“Challenges and Opportunities of using Web-based Information Services in higher education: Students and Lectures perspective of Moodle.”

Web-based Information Services in higher educations

A dissertation submitted in partial fulfilment of the requirements for a Bachelor Degree in Business Information Systems

By

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Declaration

I, the undersigned, hereby declare that this dissertation entitled, “Challenges and Opportunities of using Web-based Information Services in higher education: students and lectures perspective of Moodle.” is my own work and that all the sources that I have used or quoted have been indicted or acknowledged by means of completed references. It has never been submitted nor is it currently being submitted for any other degree.

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Abstract

The rapid growing technology has impacted the society in general, especially in industrial sectors. The dramatic improvements in technology have introduced various methods, which are being used by enterprises to access information internally from their establishments or externally from remote locations. Web-based information services are one of the effects of the evolution of technology, which is being used by enterprises and specifically in schools as well as in higher educations. There are many types of web-based information services (WIBS), which are used for learning management system (LMS), this is including Blackboard, Moodle, OLAT, Sakai and Kallidus OnDemand. Some of LMSs applications are open source and other are commercial versions, but they both have more or less the same features such as allowing users to produce learning material online, to distribute of learning materials and to provide communications to various users etc.

This paper covers the challenges and opportunities of using Web-based Information Services in higher education in particular the viewpoint of Cardiff metropolitan students and lectures regarding Moodle. Literatures on different web-based information services and Moodle from different sources are investigated in order to comprehend the main problems and benefits of using LMSs in enterprises. A mixed methods of qualitative and quantitative approaches is used to collect and analyse data through the use of questionnaire forms. A conclusion is drawn to what has seemed to be the source of the problems and main benefits of using Moodle by Cardiff metropolitan. These findings will be important to many schools and also to both types of learning, including long distance and traditional learning.

Keywords: Moodle, Learning management system, forum, Blended learning, ICT
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Chapter 1 – Introduction

1.1. Introduction

Information communication technology (ICT) has taken place in every part of human life, through the previous twenty years including in business and government. Education and social are two close environments, in traditional education there is a close relationship within the teacher and students. The education has become a learning-centred system due to the use of ICT with the frequent improvement of technology, ICT is playing a major role in the 21st century education (Noor-Ul-Amin, 2013). The facts that are enforcing the pedagogy and the society into wanting to be at the same level with ICT are including quick access to information, reliable communication methods, a convenient way of learning, cost-effective and the amelioration of learning and teaching approaches (Chewe & Chitumbo, 2012).

The current life style is branded by the rapid spread and the improvement of information technology in many senses. The society is eager to keep pace with technology from general use, individual usage and for working purpose (Rendulić, 2011). The uprising of computing and communications in the previous few decades have validated that the evolution of the technological and the usage of information technology will keep progressing at a fast rate. The effect of reduction of communication cost is due to regular improvement of technology invention and increasing in usage by users (Lee, 2002).

Kolaric and Rendulic define information technology as a combination of any technology that is used process, collect, protect and store information. The term information and communication technology (ICT) encompass any practical method used for management information and enabling communication, including computers, network hardware, communication lines and all the necessary software. This means information technology, telephony, electronic media, and any kind of method that allows the handling and the conveying of audio and video signals, and also including any function that regulate and deal with the transmission of communication over the network of the technologies (Kolaric & Rendulic, 2011).

Many organisations at the moment, are using the web-based information services for their everyday business activities, including mail systems, file systems as well as network devices such as firewall and routers (Dong, 2008). The increased of development of different external aspects have influence on how universities run their courses (Cobcroft, 2006). Use of web-based environment has introduced new and useful roles to librarians and information professionals. Before the uprising of technology library worker roles was mostly to look after books, but now they provide more like students’ supporters. New roles for Librarians and information professionals is included explaining to students how to use online resources, arranging workshop, book talks, debates as well as providing web-based services to web users (bhardwaj & Walia, 2012).
Learning Management System (LMS) is a software application that is used in education to organise, create and evaluate learning activities (Firoz, 2014). Learning Management System is more in use now than it used to be in the last 30 years of the uprising of technology. LMSs are being used in education as a bridge between the modern educations with the actual improvement of technology (Phillipo & Krongard, 2012). Moodle is an online LMS, which allow teachers to create and post class materials such as assignment, notes, quizzes and discussions (Romain, 2015). With 49, 600 listed sites and 38 million users worldwide, Moodle is considered to be the most used open source LMS, which is being used at the moment. Moodle is more used in organisations such as schools, non-profitable organisations, small businesses, and local government agencies, due to its effective usability (Monarch, 2010).

1.2. Research Outline

Chapter 2 literature review, this section contains information for various past research papers. This section is divided into eight sub-sections, which cover different types of available LMS including their advantages and disadvantages. In addition, this section also focuses on past research about Moodle, including its background history, advantages and disadvantages of using Moodle in education and how its challenges can be overcome.

