrible version of Sakai... that we use here. That is, there was about 3 years and it has become way more stable and reliable.

Do you think the system provides you with a way to use many teaching methods?
Um, yes, um, I think that it suits the needs or more than the needs, the demands of say a large percentage of the teaching population because most people just have very basic requirements. They want to have a content repository solution, they want to find a system to manage effectively and efficiently assignments, collection and provide an operation of feedback and it solves demands around automatic testing for tests and quizzes for example and so on. And it has other features. That being said, there are specific niches of pockets of needs that are not well covered for in our content solution. More than it being impossible, it is a matter of resources. For example, some people have a lot of material through content authoring software the likes of articulate, for example. Or they buy proprietary material through an e-learning provider and they expect to integrate it and they fail. Those people expect you can track students' performance across different activities and so on. At the moment that is not possible because we don't have an integrated core engine on the. And in order to that we need to pay xx amount of money every year. And it would be used for a license and that would escalate every year. So it has been the lack of resources both to enhance the functionality of the Blackboard that is preventing some users from using more advanced features like you, Liam, had some experience on the... which is not supported anymore, but that is an example of something that has a high level of configuration which was never conducted and therefore it was not very useful. Again, it is pretty much a niche need that it doesn't appear that often. Like most people are just happy to solve the basic requirements of content delivery, assessments, and feedback provisions. Another example of things that we cannot do at the moment, for example, we don't have an integration. It is possible to integrate with a video repository and video sharing and video platform solution, like media site. And some particular departments have it working, but if they for themselves, but that is not across the board. So it becomes a matter of who has the budget, who has the political right to raise to that end. And once that happens, then the media site is working for the medical school, but it is not available for the rest of the people across the board. And that is based by dural? and the regulations. Quite successfully with Sakai... and so on, we have another example like the web conferencing solution. The integration works fine with big blue button, but it has been subject to a user license now. However, some progress has been made by which we expect that by the end of this year we expect to offer that service across the board. But again, it has been in demand by certain pockets that hasn't been satisfied up to now. More examples of functionality that we want to see coming through the link. Quicker integration. For example, some departments are using audio response systems as solutions in the classroom and it is a possibility to integrate those back into the sakai structure so if there are quizzes in class, you can simultaneously see student performance within... So again it is a matter of putting the resources into
coordinating and configuring that. So you know the possibilities are there, but we don't have the functionality because we been lacking one I .... that is necessary in order to buy licenses and other platforms to provide the service and secondly I suppose, also the mandate and political drive to do so.

What percentage of staff would be currently using?

I don't have those figures because statistics from sakai is quite challenging. It is quite difficult. Sakai is as you know, in every site you have little site editor that you can use. Excuse me, site statistics. So you can use to..........exactly. Well you can see it within your site, you go to site statistics and you get comprehensive reports on the usage, learning analytics, basically, on the usage of your site and the resources and activities most popular and what user did what when and so forth. That works fine at the site level, but when we go at the macro level, the tools that the technical provider has provided us to obtain learning analytics at a global level has never really worked. Whenever we went to them saying that we want to get basic statistics on usage from you, they have provided us with extremely comprehensive cumbersome datasets that you would have to mine. We did that occasionally. It is not something that we have the facility to do on a frequent basis. So we have to have a lot of grasp of how many modules are published there.

Is that a valid approach? To say well, there are so integrated that all modules are put up on Sullis. Can we look at it and say how many are actually published?

Well, it could be possible to look at it on a manual basis, but they are in the thousands at this stage. We would want to...It is very manual and cumbersome to get any numbers at the moment. What we will want, it would be impossible and it would be reasonable to expect the technical provider to provide to us. But whenever we ask, it is not something that is easily put forward because it is something that is quite time intensive. So we don't have as much information as we would like about...

Can you get that from student academic affairs because they provide the data saying well...

No, they have no awareness. There is a module created for each module that is in SAA, there is a corresponding site in Sullis, but the site ..... is unpublished. SAA wouldn't have awareness of what sites are published in sakai or they are not... I have a snapshot of the sites that are published, but I would have to go screen by screen through hundred screens to gather an estimate. Did I send you an email at some point with an estimate I made?

A couple of years ago, yea I remember that.

It wasn't that long ago, wasn't it more recent than that? An estimate of published site all over the years, but that was kind of cumulative, but once a site is published, it stays published unless an instructor goes and unpublish it. So what I am saying, .......... per semester.....well every year you have a new site, every semester you have a new site. Virtual, it is a new space, so you have to publish each semester. So any way, the answer is that we don't have great statistics, no.

How satisfied are you with the time to complete tasks using the system?

How satisfied...

The time to complete tasks, I mean the basic ones, just upload the material?
Alright, it is fine. Like sometimes there are some .......... that were having an experience that much and I don't know if that has to do with the network structure here, but some people used to complain a lot. There have not been as many complaints the last three years or so. There were some changes where the servers were hosted and I think it had something to do with that. I am particularly...

What are your thoughts on the font options and the colors and the layout of the user interface?

It is pretty updated at this phase and also in terms of the accessibility for complying with our responsibilities around accessibility and all that. (background comment) Exactly, you wouldn't be able to put your hand on the fire for that although I know people in the facility services are very good in finding ways to help the students to navigate the dashboard. Basically, as I was saying to you the other day, there is a new version coming, version 10, in the summer.

As a user, do you have the right to customize the user interface as you like?

The only thing you can customize is the set of tools that you have within your site. You can create project sites as well to go along with sites. The new version will allow the university level to customize. I am not 100 percentage sure how much user customization can be done at the course level site. And I have not explored that yet.

You think the system gives the user good feedback overall?

A good feedback or a good experience?

A good feedback in terms of reports, this kind of stuff?

The user as the student or the instructor?

Lecturers...

As the lecturer? The .......... at the class level is quite versatile, quite useful. So that is useful. So from that perspective ....in my opinion, how much feedback .......... Are we talking about analytics, or what are we talking about?

Sorry.

What are we talking about as feedback?

Access online, quizzes

Like if you have possibilities for feedback for students? Is that what you mean? There is automatic feedback for tests and quizzes and there is a high level of sophistication that you can design around test and quizzes. And then there are possibilities for providing non-automatic feedback, manual feedback, for the assignments through specific feedback tool. So there are ways you can and there is a gradebook tool as well, so yeah, there are ways that can be used in order to enhance and make more efficient the feedback provided.

One example, I have a student who is failing and he comes to me and says he is not happy, can I look up how often has accessed the material and that online?
Specific to that?

Yeah

What about the navigation on the system?

The navigation? Yeah, the navigation. There is a bit of a learning curve involved in order to get used to navigate through the links and the structure of the … and all that. Once you learn it for one site, you know how all the sites work. So they are consistent across in that sense. From the research we have conducted with the students, they are pretty okay when it comes to navigation, accessibility and all that. Once they get through the initial loopholes of how to access the site which usually is something that has to do with I am going to race through my module than say, whatever, and they are usually okay. They very much talk about the need for their lecturer making sound logical choices than the actual platform. Something that we actually have seen from research from institution to institution is that we expected to find more differences based on the platform, but we didn’t find any differences in terms of student satisfaction. If you are a Moodle user or a sakai user or a Blackboard user or whatever it is, it is more about I want my lecturers to use it and to use it well.

Which aspects do you prefer the most in the system?

What features do I prefer most and least? Well the ones that I prefer the least are the ones that don’t work great or they are cumbersome to use. Like the blocks tool is not great, it is pretty poor. The weeks tool is pretty unusual. So is the Moodle one, I have to clarify. The weakest ones don’t work that great. The one feature that I like. Assignments is quite powerful once you have a manageable amount of classroom size and there are little features like feedback that are very handy for people once you know how to use them. I like the new listen tool, it is powerful as well.

You teach new users about the system as well, right? Could you tell us about your experience?

Well, in general, it is not like it used to be in the early years. It has been kind of, attendance has been quite modest in the last few years. This year actually offered a lunchtime brief hour session as opposed to a hands on seminar. I always did a 3-hour seminar where people go to experience the system from a student perspective, they go to carry activities within the seminar and they go to plan ahead. So they have a comprehensive experience. I think that it is difficult to give 3 hours of your time to participate these days. So these years we kind of organized briefing sessions, it was a face to face session where people pop in with a view to if like to organize 1 to 1 meetings with people who wanted to talk further about their own particular teaching scenario. My experience is that sometimes you were in the sessions Yasser and I got some students and teachers instead of lecturers sometimes, I find that some of the lecturers learn from their students and from peer to peer. And that is perfectly fine because there is only 1 of me. So it has become through the years, I don’t know if you agree Liam, pretty much part and parcel of the jargon and people are most familiarized with how it works and what it does and so forth.

What function do you consider it on when you teach new users?

What function? More than function, more than tools, I try to take an approach to 3 different themes, one theme would be content authoring and assigning learning. So we talk about instructional assign and about activities and how to purpose content to create user engagement, student engagement. So that is the first thing. The second thing is with calibration and communication. So I talk about discussion
forums and I talk about collaboration tools and so on. And the 3rd thing is feedback and assessment, so I go over the tools that are allowed for that.

Okay, well, what is your preferred method for teaching? Do you prefer face to face communication, online?

I like the ...... that you get from face to face teaching is difficult to replicate. I do enjoy

Blended?