Chapter 3 Research method, this section briefly describes the study context in detail and discuss the methodology. It also discusses different types of methods. Most importantly, this section explains data collection methods and techniques used for this study.

Chapter 4 Results and discussion, this section cover the evaluation of the collected data in order to get a clear understanding of how the data was analysed. Each question is evaluated using text, tables, bar and pie chart to get a better comprehension of the collected data. Additionally, comparisons and evaluations of responses from different are provided in a brief statement.

Chapter 5 - Conclusion, this section identifies and explains the most important points of the data analysed in the section 4, analysis and discussion. Each point is deliberated and linking it to a specific statement discussed in section 2 in order to build a solid opinion. In addition, some suggestions will be given for future studies in this field, and how the case study could be constructed.

1.3. Purpose of the research

The purpose of this research is to investigate and to study problems and benefits to lecturers and students for Moodle as a web-based information services in particularly at Cardiff metropolitan university. In order to understand exactly the problems that Cardiff metropolitan Moodle users are faced with, this paper reviews past literatures from different research and case studies. The objectives and aims of the study are as follows:

- To investigate and study potential LMS use in higher education
- To determine and analyse the benefits of and barriers to the use of Moodle.
• To study the use of Moodle as an education management tool.
• To evaluate the overall experience of students and lectures using Moodle as a teaching and learning tool

1.4. Research schedule

A schedule for this research was created in order to plan deeply how the study will be directed. Each research activity was given a period of time to be completed, which was enough to verify the work before moving to the next stage. The critical path for this research were included finding reliable research topic, writing the abstract and introduction since these were supposed to be completed before starting the literature review. This study was managed by following the project life cycle of waterfall methodology. This is due to the fact that the study was led from top to down and each stage was properly complete before moving to the next stage. The research schedule can be viewed in Appendix E.

Chapter 2 – Literature review

2.1. Introduction

This section critically reviews past paper from various sources in accordance to the investigated area. This section defines the meaning LMS, how it is used by different organisations and various names that it used refer to LMS. Benefits and fall-backs of using an LMS in organisation, most common potential LMSs that are in use is covered in this section. This section reviews in depth past studies about Moodle, including the benefits and disadvantages of using Moodle in higher education as well as why Moodle is designated LMS for Cardiff Metropolitan.

2.2. Potential LMSs use in education

Most Learning Management Systems (LMS) are interface web-based educational tools, which use synchronous and asynchronous methods to enable access to both users and administrators whenever and wherever (Black, 2007). Synchronous method in education consists of a real-time e-learning via video-conference or chat such as forums. Asynchronous studying is merely online, but learning materials are posted online and questions are sent through web email (Epignosis, 2004). The popular LMS in used are including Blackboard, Sakai, Kewl and Moodle (Unwin, 2010; Mtebe, 2015)

The contemporary style of teaching is a mix of traditional with the combination of technology, which has been named Blended Online Learning (BL). BL improves the traditional teaching style with the use of the internet to gain access to files, documents and web conferencing through LMS (Fadde & Vu, 2014). In the U.S in
2003, 43% of chief academic officers believe that face to face learning is far better than online learning. During the period 2003 to 2009 there was a slight change in this opinion, some chief academic officers suggested that online learning was still poor and others claimed the online learning was somewhat poorer and this view was until 2011. The 2012 survey indicated that only 23% of school leaders believed that online learning was inferior while there was a contrast in 2013 the percentage had increased up to 26% (Allen & Seaman, 2014).

The new generation of university students has been brought up in the technology era and this is why they are called the Net Generation or millennial. This is due to the fact that technology has been part of their lives, which includes the internet, phone, email and laptops. This is why it is important for higher educations to fuse technology in teaching so that students can feel that they are still in their comfort environment (Campbell & Colleagues, 2007). Figure 1 below, is a bar chart showing information of U.S. education leaders who believe that online learning is inferior or somewhat inferior to face to face learning.

![Figure 1. View of some of U.S. education leaders on online study](image)

In the survey conducted by Poon for, Nottingham Trent University (NTU) indicates that the most important parts of the success of blended online learning (BL) found were included information technology and human resources as well as resource that facilitate the delivery of BL, which are LMS and the institutions. Human resources are key factors in the introduction of BL in meeting the organisation’s need in term of cost, time, effort and skills (Poon, 2013).

LMS can also be referred as Course Management Systems (CMS) or Virtual Learning Environments (VLE), but in more simple and understandable words LMS is an internet-based software that enables to register students, check students’ performance as well as implementing and dispensing course materials. The most known LMS are Blackboards and WebCT. There are commercials as well as open source LMS, they all have different functions and features, but some aspects of the LMS platforms are similar (Paper, 2010). Features that all LMSs have in similarity are including content management, assessment, testing, curriculum planning, report generating communication, collaboration and announcement (Kulshrestha & Kant, 2013).

Commercial LMSs come with a contract, which restrict customers from modifying it or distribute it other people while open source clients must be modified the software
to meet their needs and redistribution of the software is allowed (Pankaja & Raj, 2013) (Simonson, 2007). Blackboard Inc. has less competitions in price due to the fact that it doesn’t allow third party applications to be used with it and the price has been rising in the previous six years. (Randall, Sweetin & Steinbeiser, 2010). Open source software is the best platform that should be used by universities as the software can be manipulated to meet the need of the organisation (Atmazi, 2005). The most commercial LMSs used in education are Blackboard and Desire2Learn, and within open sources is Moodle and Sakai (Meenakumari, Antony & Vinay, 2013).

The LMS market is rising faster in 2005, there were already 200 LMS platforms on the market (Atmazi, 2005). LSMs started to infiltrate in a higher education environment in the 1990s and now LMSs play an important part in how lectures are being acquired and delivery to students as well as being used as a communication method with institutions and students. The estimated revenues of LMS internationally, including K12-market, corporate training and in different higher education in 2013 was between $1-2.6 billion, which will then triple by 2018 to 7.8 billion. The result from the 2002 survey conducted by Educause Core Data Service indicated that Blackboard was the most used LMS in higher education and this has remained the same until 2013. Blackboard has owned the last decade in LMS market as its era, but in 2014 Blackboards popularity started to decrease due to many rivalries and new LMS platforms breaking through the clutter marketing (Dahlstrom, 2014).

It is a difficult decision to be able to choose which LMS platform will best suit an organisation as there are hundreds of them to choose from. It is wise to start by pointing out the reasons for an institution to start using an LMS. It may also be important to test the product by using a demo or trial version for a better understanding of the products before making a final decision. An introduction of a new system can have an impact on a company’s culture due to the new innovation’s requirement that users and the old system must adhere to. Therefore, it is wise to choose an LMS that will accommodate the institution’s need (McIntosh, 2016).

2.3. Opportunities of using an LMS in higher education

Students are more engaged in group work when the activity is done online (Feldman & Zucker, 2002). Alkhanak and Azmi concluded in their research that students have shown both a great dependency on using resources provided by universities such as browsing the internet and other services. Students were also enthusiastic about e-learning and they as well value more the convenience of finding course information online as this will increase their performance level. In addition, students prefer to study a course that uses information technology features such as interactive multimedia content or e-learning, which is seems to be more advanced than traditional teaching style (Alkhanak and Azmi, 2011). Students and educators can take advantages of an LMS solution if learning materials are posted and accessed effectively online (Maikish, 2006; Goyal & Tambe, 2015). The increase in the number of students enrolling and the more needing of e-learning has made universities to use more LMS (Monsakul, 2007).
LMSs provide different logins system for lectures and students, but they both can access materials uploaded by one another. They also allow institutions to track students' logs and their real-time performance on the network. LMS covers course planning, quick assessment, students' involvement and managing of content. (Kulshrestha & Kant, 2013). Now institutions and organisations can’t be worried about storage space since LMSs are stored in the cloud. This means that companies can save time and money, which was used for storage space and postages. Most LMS companies have upgraded their product features to meet the current technology pace which is included adding new features such as virtual classroom and video conference and the products can still be upgraded while customers are using them.

LMSs have become easier to use and to access as users can access the system from any location at any time (Peter & Gallagher, 2011). Most important benefits of blended learning to students is included a virtual interactive and comfortable environment due to unlimited access to learning materials. In additional, faculties use the benefit of BL to provide a better learning experience for students by interacting more with them. Other benefits of the use of BL by organisations are including less crowded classrooms and parking space (Oh & Park, 2009). Moodle is one of the LMS that has been increasingly used globally. Higher education preferred to use Moodle due to the fact that it is designed to meet learning needs (Chewe & Chitumbo, 2012).

### 2.4. The challenges of using an LMS in higher education

The increase use of smartphones has created opportunities as well as challenges in the education sector (Adayana, 2015). Use of mobile devices by students has become typical and this means they also access LMS through mobile phones (McIntosh, 2016). LMSs has failed to meet users' requirements in term of accessibility such as finding a program and information. Furthermore, there are also addition problems to do with IT demand, which is the internet speed and password authentication (on24, 2012). Many studies suggest that interactive features such as forums, chats and emails are underused in LMS (Jamie, 2003; Vovides, 2007; Mtebe, 2015).