Yeah? I first taught online and it is difficult, a different experience. And it is very time-consume as well. So face to face is, the origins of face to face is difficult to replicate. But it is, yeah, a blended approach to maximize both sides allows to use both sides that allows to do things that we won't be able to do in class as well. I think that different approaches have different advantages and disadvantages. I don't know, I suppose I am confused that I want to practice what I preach and I want to keep myself involved. I was talking to this Spanish university because I want to keep teaching online as well as face to face so I want to keep doing a bit of everything.

Overall do you want to see anything changed in the system?

If I like to see something changed?

Yeah, in the current situation.

Yes, in an ideal world I would like to see that we have an allocated budget in order to work on proactive management on the system rather than a reactive one. So we can say this year we are going to invest in having a ...... function for those people that want it, for example. Or this year we are going to have a working integrated proper solution or we are going to have a working video hosting or yea, solutions. That is what I would like to see going forward rather than being spectators.

Do you find that, as a general point, the longer we use Sulus, the greater the expectations that we keep using it?

The expectations....

ten years, anniversary, right?

The expectation by the university or by the lecturers?

everyone.

The expectation is that we would stay with it.

In other words, at the 10th anniversary, it looks like we are going to be staying with Sulus as opposed to going to Google docs or ....

Yeah, there is a line in the learning specific plans that says that someone has to find a solution to being different across the university. There are pockets of Moodle use in different departments. So at the vice president level they are trying to find some ideal and they kind of want some sort of solution. So that would mean that either they migrate or we migrate to something else. Now, where is the political drive going to come from for that? I have no clue.
Can there be one solution, one fit for everyone? The great diversity of university are engineering and special needs and particular needs. Is it not inevitable that we have different flavors? Is it possible that we have one particular?

It is a good thing to unionize everything. I think that this uncase from the management level of the university with the existence of different platforms is one that relates to the student experience being uneven like maybe a single student has to access 2 or more platforms or modules. It doesn’t make for a seamless student experience. I suspect that it could have an element of the millennial generation like they expect to be marketed programs online or versions of modules online through CPE therefore if they are working with Moodle, but that is not a supported choice, wouldn’t that be an ideal if they were working with institutional support choice, whatever that is, Moodle or whatever. I guess that they are also thinking of that, thinking of the strategic objective of having 20% of all modules in a blended format that is why .......it is difficult to coordinate objectives on that level if there are different pockets of use and lots of the pockets are unsupported especially. That is my own interpretation.

And that 20% of modules is blended deliberately as part of the strategy plan and are they using Moodle as a delivery system or Solis as a delivery system or is the expectation that they would be through Solis?

There is a new version of the teaching and learning plan coming and what it will say is that they suspected that .........would be decided for everyone across the board.

Will be decided?

Who is going to have the mandate to decide it? I don’t know. Certainly, though IDE doesn’t have it either.

So it is not yet decided which delivery system...

At the moment we don’t have a solution supported really. Now, from how we are going to move forward so there is one ........ across the board, I don’t know. But that is what it says, the objective states that we are going to achieve in whatever it is, the time frame.

15, 19?

I don’t know, so yeah.

Thank you very much

You are very welcome. Are you more confused than when you came?
4. *Sulis user 4*

Thank you so much for giving me this chance to do the interview with you. First of all, How long have you worked on Sulis system?

Well I started using the system last year really as I was starting teaching for one of the models there available. So I started coming around the system last year basically. So two years.

*Are you satisfied with the overall design of the user interface?*

I am, I am actually. I find it quite user friendly and I think you know it is quite easy to navigate in the system for myself as a tutor and for my students as well. So far, I get good feedback from students. They don't have, so far, they didn't report any specific issues or...

*What are your thought about the language, font colors, this kind of stuff?*

The layout, the overall layout....

*The space between the lines....*

Well that could be probably improved, I think. I think it is quite clear even regarding the color and the design, the overall design, maybe, yes, the font could be make a little bigger you know, just as the slide really modification and time, time. It is fine even like that.

*Do you like face to face communication with the student or blended or online courses....*

Well I do like to have the face to face interaction, but I do like the using the online courses as well...so a blended approach would be my thing really. And I think it is important to be there and to have a face to face approach as well, not necessarily all the time, so I think in that case the online, the use of online facilities can help, can be blended.

*Do you think the Sulis system provides you with a way to use many teaching methods?*

Yeah, yeah.

*For example?*

Well, students they, for example, they do have materials available to them for the course available so they are not attending or they are missing one lectures or one lab, they have the material there so they can approach and use the material available there and if they do have any troubles, they can come back to ask so they have everything there already anyway to use and to consult anyway. So in that sense, I think it is very good.

*What about the navigation on the system?*

Navigation of the system? The navigation of the system...

*So easy to use?*

It could be improved. It could be improved.

*In terms of what?*

In terms of being probably more, you know sometimes, when you are for example, you have your module and you have their resources part where the material is available, sometimes when you need to
go back for example to a previous page you need to go back actually to the actual module and to click on the actual title of the module so it is not so kind of direct, lets’ say in that sense. So it may take a little bit more time to familiarize and to you know, get used to. So in that sense, it took me a little bit in the beginning?

How satisfied are you with the time to complete tasks using the Sulis system? For example, when you upload some materials?

No, it won’t take that much time to upload things and material or lectures.

What about another task?

Overall?

Overall, yeah.

Overall I say it’s fine. It is working well in that sense for uploading and ... yeah.

Which aspects do you prefer the most?

in Sulis?

Yes.

Well, I really do like the fact that students have the possibility to have not only the material related to the lectures, not only the content of the lectures and labs, but further material as well so they may have video and they can upload things themselves, for example, and I do like that aspect of interactivity, really, of the platform.

Which aspects do you prefer the least?

The fact that open is not so direct so you (could not decipher) or if you need to check the resources for example, can open the resources, but then you have always to go back to the actual module. So it is kind of a little bit tricky sometimes, the linking really of the resources and the content really.

Usually when you need some help in Sulis, what do you do?

I will ask my supervisor. Overall, my colleagues.

Overall would you like to see anything changed or added in Sulis?

Overall, yeah, I think even the few things like the font or the colors, those kinds of things, those kinds of things, those things, the bigger ... of the linking part could be improved. But overall I am satisfied.

Do you like to customize the system as you like?

I would.

It would be much better, yeah?

Yeah, yeah, I would like that, absolutely.

If you need to add something?
No, I think the overall I am satisfied with at .... It was a new thing for me anyway so when I saw it there and all the possibilities, I was very impressed and then when I was using them I could see some of things ....... the linking part. But overall I am very very satisfied with it.

Do you have any experience in learning management system, I mean Moodle or Blackboard, before Sulis?

Before Sulis, I used briefly Blackboard by another university.

As a student or as a lecturer?

As a lecturer. Well, as a tutor really, but for a brief amount of time and I was basically uploading things there, things for one basically guest lecturer, I was giving their...

Can you give a comparison between Blackboard and Sulis?

Not really.

Just from your point of view....I mean the user?

I didn't have much time at ......to familiarize with it and as I was saying, I was just using it to upload.

The user interface. What do you think?

But Sulis I think is better from that point of view. I find it easier to approach Sulis as a visual kind of...for Blackboard, I find things, it was a little bit more, at first approach I mean, much time.

Thank you so much

Thank you.
B. Blackboard users

1. Blackboard user 1

How long have you worked on the Blackboard System?
Thank you, I have been working since 2007, as a student first and then in 2008 I was teaching at University of South. I was teaching a course and I had the chance to explore more capabilities with the Blackboard. So you can think of it as 2007, this is the first time that I started working with the Blackboard.

Are you satisfied with the overall design of the user interface of the Blackboard system?
It is a very good interface. I liked it. The good thing about it is that it is consistent, since 2007, since the first time I saw it. It didn't change since then. There is of course a little bit of changes or improvement, you can think of them as improvements, but in general it is the same and I like it. I think that it has been designed in a very good way and I think they put a lot of thought into designing the whole interface.

What is your educational background?
I finished my bachelor, masters and PHD, from the United States.

Computer science?
Yes, computer science. I finished my bachelor's at the University of South Carolina in South Carolina State. I went 92. I went for English first and then I finished my bachelor and masters.

Do you think your educational background impacts how you use Blackboard efficiently?
Not my education background, but the whole team. If you are computer science it is something easy for you. But if you study religion or something not related to computer then you will need something to coach you to enter and start using the system. But for a computer science, I think it is self-explanatory, you can plug in, see everything like the menus you can follow it, it is not hard to follow if you have computer science if that is what you mean with your question. Different states or different countries should not have any effect.

Do you think the Blackboard system provides you with a way to use many teaching methods?
Yes, I think it enhances the methods. It enhance the way of delivering the classes. Like if you don't have Blackboard, let's say you don't have Blackboard, how would you communicate. You would have to communicate with emails. Maybe like some students, and not all students or teachers are even using like, not unified. Some more advanced teachers will think to provide their web page and then they will put their material there and they will put maybe like slides. But they are faced with the problem of how they can post their grades like the student grades, stuff like that. You cannot like student privacy. Blackboard is very very good. As the teacher, you can do all these things. You have a username and password and you just use it, learn how to use it.

How satisfied are you with the time to complete tasks using the Blackboard system?
It is I think based on the master utility. If you master Blackboard yourself, this is one part, but if you master it, then you will have no problem, you will navigate directly and you will know where to go, you will upload your material and have not problems. Let’s say you have like exam, say an assignment. If you master it, you know how to do it, you have the experience to do it, you can do it very quickly, and it will take you very little time. If you want to upload your material, it will not take a lot of time. So with
Blackboard it is personal, you cannot say there is one, like fast or slow, it is based on the person himself or herself. This is one thing, but if you go to the other side, but if you want to think of the time to upload, the time, then you have to look at the Blackboard itself, because the Blackboard has its very mature software.