A survey conducted by ECAR in 2014 in 45 different US states, suggests that 86% of students possessed smartphones. (Educause, 2014). The figure 1 below, is showing the percentages of student answers to the question of how it is important to accesses LMS from smartphones. 57% of students who participated believed that is really important to access the LMS through their smartphones and 11% of students believe that it is not important at all.
Organisations that are using mobile method in delivering course materials and information, they find it harder to understand the benefits and the challenges of this approach (Adayana, 2015). Learning materials that are designed to be accessed by mobile users must meet the requirement of small devices, most importantly is the screen size (McIntosh, 2016). In developing countries, ICT have not been infused properly into teaching due to the lack of money and technology environments (Lwoga & Sanga, 2007).

2.5. Moodle Background history

Moodle was first published in 2001 by its founder Martine Dougiamas and 2 years later he started a company known as Moodle Ltd. In order to provide a free learning platform for community schools (Moodle, 2016). As a self-governing and an open source software project organisation, Moodle has 54 partner service companies worldwide that provide assistance to help the company exist (Educause, 2016). MOODLE is a free open source e-learning management system, which stands for Modular Object- Oriented Dynamic Learning Environment (Powell, 2011). Moodle is implemented in 75 different languages and it is used in 160 countries with 350 members and 14 million students. The purpose of Moodle is to allow teachers to have total control of the interface design as Moodle design is concentrated on a virtual classroom. Most importantly, Moodle permits students to take part in different learning activities than just accessing learning materials. This indicates that the idea of including Wikis in education is close to Moodle functions and that it is how Moodle should be used in pedagogy (Lytras & Corti, 2012). Also, this is why it is the most preferred LMS by many schools (Miles, 2007). Moodle’s development community are really helpful in providing assistance on the use of the software and also updates are easy to understand (Chewe & Chitumbo, 2012).

2.6. Opportunities of using Moodle in education

For students to be able to gain the full advantage of Moodle, they must follow the pedagogical philosophy of Moodle, which consist of a studying style of collaboration, participation and interaction (Zakaria & Daud, 2013). The key points of open source management systems are the capabilities of changing codes and the freedom of the redeployment of the software. Most advanced LMS open source solutions now have new features, which can allow them to be combined in an organisation’s existing system (Unal & Unal, 2011). Moodle was developed to be used in higher education, but this has not been the case as Moodle is being used in different organisations internationally and in various learning approaches such as in e-learning as well as an additional teaching tool in traditional learning (Chewe & Chitumbo, 2012).

Moodle is providing the opportunity for students to communicate with the use of asynchronous and synchronous medium as well as access learning materials and taking part in quizzes, online assessments, email and forums. All students are able to access learning material from anywhere at any time (Hamilton, 2009). When students access Moodle, they are able to see activities that have already happened and what is happening in real time such as reports, course update, forum and submission of assignments. This does not mean they can see other student...
assignment results, the benefit of these features is to motivate students to take part in the study activities (Moodle, 2012).

When it comes to adaptability Moodle is better, especially in facilitating the transmission of learning materials and can also be modified more easily than Blackboards. Moodle can be customised to adapt the organisation’s need due to its facilitation of open source codes. More importantly, Moodle is more cost-effective than any other LMS solution because its licensing is free. The only cost may include the vendor hosting costs, which is less compared to Blackboard. An additional cost can be for plug-ins, which can be bought from a third party company. The open source collaborative Moodle assessment report suggests that there is not much difference between Moodle and most popular LMSs when it comes to ease of use. Moodle is more advanced than other LMSs in instructions, functionalities and administration features. In the previous six years Moodle’s popularity has been increasing worldwide and this has made it to be one of the best open source LMSs (Randall, Sweetin & Steinbeiser, 2010).

Hamilton concluded in his research that technology on its own, cannot offer a valuable learning experience to students only with the use of LMSs such as Moodle. Instructors can deliver better teaching material to students with the assistance of the 13 principles of Moodle. In additional, computers are crucial in contemporary learning environments as they get learner ready for upcoming education or employment. Inadequate of finance, lack of access to technology devices, students rejecting changes and insufficient IT help can prevent institutions gaining advantages of Moodle. Moodle can help students to achieve the best outcome of pedagogy through their learning such as instructors can use Moodle features to bring student social lives into teaching. This will help students to be more engaged and also make them feel as if they were in their usual environment and therefore it will improve their learning abilities. Even though there is not available an environment that can provide all the students’ requirements (Anderson, 2004) Moodle can be used in literacy teaching and also allowing students to keep up with technology and social improvement (Hamilton, 2009). In addition, Moodle has all features that can be found in commercial LMSs such as Blackboard and WebCT (Dede, 1997; Abu-Shawar, Al-Sadi & Khan, 2007).

2.7. The challenges of using Moodle in education

The failure of fusing technology into study by several institutions is due to the fact that they want to mimic the traditional approach through technology. Technology tends to be used by institutions as a based model for teaching rather than a pedagogical instrument (Ehrmann, 1995; Lwoga & Sanga, 2007). The first potential barrier to the integration of technology, is being specified as technology itself (Zhao & Frank, 2003; Lemke, Coughlin & Reifsneider, 2009; Moeller & Reitzes, 2011).

The major weaknesses of open source LMSs are, including being less reliable in term of technical help and over modification of code can result in malfunction of the software, which can prevent the software to accept new updates in the future (Unal & Unal, 2011). On the other hand, challenges are inevitable to these types of software, which include technical and human support. Installation, operation, maintenance, network administration and security are technique challenges that an organisation
can face and human challenges are included IT illiterate, age and gender. In order to achieve the best outcome from using Moodle, the process required to have an accurate planning, promotions and participation of stakeholders in each phase of the transition otherwise the project will be catastrophic (Chewe & Chitimbo, 2012).

Challenges that can be associated with using Moodle as part of Blended learning are: instructors may not want to use Moodle or they do not have enough time to learn new innovation or they have less knowledge in technology. Class sizes, lack of training, cost of IT equipment, technology failure and students who do not want to take part, all these can have a negative impact on the use of Moodle in education (Hamilton, 2009). However, Moodle has provided more benefits to its user community than its challenges (Chewe & Chitimbo, 2012). In order to set up and use open source LMS users must have some knowledge and skills in this field, which can require users to do training (Unal & Unal, 2011). In order to ensure that Moodle is reliable and it is qualified to be used in a pedagogical environment Moodle developers work closely with Moodle users as this allows them to get accurate feedbacks and recommendations to enable them to make further improvement (Dede, 1999; Park, Heo & Lee, 2007).

2.8. Strategies to overcome Moodle challenges in education

Even though there are barriers in using Moodle in education, these can be overcome using different strategies such as providing instructors with training and assistance. Students can also get help from an IT assistant, instructors or from their peers in order to benefit from Moodle (Hamilton, 2009). Stakeholders should be involved in the entire process of the transition to a new innovation. The institution must organise an awareness programmes, which promotes the benefits that a new technology innovation will bring to the organisation. This can be done in different ways, which includes visiting other institutions where the innovation in question has been a success as well as training staff. Administrative plays a major role in the process of integrating a new technology innovation in an institution, which can include rewards, resources and implementation of ICT policy. Managerial and leadership, dedication and engrossment are very crucial in the achievement of an ICT innovation (Lwoga & Sanga, 2007).

Roueche, John, Baker and Rose suggested that in America community colleges, leaderships will continue to be challenged through education and from the outside environment. Their knowledge in the field and expertise will allow them and their subordinates to overcome those difficulties forcefully through their skills. Leaders need to possess transformational characteristics, which consist of influencing principles, attitudes, opinions, performance of faculty and employees to reach the institution’s goals (Roueche, John, Baker and Rose, 2014). In 1996, Hativa & Lesgold, conducted a survey where question was asked to teachers on the barrier of use of technology in class. Most answers were that it is about the teacher working facilities, which is including a lack of hardware and software, difficulties in accessing computer labs and not enough technical and instructional support (Hativa & Lesgold, 1996).

Even though technology is at many people’s hands, but technology is not fully merged into education. In the survey conducted by Nellie Mae Education Foundation
indicates that only 8% of the instructors who took part have really integrated technology in their teaching. Furthermore, 43% of students who participated in the survey suggested that they were not ready to use technology to enable them to move forward to higher education or into employment (Moeller & Reitzes, 2011). There are many implementation failures in education and not only technology. Launching a new technology in a social environment, its demand more than just training, but a very-well prepared process. Training can be provided in various ways, but it's required a serious reasoning (Hativa & Lesgold, 1996).

2.9. Moodle as a designated LMS for higher educations

Originally, Moodle was primarily designed to be used in higher education (Lopes, 2011). Dublin City University was one of the first universities to accept Moodle as an LMS in 2003. From 2003 to 2012 Moodle was adopted by 26 universities and had 50 Moodle partners internationally. Bennett stated that the adoption of Moodle in New Zealand and Australia was mainly due to the cost (Bennett, 2011) Bias authors against Moodle, are not eager to give the exact amount of saving that an institution can make if they were to switch to Moodle. For example, Landa suggested in 2008 that University of New York could save up to US$ 50,000 per year; Croy estimated in 2009 that the University of North Carolina at Charlotte could save up to 53% if they switch to Moodle (Costello and Eamon, 2014).

Dougiamas clarified that the purpose of Moodle was created to reinforce the power of something that has already been existing, which is the internet. The internet is wonderful, but it can't be useful if there is not a reliable software to allow users to access it. Moodle. Inc. is developing a pedagogical tool that allows teachers to manipulate various functions easily in order to provide a better learning experience for students (Dougiamas, 2007).