This is one side. Like you master that, it will be easier and faster for you. And you haven't supposed to say like a long time. Like people, some people will have all the material ready and they will just upload it and it will not take a long time. The other side that I want to talk about is that the Blackboard itself with the back end. The Blackboard itself as a software is mature. It is a very good system that has been developed over the years and they close all the security issues so it is very good. But then you have the servers at the back end. You will have the network bandwidth. All these will affect how long it will take to upload the material. So let's say in our case, the whole university is online and the bandwidth is limited or the servers are not very strong servers, then everything will be slowing down. So it is not the Blackboard's fault. But the people who are supposed to set the environment for the Blackboard. As an end user it is my problem, but this is supposed to be a university problem or the provider. If I want to provide the Blackboard, then I have to work on all these issues and I have to study it before I just put in Blackboards and available servers and start using it.

What are your thoughts about all language capabilities?

Yes, it is clear. And as I said, it is self-explanatory if you have computer science background it will not be difficult. Font and these things, I think is good. Colors are good.

What about the colors?

Yes, it is pleasing. Green and it is pleasing to the eye. I think that you can change that.

Would you like to see anything changed?

If there is no capability of changing the colors on these things, then it should be an option.

Do you think it is a good idea to give the user the right to customize?

Yes, customization is very good. I think that there are like if you go to a main webpage for like your homepage, you have the ability to put there what tasks you want to see. Announcements, all these things, you can have them or you can delete. So it has some personalization capabilities. But I am not sure about the colors because the question is about the colors. If it is not there or not and it should be there.

What about the font options?

The font, if you go to website, personalization is one of the things like yahoo or if you go to google, they try to personalize things like with the ads and everything, they try to track the user. So personalization is usually a plus for any software. If they can have it. It is supposed to be, then it is good.

Do you think that the Blackboard system gives the user feedback? What do you think about the system?

Yes, it is. See, the e-learning itself should be a culture. It is not supposed to be just be the students. Like before I go to class, I would check my email, check the Blackboard and see if there was any.
announcement on the Blackboard. It is kind of culture and the student themselves. They make Blackboard as part of the class. And so I think here that we are not at that point yet, but we are going toward that.

What kind of challenge do you face here?

The challenge of course, first, as I said is that once you start the Blackboard itself for the student you have to train them and make them feel comfortable with Blackboard. There was a suggestion.

Do you think that, the new generation is ready for this?

It is.

Most of them use smartphone.

There is Blackboard on the smartphone. They are catching up on that, it is not a problem but I mean to use it, some students will come to class without checking their Blackboard. I have some students, where when is the last time. Okay, some students did not login for almost 4 week and I ask them why they are not logging into Blackboard and they say that there is no need for it. And I kind of like force them in some ways. Let’s say that I will put something on Blackboard that they have to solve like discussion or homework, but homework, they have to submit to Blackboard, I will not accept it otherwise. So you have to teach the students. But as a university, we are supposed to prepare them from the beginning. I was thinking that there are some ideas either from the capability or from the start where you have to force the student to use Blackboard from day 1. Maybe orientation at the beginning telling the student they have to use Blackboard, it is like email, they have to use. And then of course the teachers themselves have to force their student to use Blackboard.

Which aspect do you prefer the most in the Blackboard system?

Blackboard is very good management tool for any course. There are a lot of capabilities. Here at our university? At our university, if you go to the tools there are a lot of capabilities in the Blackboard. Like I say, one of them is like the photo star. That is one thing that it is supposed to have. There are of course assignments that are not working yet. There are many capabilities if you go to our system, you will see it is like greyed. So I cannot use them. I don’t think there is a reasonable or a reason to stop it. Maybe they want to limit the capabilities until student and faculty become ready for it. But I think it should be open and there is no. Of course there is technical issues, the connectivity between Blackboard and the server should be stronger.

Which aspects do you prefer the least?

There is you know, if you do like online teaching, like if I teach, I know if the student are puzzled, if know if the student are confused about one thing. I learn it over the years and I learn how to look at the student and repeat again. Or not repeat it. Or I will learn if they feel like they are bored from me explaining or overkill one subject. This of course, you will lose it, but it is there if you can use it in the right way for Blackboard. But to not use it, I don’t think it is like a face-to-face university. I get some, but not all the way. Let me add one thing. Blackboard is very beneficial in our cases in Saudi university. We have the leverage of the real experience in distance learning. We have portal teaching for the girls like I teach one course for the girls’ campus. For 25 years ago, we did the distance learning for the girl’s campus. The teacher will come, he will have the closed circuit and he will teach them over the closed
circuit. Now we have that online. Which can be used. Like students don't have to come. I can take like online I can see their participation and students sometimes do not really feel shy to participate due to culture. With Blackboard, actually, I teach classes for Blackboard. You see that they can type and participate with you. So it is a good aspect. I feel to mention when I say what is the good thing that you like about Blackboard. It can be used in an environment like our environment and if it is utilized properly it can be a very good system.

A good solution?

A very good solution, outside of the fact that it is crisis management like here in Saudi Arabia. Like in our university there was a situation between the Saudi (could not understand what was said) and it was used as a solution for crisis to kind of like continue the teaching and make sure that everything is no lumped in one place as a university, everyone can attend. We have very good percentage of sexes and it is good. We have weekly reports and mid semester report. And at the end of the semester we have the final report. But we see the range of performance is almost the same. We have different ways of delivering the information, but especially for the female campus, it is pure online and it's a good success.

What is your preferred method for teaching students?

Blended. I like blended.

Why?

You will use Blackboard, and all the other systems as support for it. As I said in the beginning, face to face we don't want to lose that. If everything is online, then we will lose a lot of things that will tell the teacher. I am talking from the teacher perspective. For me when I see the students, I can have a group to work together and we can see who is participating and who is not. I can change my delivery when I see the student is puzzled or confused. You don't want to lose the face to face, but at the same time, you can use the Blackboard as a way to manage the class and post supporting material. Like now, some people say they like the board, then write on the board. But why do you need to write everything? Why need to draw things that you can just put on the Blackboard or the PowerPoint. Like for the medical field. You don't want to, I don't know about, they would draw a long time ago they would have the what do you call them, the teaching posters. So they would have the poster and the guy would bring the poster and they would show us and then we would sit there. And the thing is that you will have more things to show. And they say that picture is worth 1000 words. So you can pop up there and show them, like a simulation. Like for computer science, one of the things that I show the students is a comparison between the quick search and public search and there is simulation for it and you see the difference between. Like the flow of the instruction in the computer. If you keep saying saying, saying, but if you have a simulation for it and see the instruction and you can see the instructions for it like how to code and decode, they can grasp it much better and all this can be done only through technology. So I think blended is the best thing, I think for me. Some people maybe, in some cases, maybe it is better to use pure online.

Overall, would you like to see anything changed or added?

We need to be more stable, that's all. And we are working on it. And it is due to technical problems, but in general, it is a way to be solved.
2. **Blackboard user 2**

How long have you worked on the Blackboard system?

I have been working on the Blackboard system for the last two years.

Are you satisfied with the overall design of the user interface for the Blackboard system?

Yeah, I think so, I am satisfied with the Blackboard system.

Do you think the Blackboard system provides you with a way to use many teaching methods?

Yeah, it provides you know a big variety of teaching methods. You can use it in a different way. You can give assignments, you can give tests, and different kinds of tests and multiple choice options and fill in the blank. It is a good way to mark and get feedback. It is a good system.

Do you think the organization of screens on the Blackboard system has any effect on how you work?

Yes, it has made it easier. You can upload easily from your computer to any material on your screen and you can show it to your students. I think they can benefit a lot.

Please correct me if I am wrong, can we say that it saves you time?

Yeah, it saves a lot of time. I think if you prepare some material on the computer beforehand, while teaching and while using the Blackboard is saves a lot of time.

How satisfied are you with the time to complete tasks using the Blackboard system, from simple tasks like uploading material to tough ones?

It depends on different kinds of materials. You can think that the easy materials should be the first one and you can upload the different materials. It depends on step by step. You can take from easy to difficult situations.

What are your thoughts on the language capabilities? I mean do you think that the label names are clear?

Yes, we can explain to them.

Without explaining? Do you think it is clear?

They can use a dictionary and other sources. It is up to the students, they can use different materials and take help. Most of the time the students take help from their brothers, sisters, and fathers.

Without this help, do you think it is clear?

Yeah, in my opinion, I think it is clear.

Would you like to see anything changed or added?

Yeah, I think that they always call for improvement, but as far as I am concerned with Blackboard, I am satisfied with their technology. It is ok to use. But it depends on the technicians that they can improve the system.

In case the students have some challenge?
Here we have some teachers and they are always here to help the students and actually sometimes the students have workshops for Blackboard training. So they have attended workshops.

Who handles this? IT?
Yes, IT department

Useful?
It is really useful. Both the teachers attended workshops.

Teachers too?
Yeah, yeah, of course. We attended I think um three or four workshops at least

How many days?
One workshop is weekly, sometimes. It depends on the needs of the teachers. If the teachers say we need more workshops, then there are more workshops.

And do you think, is it enough?
Yeah, it is enough. Almost all the teachers at our college are adapting using Blackboard. And all the students know about Blackboard how to use.

What aspects do you prefer the most on the Blackboard system?
We can use you know Blackboard for teaching

What kind of teaching?
Yes, for classes. This year we have been attending virtual classes for the students. They are very successful and the students are getting benefit and teachers are also getting benefit because we are learning a lot of things from the system.

What about the students’ attendance?
It depends. This year for example, some students are available on virtual classes and some students attend physical classes. They have option. It is optional. So if we find some students on. virtual classes, we can enhance our abilities.

Do you see any difference between the students who attend the virtual and actual class?
There is some difference

In terms of what?
In terms of facial expressions, for example. Here, we don’t have facilities to view the students because there is no camera. But in physical class if there are some students so from their facial expressions you can guess if they are understanding or not. Our main thing is to be focused. But with virtual classes we don’t see their facial expressions and sometimes we are not aware of their situation.

What aspect do you prefer the least on the Blackboard system?
I think that the same system I was talking about facial expression. If we end up in this camera situation, we can enhance it. I think that as long as I am concerned, I feel that their facial expressions are very important and we miss them.

What is your preferred method of teaching students?
I think both. Physical and virtual classes. Both can be helpful. Blended learning.

Can you explain more?
Because in physical class we have limited time. We sometimes have a lot of things to do in the class and some things are left without much explanation. So if we use physical class as well as virtual class, we can explain a lot of things on Blackboard system. If we use it, along with the physical class it is very handy for the teacher and the students also.

Are satisfied with the user interface of Blackboard system?
Yeah, I am satisfied

Overall, would you like to see anything changed or added in Blackboard system?
No, I think it is okay. If we use it properly it offers a lot of things.

Yeah, for example?
For example, you can use it for teaching purposes and you can use it for evaluation purposes also and there are a lot of choices, big choices. I think I am satisfied with Blackboard system.

Would you like to add something to the interview?
No, I think that I want to thank you.

Thank you so much sir.
It is a good thing to have a different opinion about Blackboard. I think it can be helpful for the teacher and the students.

Thank you so much sir.
3. **Blackboard user 3**

How long have you worked on the Blackboard system?

About 4 years.

Are you satisfied with the overall design of the user interface of the Blackboard system?

Yes, to a large extent.

Do you think the Blackboard system provides you with a way to use many teaching methods?

Yes, it gives great power. A variety of teaching methods, especially you can use lecture, question and answer and problem solving, new approaches, you can utilize the technology to serve teaching methods.

Do you think the organization of screens on Blackboard system has any effect on how you work?

Of course, it has. They have. Some are a bit complicated with lots of icons. So they need certain arrangement in order to utilize or to make simple ways for entering here and there and not to have a long time checking or looking for certain icons.

How satisfied are you with the time to complete tasks using the Blackboard system?

Let me say about 68 percent.

**Considering what? Takes a lot of time?**

Yes, time consuming program. And at the same time there are certain icons that we don’t need. Certain places that we spend time entering here and there and from here and there. And sometimes we have problems in returning back to a certain place or a certain webpage. The other thing is that the fonts, certain fonts, yes are used small. Or let me 12 to 14 (this first phrase was not very clear on the audio to me). Which we would like them to be larger, not too fatigued on eyes. To make our eyes tired from seeing and looking. At the same time these things may need to desire to go out of the system to lessen the desire of continuing or going on and dealing with tasks. This makes you tired, certain icons, certain fonts, the shape of the icons, the (could not understand word) side so if they are divided and put in nice shape to attract the users. At the same time, we need certain icons to be blocked out of the system. To minimize the number of icons and then to add a second list of icons.

If I don’t get you wrong, I think that you are not satisfied with the navigation of the system.

The navigation? Yes.

**Can you explain more why?**

The navigation of the system. As I told you, time consuming and certain icons make the eyes stick. And at the same time, certain terms need more explanation, need more training. They need more training searching activities or searching tasks within the program. They need more training, more training sessions, more activities in order to enable us to deal with them.

What if they give you the right to customize the system as you like? Would be a nice idea.

It would be, but this is first. But if they minimize the icons, they minimize, there are certain topics and certain subtitles, we don’t need them. They would be more specified or more specific things for us as English teachers or as math teachers. Divided by groups, yes. And some icons from us and provide us
what we need from the system, just what we need from the system. Because certain group have certain needs.

Do you think the Blackboard system gives the user good feedback as a teacher, as a student, as an administrator?

In the field of marks, yes. In the field of marks yes. And this may help the teacher and the student to carry on and improve their tasks or to improve what they want to do.

What about your students?

Really, they face problems.

In terms of what?

Entering the system, navigation, and as I told you, there are lots of icons, lots of titles, many titles, that students do not know how to use or how to entering a certain place unless we ask the teachers. So training is needed. Training is needed for students. Not training as training as we say, but we need deep training, we need hard training, we need follow up training for students. You know they can enter, but if they want to ask exercise, we have to look here, there, they lost the desire to continue.

Which aspect do you prefer the most?

In the system?

Yeah.

You mean the service provided by the system?

Yeah, the functions.

The training sessions, the discussions, discussions both and the assessment part that we use for them is very efficient. The exam building also although it needs some alterations sometime.

What aspect do you prefer the least?

The least, let me see, the least part...equal system that added to the program or the lecture recording is something that I really don’t like. It needs more time and it needs more concentration, if there are mistakes you cannot go back.

What is your preferred method for teaching students?

My preferred method?

Yes. Face to face communication? Online?

I prefer face to face communication.

Can you explain more?

Yes. Problem solving methods and let me say the involvement theory. I like to involve my students in learning. Also, I ask them to learn how to swim. It is an effective way I think. As it is said, tell me and I forget. Teach me and I remember. Involve me and I learn. So I believe that learning through
involvement either physically or virtually even if the platform can be supported program through learning. Unsupported program. Not as the main thing. It can be a supported thing. A supported or supplementary program for learning and truly gives opportunity and great help to students.

Overall would you like to see anything changed or added in the Blackboard system?

Yes, of course.

I need more specified programs for more specified things. Specific things, specific patterns, specific icons, and specific subtitles or issues or tasks to be more specific. Now it is general for let me see. English people, science people, the same program. No, we need it to be more specified to major in certain things.

Would you like to add anything?

I hope that there would be alteration or some change in the program. Or let me say, improvements, set improvements to be added technically and after deep studies like what we are doing now.

Thank you so much.

You are welcome.
4. Blackboard user 4

How long have you worked on the Blackboard system?

For one year.

For one year? Do you have any kinds of experience with a learning management system like Moodle or Blackboard before joining the university?

I haven't experienced, but I have studied about it. I haven't applied it with the students, but I have studied something about it before, studying, not applying.

Can you explain more, if you don't mind?

Yeah, we have taken some training how to record a class, how to use a Blackboard, virtual classes.

Are you satisfied with the overall design of the user interface for the Blackboard system?

In fact, Blackboard is a very you can say very much useful and it can be a substitution for face to face or traditional class, but the problem is that you can make it easier if they (background noise). Again, it is the problem with the user. When you think about what application you are willing to use here, then you have to think about all the functions, the user, who would make use of that. Their ability, their...you can also access to net, everything related to them. The problem with the Blackboard here is not the design, is not whatever, it is overall the same. Maybe somehow it could be better, something change, but the change is not the fundamental thing about the Blackboard. It is the same all over. But the problem is with the user themselves. They need...either the thing should be clearer and if you make a program and you are talking to some design of program, whenever you go inside that program, that application, you find some instructions. Be it instruction with photos or pictures to show you what to do here.

User guide?

If it is a new, for example, from the time you are using it, whenever you enter, like into messages, for example, instructions will come with a photo, where to put your hand, what to do here, what to do there, that make it easier. They think about the user. Maybe the user is not that much equipped with the internet using wireless, using Blackboard, using itself. So they can, the people who design the Blackboard, they can make some visual instructions for each single step or state that the user try the Blackboard. That is the kind of (seduction?) that is possible. I think it is possible. That is the problem with the Blackboard. Otherwise, it can be a substitution for face to face education. It is.

Do you think the Blackboard system provides you with a way to use many teaching methods?

In this...it is. It is if you can say...a matter of practice, a matter of experience, a matter of the user himself. I can use Blackboard in any way you want. In any way you like, but it depends on how much you are skillful, what is your ability to use Blackboard. For example, if I am very good or skillful in using Blackboard, I can apply whatever I want, even things that you cannot yet apply you cannot find, talking about teaching methods. But a teacher who is not that much skillful in using Blackboard he would be he would be in one style of teaching. He could not apply. That again is a matter of the user himself.

How satisfied are you in the time to complete tasks using the Blackboard system?

In which sensa?

For example, when you want to upload the material.
Actually I have many experience. For example, in the Blackboard, you can record the classes, for example, record the classes. To upload that and make it available for the students, that takes time. And it doesn't at the same, it doesn't take the same amount of time. And sometimes it takes thaaaaat much time.

I think it should be something specific, limited. That should take 2 minute, that should take one hour. I knew before that this to upload it would take 2 hour, for example, so you prepare yourself for 2 hour. But if you don't know how much it will take, sometime it take 2 hour, sometime it take one year, one day, that means that you cannot expect. Things should be limited with the time, that specific. The time should be like that. you upload it at that time, you take that time. It takes that time.

What are your thoughts about the language capabilities and the font options and colors available?

Yeah, it is okay. I give you example. It is okay, but it is not okay. I give example. Students, even teachers, any human would like to see things colorful. We would like to see things decorated, well designed and it will make it motivate you to work, motivate you to answer, motivate you to learn. Blackboard is like grey, everything is grey. And if you think about something else. Like I have experience providing exam. Like it is blank. You have to put a blank then you write whatever and the options are here. When I put the blank, sometimes the blank will come, you put it in the front, I put it in the front, but when it appear to the student it appear on the last. So the student calling me how come we put what and where and when in the sentence. I say no, I put it in the front. So this is maybe...some problem with the design. When a teacher is providing the exam, it should be like Word Office. It should be like that. We are already tried out with the Office what you can do. So that kind of facility should be there in Blackboard.