When a section of the system is changed, the system itself, as a whole will revert back to its original custom. In order to prevent this resistance from happening, the decision of change must remain the primary focus. Teachers and students’ attitudes should be of the importance and of the value that it is added to the system in order for a new technology innovation to be established as a feature in the teaching curriculum. The change should not be used as a temporary solution (Senge, 1990; Earle, 2002).

A survey done in one of higher education in Saudi Arabia indicates that the students who were very satisfied to use Moodle, also did not have any problem using the software. Lectures were happy that Moodle has allowed them to communicate with students even outside of the school time as well as being able to manage resources at any time. Participants believe to have increased their education, performance abilities due to the use of Moodle (Daoud, 2007, pp. 205-210; Goyal & Tambe, 2015). The figure 2 below is showing comparison of similar features that are in commercial LMSs such as Blackboard and Sakai, which are also in Moodle (Bri & Diana, 2008; Zoran & Rozman, 2010).
Figure 2. A comparison of features in commercial LMS and in Moodle

On the contrary Kenny concluded that the comparison between Blackboard and Moodle was not well defined, but that institution should research deeply before using Moodle. When an institution's budget is low and they are considering to reduce their expenditure, then it is wiser to use an open source LMS instead of commercial ones (Kennedy, 2005). Ahmad and Al-khnjari summarised in their report that students who started to use Moodle as their first online learning environment, were enthusiastic regarding the use of Moodle. This had helped them to improve their learning performance as it allows them to learn course materials much easily. Therefore, combining tradition, learning style with Moodle can improve students learning performances. Many students favour traditional teaching method, but still they also want to be able to access course materials and activities online (Ahmad & Al-Khanjari, 2011).

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Chapter 3 – Methodology

3.1. Introduction

This chapter describes the various research methods that have been used. An explanation is given on the choice of the approach used to investigate this research. In addition, this section provides a rationale as to why other methods were not suitable for this research. An assumption is given in accordance to the selected approach, and why it is the best fit to the research.
3.2. Research Methods

The main point of a research has a tendency to be useless. This can be pointed out in the term of preparing and development that the importance of the study is based on the quality rather than the quantity. The key points are for the researchers is to focus on creating a research and follow the correct methodology all along the entire process of the research in order to produce a great research quality. Different methodologies can be used for various investigations, but the fundamental of a method doesn’t change in any research. A research methodology is a sequential technique used to find a solution the study topic (Kothari, 2004).

A research can correctly use a combination of qualitative and quantitative data collection methods. Saunders, Lewis and Thornhill suggest that methods are subordinate to the model, which it’s described as a fundamental concept that direct the study. This is in ontologically and epistemologically basic manners and not just in selections of the approach. The beliefs of a researcher play an important in the outcome of the research, the audience might detect that the result was preconception therefore, might disagree with it (Saunders, Lewis & Thornhill, 2009). In response to the divergence among quantitative and qualitative research, there is an additional driven logical that has arisen known as mixed methods research. Actually, there are three methodological approaches that are successfully in use and they are coincided with each other including quantitative, qualitative, and mixed methods (Johnson, 2007).

This study uses a combination of quantitative and qualitative data collection methods, which consists of three types of interviews, including individual interviews, questionnaire, and focus group interviews. The main core of all the three interviews is the same, but there is a little bit of difference in how the questions were formulated. This is due to the fact that this research is investigating two types of participants including students and lecturers. This means their experience of using Moodle is different as lectures login to Moodle as administrators while students’ login as the users.

3.3. Quantitative and Qualitative Data Collection

A triangulation method was used to collect data using different techniques viz, questionnaire, structured and focus group interview. In all the three data collection techniques were designed using qualitative and quantitative methods.

3.3.1. Triangulation methods

The triangulation method consists of using various techniques of data collections in a single study to be certain that the collected data have the correct information for the research (Saunders, Lewis and Thornhill, 2009). The aim of a triangulation method to investigate a single problem in various angles. This is to allow the researcher to be sure and confident in providing explanations of one approach over the others. In order to be mostly sure that the collected information is categorically correct the used on multi-approaches, different researchers or analysts and various origins of data collection are combined with social studies.
For example, triangulation can be used through different groups of people by various researchers with different types of tuition and understandings (Laws, Harper and Jones, 2013).

3.3.2. Quantitative method

Quantitative research is created with the value of capacity or volume. It is appropriate for questions that might be conveyed in measurement (Kothari, 2004). The quantitative is mainly used for information or questions that can be evaluated using charts or figure (Saunders, Lewis & Thornhill, 2009).

3.3.3. Qualitative method

The characteristic of collecting data using a qualitative method is concerned more with the way data is analysis. When analysis unstructured and complicated collected data, it should be summarised, categorised and re-organised in order to backup purposeful investigations (Saunders, Lewis & Thornhill, 2009). Qualitative research is about the value and the types of the information. It is used to investigate human actions, including the way a person act and their viewpoint (Kothari, 2004).