What about your students?

Some of them are very happy with it. Some are...like this exam, face to face exam, I mean exam in the class. They feel nervous and tense with it. But exam at home with the Blackboard, is very relaxing. Very relaxing, they sitting doing it. They are free, their mind is okay, their nerves, everything, they are exam veterans. They can talk and walk and do whatever they want while they do exam. That is one of the characteristics of the Blackboard.

What is your preferred method for teaching students? Face to face or online or blended?

Face to face or completely online.

Blended learning is the best way I think. You cannot discard like face to face at all. And you cannot also discard online. So you need blended. Blended is the best time, best option, best methodology. You need online many times because students miss connection or interaction outside the class. Inside the class, the continuation of learning. E-learning is helping. But face to face cannot leave it at home, you need face to face.

Which aspect do you prefer the most?

I like the virtual classes, in case internet access is there. Students will provide, teacher will train. If one element is missed. Miss won't be there. Then students, internet is there, facilities are there, teachers will also train, and all equipment, everything is ready for him, that I love. Not just prefer, I love.
Which aspects do you prefer the least?

The least is the...you can say that it makes students lazy.

Interesting.

I think that this is the problem with Blackboard. So they will sleep while sitting there doing their job. And they need not to come to class, they need not to go outside, they need not to also check books. This is one of the problems. One of the aspects that is not good. And not just in Blackboard, no, even in using internet is all. I have experience with my child. I have seen them while doing some mathematics, that he is trying to solve, all we have to use is calculator, nowadays, whenever you have difficulty, you go to internet and find that there are many programs. They have given all things. All sums in mathematics are already solved. So you do it check, there it is. So it helps.

Overall are you satisfied with the user interface of the Blackboard system?

I have told you, it is okay, it is okay. But it is not that to...

Overall you want to see anything changed or added in the Blackboard system?

I hope to see that kind of design as I have already said, I have to see colorful instructions, visual things, everything with every step. The people who design they should think that whoever is using the Blackboard is ignorant and doesn't know anything and you should do something so that even ignorant people should use it. So they should think about that. your design, your instructions should be clear with visual things where to put here, where to put there, take off this. That kind, I have to say that also, I have to see colorful, I have to see the exams. As you are preparing, preparing the exam in the Blackboard, I think that they should (could not understand).

Do you want to add something?

I don't want to finish the record

Thank you so much.

Thank you very much. I am very happy. I was looking for someone who was doing research on the Blackboard in the university. Whenever there is something new in the university and online, they should do something about it. Who is doing research on using Blackboard, or research something on e-learning. So whenever you find university research, think about whatever is there in the university, what is applying. To see the research and what they are saying.
5. Blackboard user 5

How long have you worked on the Blackboard system?
How long have I been working on the Blackboard system? For about two years to three years. But for the first years, we have been. Just tell me, doing a lecture for the distant learning students. Now we are using Blackboard to teach any normal student who are studying, who, and they use us and this is because the conditions of the war here. And now for about one semester are using Blackboard for teaching. Though the choice for attending, for any, for the students is still there, but most of the students use the Blackboard and the lectures on Blackboard are there for the students before the end of the semester for they have them they get to the lectures and they know.

Are you satisfied with the overall design of the user interface?
This Blackboard system has great capabilities and now we are using very few of its capabilities so we are satisfied, so we need some capabilities they could be provided by the system managers, but very few.

What about the navigation on the system?
Well it is very easy to navigate the system and there are a lot of videos telling us how to do this and these videos could be found.

Did you get any kind of training?
Well we have some training by one of the staff members here who is responsible for the e-learning. He gave us a training course of about 6 hours to 10 hours.

What did you think of this course?
Well, most of the training had been out of point because he had been using stuff that is related to all problems that are not used with the Blackboard system. Now we use equal system for lecturing and collaborative system for, for, classes with the students, but they are problems which have been used before. I think that the problem that had been used before I didn’t remember the name, but most of the training had been for the programs we shall not use. That was the problem with the training, but then we developed our own (could not decipher) by getting to the system and using it and there are some videos there on the site of the university and if you see the video, you learn how to use it.

How satisfied are you with the time complete tasks using the Blackboard system?
It is an efficient program; it is a very efficient program. But you see, there is a problem with any editing of the program because sometimes you try to, you work for a long time and then some interference comes from here and there and the editing capabilities of the program are not...

You mean the more experience you have with the system, you have much benefit from the system?
You can’t edit what you have already done with the program. The capabilities of the program are still lacking behind the other capabilities of the program.

Which aspects do you prefer the most in the system, the Blackboard system?
Well, it connects you with new students very easily and quickly. And if the students are doing well, they could benefit well from the program. And now, for the first time, and I am teaching a course in English, for the first time, students could achieve very high marks, for the first time, full mark. And the first test
for the semester, 5 to 6 students had achieved full mark. And this never happen before. So we have been teaching them directly in classrooms, but I think because their attendance is somehow weak because of the social conditions here, our community here is not like the (could not decipher) American community for which the problem had been prepared and they got too much social barriers and that prevents them from attending all the classes, and now if every student cannot attend the class, he can get to the Blackboard system and he could attend the class and he could attend the class again if he didn't understand, and that is good. And now the student chooses a time at which he gets the lecture. But you see, the normal...(could not understand)...it is very flexible. The normal programming which has been made for the university for lectures, does not give the student choice... (could not understand)...is a fixed time at which he is going to attend with his colleagues and now he can choose, he can choose a time and he is going to choose a time at which he is very ready to receive the knowledge and he is very motivated for the lecture and that is, I think one of the great advantages of the (could not understand).

Which aspect do you prefer the least in the system, I mean the Blackboard system?

Well, I don't see any...very very very disadvantages in the system, but you see sometimes the program is a bit complicated for the use of our universities. If we could have a more simple version that is going to be used for our universities, could be better, and if there is going to be any direct icons just like when you are using the (could not understand) system or Windows 10 or 8, direct icons, now students you search for icon you want for the interface and that icon could be, so you are going to search a lot if you don't know the system well, sometimes you suffer a bit.

What are your thought about the language capabilities and the font options and the colors available in the user interface?

It is good. You can do what you want. When you are writing, when you are editing, it is just like using the Word program or the office program.

What about the colors?

Uhh, it is good.

What about the font?

The font is good.

What about the space between the lines?

It is always under control. You can use what you want, you can change the font, you can change the space, you can do all you want to. It is just as you are using Office program or Word program. The choice is not as wide as when you are using Word program, but it is good.

Does this mean you are totally satisfied?

Yes, I am satisfied. And I think that we have to use it even if the made us use the program had gone away and after the war had stopped, I think that we should continue using this program. It is good and you can, it is once you prepare the course, the course is there and you can use it for two or three years until they are going to be remnants of the course because we aren't going to continue teaching an old course. It is going to be teaching a history of knowledge, not knowledge.
You had mentioned the war, does this mean that you use the system because the situation now more than before?

Now the most important cause that we using the system, the war. But before the war, the system had been three and we had been using it, but we had been...slightly, not that much. Now because of the war and because they do not want the students to attend classes.

But still I see some student attend classes....

It is a choice; it is a choice for the students. If the student want to attend, he is going to attend, if he does not want, no one is going to compulsory attend him. Because some students come from areas in which the internet is not provided well and some students do not know the technology well, they cannot use the programs. They do not have access to internet so the choice for lecturing for class around lecturing is there and it is not used very much by students.

What is your preferred method for teaching students? Face to face communication? Online? Or blended learning?

Well I prefer we had a mixture of more than one method because this gives the students a wider choice. If the student missed one of the lectures, he is going to get back to the Blackboard and get the lecture from there. And that teaching gives you in (could not decipher) confrontation with the student and sometimes this is going to be more benefit for the teacher than the student because it is, you can always see the feedback of what you have been teaching in the eyes of the teaching. His answers for the questions you ask. This can be used also in collaborate system when we prepare for classes with the students in the proper system, the internet classes, but you see it is not like data classes.

Overall, would you like to see anything changed or added into the Blackboard system?

Well, we would like to have more editing preferences in the Blackboard system. We would like to have a simpler interface for the Blackboard system.

What do you mean simpler?

Less icons. And concentration on the basic jobs. Now it gives you a lot of jobs so if the program is developed so the system administrators, the local system administrators at the university could intervene with the program and could adapt the program to the needs of the university or to the needs of the faculty so different (could not decipher) have different needs. And sometimes different departments have different needs. Now the program is given as a package, the whole package. Take it or leave it. But if the package had more choice, it would be better.

Do you like to add something to the interview?

Well I would like to thank you for your effort to get information about something that is important for the university for you to do research that is going to be beneficial for your country and we would like to see more so this doing this for the interest of Saudi Arabia.

Thank you so much
6. **Blackboard user 6**

How long have you worked on the Blackboard System?
In fact, from the time I have in University, now it's about 2 years and a half.

Do you have any kind of experience with learning management system before joining Najran university like Moodle or Blackboard or...?
In fact, when I was in Egypt, in fact there was growing interest in the e-learning so really I used different and various programs dealing with e-learning?

Did you get any kind of training from Najran University in terms of using Blackboard system?
In fact, we have here ongoing training happening every now and then if we have any new idea or new technique.