Before starting the real survey, a pilot questionnaire was produced and critically discussed with colleagues and my supervisor to make sure that it fitted with the concept of the dissertation topic. This process was done before submitting with the ethics approval form – see Appendix A.

Bell suggests that the questionnaire should be piloted to check the time will respondents to complete the survey and remove any question that would not benefit the research. Pilot survey is normally the imitation and trial of the actual survey (Kothari, 2004). The piloting of the questionnaire can be done even by family and friends, but it is recommended to do this to a group of people similar to the one that will do the real survey. This is because they can provide feedback that will help to improve the survey questionnaire before distribution. The objective of a pilot implementation is to remove any defect from the questionnaire so that it is easy for the real participants to answer all the questions without any problem. In addition, the system helps the researcher to start writing the initial analysis of the dissertation, which will allow them to check and improve the quality of actual analysis (Bell, 2005).

The questionnaires, research information sheet, participant consent form and ethics approval form, were all submitted to the ethics committee at the Cardiff Metropolitan University School of Management at the same time. The survey could not take place until the ethics approval form was approved.

3.3.4. Questionnaire

The questionnaire is within the most commonly used method of collecting data in the survey technique. This is due to the fact that every participant responds to the same questions and this makes it easier in collecting answers from a massive sample especially with quantitative analysis (Saunders, Lewis & Thornhill, 2009).
The way of designing a questionnaire depends on the number of participants who will take part in the survey. In the figure 4 below an illustration from Saunders, Lewis and Thornhill, which demonstrate the two ways that the questionnaire can be distributed to participating. Self-administered is done by sending the questionnaire to participants and interviewer administered is by through face to face or via telephone interview (Saunders, Lewis & Thornhill, 2009).

Distributing the questionnaire to participants in person has many advantages as a researcher can clear explain the objective of the research and even better some questionnaire can be completed right away in the researcher’s presence. Other ways of distributing the questionnaire can be done using the organisation mailing system and asking help to dispense the questionnaire from colleagues and friends. Furthermore, a postal survey can be used and this should be the last technique to be considered in the distribution of the questionnaire. This is because there are less guaranties of getting all the questionnaire back and it cost more than other techniques (Bell, 2005).

3.3.5. Sampling Design.

A sampling design is a well-build strategy in getting data from the targeted participants. This is a method or process that it is used by the researcher in deciding data to be included in the sampling. Sampling design can consist of different data regarding the sample such as the scope of the sample. The design of the sample is decided prior to collection of sampling (Kothari, 2004). There are two types, sampling techniques viz, probability or representative sampling and non-probability or judgmental sampling. The probability sampling technique done a through a known group of people while non-probability sample technique is used on unidentified participants. Some research can combine both of these sample techniques. The figure 5 below is an illustration of probability and non-probability technique, which demonstrated by Saunders, Lewis and Thornhill 5 below (Saunders, Lewis and Thornhill, 2009).
Figure 4. Sampling design techniques by Saunders, Lewis and Thornhill 2009

Both probability and non-probability sampling techniques were used in collecting data. Firstly, a group of participants were selected to take part in the individual interview. Secondly, online questionnaire was completed by Cardiff Metropolitan students, but unknown to the researcher. Generally, the purpose of the questionnaire for this research consist of finding problems and opportunities that students and lecturers face when using Moodle as part of their learning and teaching needs. This is included, how information is accessed and uploaded, type of files, their view on the use of online learning and past experience of using Moodle. To get more accurate and reliable responses from these hypotheses, it wise to include different types of sub-questions, which is discussed in section 3.3.6 below.

A consent form was designed to notify participants about the type of information that will be collected in the questionnaire and what the collected data will be used for. In additional, the consent form expresses clearly that no sensitive data was needed for this dissertation. A research information sheet and consent form were also supply to face to face and to the focus group interviews, prior to the interview.

3.3.6. General Information

Semi-structured style was used in online questionnaire – viable in Appendix B and in the individual interviews. This was allowed participants to express their view on the use of Moodle and also in order to get extra information.

Saunders, Lewis and Thornhill suggest that semi-structure interview is ideal for studies that required exploration or explanation. In order to comprehend the interactions within different situation a semi-structured interview can be conducted (Saunders, Lewis and Thornhill, 2009).
Semi-structured format that it is conducted by ticking or circling answers offer effective ways of summarised and analysed collected data (Bell, 2005).

3.3.7. Question types

3.3.7.1. Multiple choice or closed questions

Multiple choice or close-ended questions were used to avoid vague, unstructured and unnecessary responses that may not benefit the research at all. These types of question were used in focus group – see Appendix D.