What do you think of the training?
In fact, it is nice to have such sessions because they help as much to use the program and system easily.

Are you satisfied with the overall design of the user interface?
Up to now it's okay.

Up to now it's okay. Can we say, 100% you are satisfied or 50 or 30?
Nothing is perfect, you see? But the point of that is for the requirements of nowadays, it is sufficient.
Everything on the Blackboard you can see that is sufficient.

Do you think the Blackboard system provides you with a way to use many teaching methods?
In fact, practically speaking, we use the Blackboard now to reach student who can't come to the university. So we provide them with the material that they miss here at the university or during the classroom if they don't arrive because of the conditions happening now days. But we try to do our best to provide them with the material.

And you think Blackboard is good for this matter?
It's good, but the interaction with the students is not that good.

Okay, can you tell me what about your students?
The point of that is that some of them don't have the ability to use the Blackboard.

What do you mean?
They are not trained. They don't have the skill I mean. They are not trained. They don't know how to logon sometimes and they don't know how to reach the files. So they need more training. Some of them are excellent at using the Blackboard and we communicate with them well. Especially nowadays, we have assignments. Because assignments are unique, market for months, they know that they have months. When it comes to final exam, they all try as much as they can too, even with the help of others to use the Blackboard. Such kind of capacity assignment really help the student to learn the Blackboard system.
How satisfied are you with the time to complete tasks using the Blackboard system? I mean from the simple task to the tough one.

In fact, not long as I know how to use the Blackboard so it’s okay. So I feel that’s okay, it does the job.

If you don’t mind, can you tell me about your education background?

In terms of what?

Computer science or math or...?

My major is English

Do you think your educational background impacts how you use Blackboard efficiently?

By the way, I received many online course and online trainings and gave online trainings so I feel that I am really familiar with e-learning system. So not problem for me and I like it very much really...I think I got the benefit of using e-learning so I say that is a good way to benefit our students and I believe it can relate the gap.

The gap between?

The gap between teachers and students because sometimes we don’t have them in the classroom so they don’t interact with the teachers.

The gap in communication you mean?

It enhances communication between the teacher and the student in fact. And at the same time they benefit from this because some of them live in distant areas and they can get access to the material that they missed inside the classroom.

What are your thoughts about all language capabilities?

I am satisfied with the language used.

What about the label names?

Yeah, very clear. And easy for anyone to read.

What about the colors and the font options?

In fact, I am not really specialized in design, but I feel that they are friendly to me. The colors are friendly. The system, the journal, is friendly.

What about the navigation on the system?

It is good. It is easy to access any...

Which aspects do you prefer the most in the system?

Of course interaction and communication.

Which aspects do you prefer the least?
The least? The what we call, the skill, the computer skill. They lack the skill, some of them they lack. Or some of them don’t have this option or they don’t have the facilities needed to communication online.

What is your preferred method for teaching students?

Above all, face to face.

Face to face communication? Can you explain why?

Because in fact I can’t really interact with them, I can’t see them. So when you have physical really people, when you communicate with them physically you can really see and you can ask and you can really sense if they understand you, if they don’t; if they like you, if they don’t like you, if they have any problems, sometimes. When you deal with them electronically they don’t have this sense of human aspect.

What do you think about the online courses?

The courses are essential, but they are supplementary, but they shouldn’t be the main focus. They should really complete our work, but not the whole work done online.

Overall would you like to see anything changed or added in the Blackboard system?

In fact, I would like just to get students turned better and then they can use the Blackboard system better.

Do you like to add anything to the interview?

Just good luck.

Thank you so much
7. **Blackboard user 7**

How long have you worked on the Blackboard system?

We have been using Blackboard, I believe, for 2 years. But over the time we have had more and more training on Blackboard so I am comfortable using Blackboard from this year, so about 1 year.

**What kind of training?**

How to use Blackboard. Navigate through Blackboard, where to go, how to use, I don't know if you know, Echo...

Yeah.

Echo system and all these other systems within Blackboard we have many websites and how to use them. And I believe I am comfortable with them as of one year now. So you can say one year.

**Are you satisfied with the overall design of the user interface?**

Yes, I am. It is pretty good. It is easy to use, easy to navigate, pretty simple to use to be honest. So it is good, yeah.

**Do you think the system provides you with a way to use many teaching methods?**

Yeah, you can use many assignments to upload homework and practice tests for students. And you can get the feedback from how they done on the actual assignments that they have uploaded to the Blackboard. So you can see what they (could not decipher) and you can assess it, go through it, and also you can give them a feedback by leaving a comment on the grade center. So it is quite good in the sense of teaching methods, quite good.

**How satisfied are you with the time complete tasks?**

I am very satisfied.

**With the time to complete tasks using the Blackboard. For example, if you want to upload a material, what do you think about the time?**

**Time of uploading?**

Yeah.

It doesn’t take very long. It is pretty straightforward. It takes just a matter of couple of minutes. Couple of minutes to upload the assignments. So you have the assignment, practice test, whatever you want on Word, Microsoft Word or PowerPoint, however you like and you just upload it up to Blackboard. Like sending an email 5 minutes or something. Upload it to Blackboard.

**What do you think of the language and the colors and the font?**

Of Blackboard? It is fine, but most of the time I use my own files from Microsoft word and I upload them so I don't really use the fonts much from Blackboard. I use it from Microsoft Word and then I copy and paste it onto.
Why you do this?
I find it easier to use Microsoft Word because obviously you don’t need internet connection whereas Blackboard you have to use internet connection wherever you are. So with Word I can just do a bit of work in my office, do it at home, do it somewhere else without internet connection. So it is easier for me to do it on Microsoft Word and the copy and paste onto Blackboard when I do have internet connection.

Do you think the Blackboard system gives the user good feedback?
Yes, cause like I said with the assignments, the practice tests, whatever you upload, it goes to the student individually and individually they have to complete the assignment and when they do complete the assignment it goes back to you as the teacher. And then you get to see what the answers to the question that you provided and from that you can actually go one by one and mark them and give them a grade for the assignment and then at the same time you can also give a comment say question 1 you got this wrong because of so and so. Question 2 you got this wrong because of so and so. So you can give individual feedbacks to all the students. So it is quite good in terms of communicating with students.

Can you tell me about the navigation, are you satisfied?
Yeah, I am satisfied because it is easy to use, it is straightforward. It is not really difficult but I do have to say that you have to have a workshop, a little training on how to use Blackboard and how to navigate before you can use, but as soon as someone gives you training, it is easy to use because it is pretty straightforward and you can see...

What do you think of the new user without training?
A new user without any training?
Yeah.
I’ll say you have to have training, without training it might be a bit difficult to know where to go to upload something or how to use Blackboard or where to go to use Echo or whatever or whatever the case you are using Blackboard for. You have to have training, I believe or someone just look over you to go here to use this, go here to do this, do whatever you want to do. But I believe you need some training before you actually use Blackboard.

Which aspects do you prefer the most?
My favorite obviously ... uploading assignments and practice tests for students cause then they can take this home and they can go through it and they can do it on their own personal time so they have time in their homes to look at and see the questions and answer the questions and it comes directly back to me. I can see individually what they have done on each homework or practice test or assignment, whatever I uploaded. That is really useful for me, it helps me to teach the students and give better feedback to the students.

Which aspects do you prefer the least?
The least is basically a lot of the times, Blackboard, it crashes
Crashes, what do you mean?

As in sometimes I am trying to upload the file or something on Blackboard and error message will come up. Just a red "x" in a circle and you just have to keep trying, keep trying, keep trying until you can upload it or sometimes you just have to wait and try again later on or something like that.

These kinds of things annoying you...?

Yeah, because obviously it affects me from uploading or sending something to students.

It happens usually?

It happens quite often, yeah.

Quite often, 3, 4 times during the work?

It happen to me you can say over the past 6 months maybe 6, 7 times.

Specificaly, when you are doing...?

Uploading. This is the main reason I use Blackboard, for uploading assignments, practice tests, and homework for students so this is the main reason I, personally, use Blackboard for. And like I said, some of the times there is an error message that the file did not upload. So even though you create the assignment, you have to create an assignment to make a homework or practice test whatever. When you create one, you attach a file, okay. Sometimes when you create and do this, you press submit, the students get to see it, but sometimes the file does not attach for some reason, sometimes it just says error, sometimes it doesn’t attach and I don’t know why. So sometimes I have to go back to it and redo it and attach the file again.

What about your students?

They seem to like the whole idea of me uploading homework and practice test because they get to do it in the comfort of their own homes whereas instead of doing it in the university, they might feel a bit nervous because of the time period and whatnot. They get a bit scared, a bit nervous you could say. So if they are home they relaxed, they see the homework, they have time, there is no time, there is no one looking over them, they relaxed so they like to do it more like this.

What is your preferred method for teaching students?

My preferred way is obviously face to face. Face to face is obviously the best method of teaching. Online is good.

in the sense of uploading files and doing some other assignments which is extra to the face to face teaching, is good. But if you don’t have face to face teaching, I don’t think it is that good. Because sometimes students have sometimes questions that maybe online you can’t answer. Face to face you can answer, make them understand more.

Overall would you like to see anything changed or added in the system?

No I think it is okay the way it is, apart from the error messages uploading the files and the assignment when it doesn’t attach. Apart from that, Blackboard is really good.
8. Blackboard user 8

How long have you worked on Blackboard system?

Well this, is my first semester.

Oh, this is your first semester?

Yeah, cause this time, I had stuff to do for teaching with Blackboard

What do you think so far?

Yeah, it is practical.

Are you satisfied with the overall design of the user interface?

Yeah, I am satisfied with it in terms of organization of content, yeah all these things.

Do you think the Blackboard system provides you with a way to use many teaching methods?

Yes, its flexibility enables you to give more time to students. I mean, autonomy for students in terms of time and space. So sometimes you...something and you give much more time to students so that they can interact in terms of time. Another thing is place. You know, especially because I teach (could not understand subject he teaches), in this context, I find it more practical than the long distance learning because you are going to record what you are saying, the materials will be saved on the Blackboard, on the forum. There are many facilities which would help students to learn and be independent with their learning.

Do you think the organization of the screens on the Blackboard system has any effect how to work?

Yeah, yeah, for sure, the organization of the screens make it easier and practical and workable, doable, and it saves time.

How satisfied are you with the time to complete tasks using the system? For example, when you upload material.

It is okay, actually. It depends on how you look at Blackboard. Is it a tool? As a tool, I find it is practical and you save a lot of time. Save time.

Can you explain more?

For example, instead of sending, I mean, getting emails from the traditional way, it would take time of collecting those emails and sorting, organize them. But in the blackboard, when you send assignments to the students via the Blackboard, they return the assignments via the Blackboard, you are not cluttered with these things, you can just open the Blackboard system and then you see all these things organized (could not decipher word) with the student ID, student information, all information about the students. So it saves a lot of time in terms of communication with the students.

What are your thoughts on the language capabilities and font options and colors available in the system?

You mean...

The colors of the system
The layout is okay, but it would be much better if it mirrored the traditional classroom

Okay, can you explain more?

Actually, we need to learn because you know it is a new mod, how to link traditional teaching with this new technology based learning. Some like, for example, the whiteboard, the facilities, how they are going to use the markups, all these things. How to get best students...because students now, for example, I want my students to do their presentation. For me, to do that, I have to move with the slides. There are no such features which would enable the students to do the presentation on the other side. It is still a teacher-approach based designed. So it lacks flexibility in terms of how students can share their presentation and I think that this would be much more better.

Which aspects do you prefer the most?

The grading system.

If you don’t mind, could you tell me why?

Yeah, the grading system you can, if you have a big number of students you can post the assignments and you can get these things automatically so it saves time. And there are many facilities like sharing where, for example, if you have more than one section, you can share these things. So I think these are...

Which aspects do you prefer the least?

Well, it depends the use. Sometimes it depends on the cost. Some courses require some programs to be incorporated like in mathematics you need lattics (unsure on spelling) to work with that, something which I think is missing in Blackboard.

Did you get any training for using Blackboard system?

Very short training.

One day?

One day, yeah. Just one-day training.

Useful?

Yeah, of course it is useful. There are many features, facilities that still we need to know more about.

What is your preferred method for teaching students?

I prefer student-centered approach which I want my student to...even though it is still the university policy and I find Blackboard is helpful in terms of student-centered approach for the teacher.

Overall would you like to see anything changed or added into the Blackboard system?

As I told you, much more space to the student to interact. In terms of teacher, yeah, it is okay, you can find many facility. But what about the student? I mean, as I told you, I face difficulty letting my student do their presentation while I was listening. So I have to move the slides and they have to talk on the other side. So if this feature would be incorporated in the system, it would be helpful for students.
Your students?

At the beginning they were, as with anything with technology, they were afraid of using the Blackboard, but with the passage of time, they found that they have the materials recorded, they have lectures uploaded, they have announcements there... the most important thing I find is that it shifts spoken discourse to written discourse. Something written, when it is written, the students are... it is not only flexible in time in terms of experience, but also when you have something written, a feature that Blackboard would help you in, it is much better to communicate with other. When you speak, the other party doesn't get the required information, but when it is written, something like what is happening in the Blackboard, you find that it is better. So written discourse is better than spoken discourse. So now......over distance, in distance learning, you find that it is like a telephone call so there is nothing to be recorded, it doesn't... students if they miss important points during the lecture, they cannot record that one or write that down. But when they have recorded videos or when they have...

Would you like to add anything?

No, it is okay, I wish you all the best in your journey.

Thank you so much.
9. **Blackboard user 9**

How long have you worked on the Blackboard system?

More than 2 years.

More than 2 years. Do you have any kind of experience with Learning Management System like Blackboard before?

No, actually I had different experience, not great experience with Moodle.

And also there are some plugins which are worthless. And that is my hobby. I am half designer, not a professional designer. So I know about these things.

**Do you see any difference between Blackboard and Moodle?**

BB is extensive. The options are more. Because also, not very user friendly from student end and teacher end. For example, if I want to put something on the home page of my own course, the options are limited. I can do many things in the manual going deeper and deeper at the second ....). But I can't bring something directly on the BB home page. This is different from other elements. Other elements are more user friendly because maybe Moodle is open source.

**Are you satisfied with the overall design of the user interface for the Blackboard system?**

I am talking about if I want to put a specific feature of the course on the homepage for the students. Blackboard doesn't have an option for this. But I can do many things but in the menu, in deeper. But it is painful sometime when I explain to students that you do this, you do that and then go why it is not always there. Anyway, once you get used to it, it is not a big problem.

**How satisfied are you with the time complete tasks using the Blackboard system?**

It is okay.

It is okay. It is not time consuming.

Not it is not time consuming, for me. My experience is different from many teachers as I was the technical coordinator for the help teachers for doing class. So for me it is not that much, but sometimes teacher get stuck in many things.

**What are your thoughts about the language capabilities, colors, ...**

We don't have any color available for the interface for the users. I cannot change much. Yellow and color and I hate that color, but I cannot change it. Even if it is changed in a very limited way, that makes it more ugly.

**Do you think it is good idea to give you the right to customize the user interface?**

Of course, it should be there. It is a basic thing.

**What about the navigation on the system?**

It is not straightforward. It is not intuitive, but it is not complexive. Simple thing. Not very good.

Yes, of course, for example, I want to send my students content area. Now there is content and there are options I can give. It is okay, it is good. But if you have something in there, I don't say it is very
simple or it is intuitive. Maybe intuitive for some people who designed it, maybe intuitive for them, but it is not complex, I can say. This is a safe statement; it is not complex.

From your point of view, do you think Moodle is much better than Blackboard in terms of user interface?
Yes. In terms of user experience or interface, Moodle might be better. I have more experience now with Blackboard than Moodle; I left Moodle maybe years ago. Yes, it is better. Actually Moodle is an option source and what happens depends on the top admin how much right you are giving them. Now, I worked as the admin in Moodle so I am not, I don’t think I am fit to answer it as a student or teacher, but as an admin I did work as admin in Blackboard so my experience is different in both level.

Which aspects do you prefer the most in Blackboard system?
Which aspect?
I like it more than anything else? I can upload anything. That is very good.

Which aspects do you prefer the least in Blackboard system?
I hate?
Yes.
The interface.
The user interface.
The user interface is not good. For example, I want my students to look at particular aspect of my course. And even if, for example if I want to change my home screen of my course, I can’t do it, so rigid. I can do many things with the course, but I can’t do anything with the interface. That troubles me, maybe because I have hands on experience with designing so I want to change the things, but I can’t, maybe because of this.

What is your preferred method for teaching students?
The relation to online learning?
No solution for face to face...why didn’t you interview me on online? They are not alternate. The best way is face to face and one to one. And the connection with each other.
And you are influencing me and I’m influencing you. But in other things, if you see that in online learning the influence is very limited. You are not always clear about your teacher and your student. But when you see your students, I learn from his face expressions, he says “okay” but I know that he is not okay. It is not substitute, but it is an option, maybe additional option.

Would you like to see anything changed or added?
Interface. Interface.
User interface?
Mainly, there are some other things which should be there. For example, the links. The links, if I want to... there is more than one link in one announcement, I cannot do it from my own course. If I want to fix a link to student from another course, from that, the option is not available because it will not open without user login. And my login is different from student login and I have moderator rights, they don't have moderator rights. And also, something I want to bring one thing from one course to another course, I can't bring it. Although there is an option for bringing some, but there is option for not some other things which you can't do it. So there are limitations especially in transferring of the course in interface, but generally it is very suitable for (could not decipher). I'm not saying there are some shortcomings, but there are more good points of it that you need some training.

Thank you so much.
10. Blackboard user 10

How long have you worked on the Blackboard system?
Well, a couple of months now since they rolled it out here.

Do you have any kind of experience with any learning management system like Blackboard before joining Najran University?
Yes, I used a Bespoke system in England.

It's called CDIS, but it was homemade in the organization I was in, so yes, I have some experience.

Can you make any comparison between that system and Blackboard?
Well, I think that both systems seem to capture pretty much essential information, no question. And I think both systems enable students to receive and send information to and from the teacher. So I think they are pretty similar. Most of these systems are pretty similar in many ways.

Are you satisfied with the overall design of the user interface for the Blackboard system?
Yeah, although I must admit I haven't managed yet to go through everything. It is quite a complicated system. And I don't think that at the beginning I found it particularly user friendly. I found it a bit cumbersome initially. And so far I have only stuck to the particular areas that I need. So I haven't really played around with it.

Did you get any kind of training?
Yeah, we did have some kind of training.

I don't think that it was enough. I don't think it was in depth enough and I don't think there were sufficient practical examples demonstrated as to how to use the system. I think perhaps that a lot more practical examples could have been given. But generally, we received pretty basic training, yeah.

How satisfied are you with the time to complete tasks using the Blackboard system? From the simple tasks to the tough one.
Because as I said earlier, I only really started using a fraction of its capability, and I have only used it primarily to upload assignments for students and then to mark and grade those assignments, I have also used it to send information to students in terms of lessons and stuff like that, but there are a whole host of other things that I know and are available there which I haven't yet gotten into and perhaps the reason for that is that I haven't had time yet to really go through it thoroughly.

What are your thoughts on the language capabilities?
The language is not bad, of course, we have an issue where we get two languages in use here, Arabic and English and in some cases there isn't the appropriate translation. And so for a user like me, I can't read certain messages, they aren't translated. And if they are translated they are not translated accurately enough. But if I stick to just the English part of it, I am okay with the language that is used on it, in English.

What about the colors available, the font options?
Fonts are okay, I don't have a particular problem with the font so far. I just think that it is a bit cumbersome. Quite heavy. And it is going to take me anyway a lot more time to get to one, understand what the different functions are and, two, get used to using those functions and then assessing its suitability.

What about the colors?

The colors. The colors are okay. I have no problem with the colors. I find the colors alright. I don't have a problem with the fonts, no problem with that.

What about the navigation on the system?

That is a little bit cumbersome. I use that word a lot, don't I?

That's fine.

It is a little bit... I do get confused sometimes. But like I said, I haven't really started using every little bit of it. So, therefore, maybe that is why I find it a bit confusing at times when I try to go into certain areas. And sometimes I get a bit confused and I go into the wrong sort of area. When I want to upload an assignment, for example. I go into content and then I forget that it is an assignment so I go into content and it offers me file. It offers me audio. It offers me this. That, and the other. I think that there is a lot, there is a lot to it. You know? It is not very simple and it is not totally user-friendly, in my opinion.

What about your students?

My students have come to me with a few issues, primarily to do with they can't download or they can't upload. And sometimes this is caused by the fact that I have not perhaps uploaded it in the right place, and that's because there are so many options. You know? Or maybe I haven't uploaded it in the right format. And again, that is because there are so many options. So we have quite a few options. I don't know if it is totally compatible with all different types of perhaps audio or, indeed, film or whatever it may be or even whether it is completely compatible with PDFs or this, that, or the other. I don't know. My students have had a few complaints, not major ones, I mean I have had to go back in and then upload it in a different format for them because they can't download it wherever they are. So just small things, nothing major so far, but I doubt very much given the students at this point have been able to assess the full capability of Blackboard.

Do you think it is a good idea to give the users the right to customize the user interface as they like?

I think there should be some options there. Yeah. I think there should be some options that allow us to either put something in or we would want to rather than being restricted. I think there should be the option. Along with the other options, you know. There are so many different formats for video and audio and all the rest of it and I'm sure Blackboard doesn't cover them all. So yeah, it might be a good idea if we had the option of being able to customize in some cases.

Which aspects do you prefer the most, I mean, in the Blackboard system?

I do like the ability to upload an assignment and to be able to mark it on the screen and to submit the scores in a report format. I do like that. I think that... and to do the same thing with any kind of practice that you would want to give your students. I think that is a good option, but that is a simple thing, anyway, it is nothing complicated. But that's the thing that I use it for most at this point in time. I only
use Blackboard, at the moment, to upload content for students to either study at home and some exercises or whatever and return back to me and for me to mark it.

What about the virtual class?

The virtual class, I do use it; yes. Because I do virtual class, I do use virtual class. But the gain, because it is not that user friendly to me, I have been a bit scared to make a mistake when I am online with students. So what I do is I take the easy option. And I know how to share my desktop so I just upload what I want from my desktop. But all the other things that are available, uploading content, doing this, that and the other, using the smartboard, bloody whiteboard, whatever it is, I haven’t dared to go into those yet. Because I am not confident enough and that is probably to do with a bit more training as well. So until my confidence level increase, I am not going to take any chances. That is it. It has been okay. Virtual has been okay, it has achieved its objectives in many respects. I can upload things for students to see, I can show them things on the spot, so I can do that. But in know that there are many other facilities which I haven’t tried yet, which would obviously improve teaching ability.

Which aspects do you prefer the least?

The bit that I find a bit annoying is where there is no translation. That means that I cannot take part in whatever is being said or whatever is being uploaded or whatever, you know. To give an example, and even where there is a translation, it is inaccurate. So I go into say, for example, the part that is to do with staff and I want to check maybe salary levels or anything else, or this, that, or the other, the translation is not clear so I don’t know where to go. It is written in Arabic and then it is translated into English. But the translation, to me, is not appropriate so it doesn’t make any sense to me. I don’t know what it is I am supposed to do even though it says, you’d have to have a look at it to understand what I am saying, but even where it says for the period, this, that or whatever, I don’t understand what it is talking about. Now, maybe if I understood Arabic I would be clear. But the translation is not appropriate, in my opinion, so, therefore, I found that going into the staff part of it, for me, is a waste of time.

What is your preferred method for teaching students?

Yep, face to face, using visual aids and lots of group work activity, that sort of thing.

What about blended learning?

Yes, mixing it all in, yeah, yeah. A bit of that as well. But the problem that we have right is that we don’t have the facilities in the classrooms to really have a really good mix of blended learning.

Can you explain more?

For example, the classrooms that I have don’t have projectors. I bring my own. So if I don’t bring it, then I can’t use it. And I tend to feel that my students learn in different ways. Some learn from seeing, some learn from listening, and so on and so forth. And I think that as far as the classrooms here are concerned and I know we are in a temporary situation, and once we move to our main building, perhaps all those classrooms will have all the necessary facilities for us to use everything, right. But for now, I find that the classrooms are not conducive, the speaker systems are terrible, you got some little tiny speakers in a large room and therefore distortion takes place, not clear, all that I think needs to be adjusted, taken care of, in order to give the students a much better experience.
You have boys and girls in your class, right?

I have girls in my virtual class. And boys I do physical class and I did virtual class although we stopped that now.

Do you see any difference between the student who studies through virtual class and face to face?

We haven’t done enough of it yet for me to make an assessment. We haven’t, and not only that, but quite a few students are reluctant to come on the virtual class. Maybe because they are also afraid, maybe they have some fears which have not yet been taken care of through training or whatever it may be. Maybe they have some apprehension, but for example, I quite often only get 2, 3, 4, sometimes one student, girls that is, on the virtual class, out of maybe 30 something or more, maybe 60 something in some case. I don’t think I’ve had more than 4 girls at one time. So we need to find out why they aren’t using it. Could it be that they need training? Could it be that they don’t have the resources to access the internet, I don’t know? Could it be they only have phones, they don’t have laptops, I don’t know. But basically speaking we aren’t seeing seventy at level 2 (not sure if I have this part right) here, we aren’t seeing sufficient numbers of students accessing Blackboard. I think that needs to be researched to find out why. Level 3 the new students, on the other hand, I believe are taking it up. Why the difference? Why the discrepancy? I don’t know. But probably something that should be looked at.

Overall would you like to see anything changed or added in the Blackboard system?

I like the translation to be more accurate, that is probably my first thing. I would like more training in it. I am not fully okay with it yet. So I think I would like to, I think most of my colleagues would like to see more training in it. And I think this needs to be targeted training. I think we need to be a bit more specific and there needs to be a lot more hands on training.

In terms of the user interface.

In terms of the user interface, I think that needs to be explained a bit better. We probably also need to look at whether the user interface is saturated in a sense. Is it too much? Could we reduce it? I mean the less you have, less is better, they say. So, you know, just too much. So much hitting, where do you stop, where do you go, what do you use, oh I don’t know ....So a combination of training and particular hands on training with an instructor and then, you know, some actual hands on experience of doing it and making your mistakes without affecting students should I say. Getting more used to it, I think that is something that would be something I would like to see.

Thank you so much
11. Blackboard user 11

How long have you worked on the Blackboard system?
For me it’s been 2 years since I’ve been here in Najran University.

Do you have any kind of experience with learning management system like Blackboard before?
Since I been here. Not at all.

Are you satisfied with the overall design of the user interface for the Blackboard system?
i am satisfied, it is okay.

How satisfied are you with the time to complete tasks using Bb system? I mean, for example, when you upload the material.
I think this one is one of the things that, maybe for everybody, that is our character as human being. Using the computerizing takes time, takes time actually. This is the issue that I think so I can say I am natural with it.

What do you think about the language capabilities?
That is perfect. All is okay.

What about the colors?
All... I have no... I think it’s okay because no comparison comes to my mind when I saw it when I access it. It’s okay, it is fine.

Do you find the user interface colorful?
The colors I think is okay. Matching with the color of the university. That blue. I think the theme of the logo. It is okay. So when that comes to my mind, the University of........., it is okay. No problem.

What about the navigation on the system?
Navigation, is okay. I have no problem. I started with something, I finish it quick, no problem.

What is your preferred method for teaching students? Face to face communication or online?
Face to face, definitely, face to face, face to face because so many things. If I follow what they are saying, the body language is there. And also you can interchange between the student and the teacher. You can hear from them, you can, the communication is different face to face.

What about blended learning?
That’s perfect. Once you have the face to face and you add something else, definitely.

Do you think Blackboard system help you in this matter?
yes it does.

Overall, would you like to see anything changed or added in the Blackboard system?
For me, as a lecturer, is okay, but maybe for the people, especially the system designer or the architecture of system, I think it would be okay if they upgrade some, what they call it, comments? Like,
I don't know what they call it, it is something like what they use in our systems like autocorrect. We have a menu that isn't used. We have also a (could not decipher) where you can add terms. So instead of the temps, maybe we have like a local. So many this one.

Do you like to add something to the interview?

No, thank you so much. Wish you all the best.