A question that has only two options such as “yes” or “no” can be considered to be an unusual type of multiple choice question or may be called ‘closed question’. The benefits of using multiple choice or closed question in data collection techniques are including the ease of managing, effortless to respond, fast and cheap to evaluate. These two methods work better in numerical assessment. Occasionally, getting unconventional answers can benefit in providing an effective explanation of the question (Kothari, 2004).

3.3.7.2. Open-ended questions

Open-ended questions where use in order to get more data that is needed for this study and also in order eliminate bias opinion of the author. Open-ended questions, usage and dependency on the respondents' answers imply that a researcher must stay open to the topic of the interview and the limitation of time, but respondents need to have a chance to formulate the responses (Ghauri & Grønhaug, 2005; Saunders, Lewis & Thornhill, 2009). The purpose of open-ended question is to allow respondents to express their ideas without restrictions instead of the limited ready-made answers. The advantage of open-ended questions is that respondents are free to use their personal words. The disadvantage of open-ended question is that it can be hard to control, burdensome to clarify, correlation and participant preconceptions (Kothari, 2004).

Open-ended questions were used in all the interviews for this research. Participants were asked to state the specific problem that they have in relation to the question, which was asked. This was mostly used on questions, where participants had only two choices of “yes” or “no” and then to allow the participant to express themselves clearly there was a further a short interrogative statement, which was “if yes or if no please specify in the box below”.

16
Chapter 4 – Results and discussion

4.1. Introduction

In this chapter, I present and discuss the data collected from the online survey, student focus group and individual interviews. The collected data are used to help answer the thesis of the study: Challenges and Opportunities of using Web-based Information Services in higher education: CARDIFF METROPOLITAN UNIVERSITY students and lectures perspective of Moodle. The sub-questions are divided into three categories in order to help to answer the central research question.

4.2. Triangulation of data analysis techniques

The questions will be descriptively analysed from triangulation perspectives. This means that the answer of a question will be represented from all three interviews at once through different analysing tools including table, scatter graph, pie and bar chart. So the main presentation of answers is as follows:

- Students’ responses – questionnaire
- Students’ responses – focus group
- Lecturers responses – interview

Follow with a discussion.

4.3. Collected data classification

The total number of sub-questions for this study was 19, but due to triangulation methods used, the sub-questions were amended to meet each technique and experience of the two categories of the participants. This is because students and lecturers have different experiences of using Moodle so what can be considered to be advantages or disadvantages is realistically likely to be different for the two categories. Individual interviews were arranged only for lectures and the questionnaire and focus group were for students. The questionnaire had 19 questions, see appendix B, the focus group consisted of 15 questions, see appendix D and the individual interview had 12 questions see appendix C.

4.3.1. General information

The online questionnaire had a total of 56 respondents, which was including 28 females and 28 males as shown in Figure 1 below. The interview had a total of 3 interviewees and the focus group consisted of 6 participants. The information was analysed using tables and figures. Tables have more details than figures such as the number of people who have skipped a question and comments.
4.3.2. General questions

The general questions were used in order to discover the participants' background beliefs as well as to understand how they can benefit from using Moodle. These questions were used in all interviews, including questionnaire, focus group and individual interviews.

- What is the main reason of your subject choice?

  Students' responses - questionnaire

Table 2 below, contains information on the answers in percentages and in number.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interested in it</td>
<td>50.0%</td>
<td>28</td>
</tr>
<tr>
<td>Career prospects</td>
<td>46.4%</td>
<td>26</td>
</tr>
<tr>
<td>There were no other better choices</td>
<td>7.1%</td>
<td>4</td>
</tr>
<tr>
<td>Don't know</td>
<td>10.7%</td>
<td>6</td>
</tr>
</tbody>
</table>

Answered questions 56
Skipped questions 0

Table 2. Reason for choosing the study subject

Figure 5 below, is a bar chart, which is showing the same information as in the table above, but only in percentages.
Figure 5 Reason for choosing the study subject

From the information provided in Table 2 & Figure 5 above prove that the university has right students on the courses. The information indicates that a big number of respondents have chosen their subject because it's what they wanted to and few respondents were not sure of why they chose it. A conclusion can be drawn that many respondents are sure of what they are studying, therefore there a huge chance of them being serious with their studies and that they can use the full advantage of Moodle.

- Do you have any work experience in your area of study already?

  Students’ responses - questionnaire

Table 3 below is showing the answer in percentages and in number

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, a lot</td>
<td>24.1%</td>
<td>13</td>
</tr>
<tr>
<td>A little</td>
<td>48.1%</td>
<td>26</td>
</tr>
<tr>
<td>None</td>
<td>27.8%</td>
<td>15</td>
</tr>
<tr>
<td>Answered questions</td>
<td></td>
<td>54</td>
</tr>
<tr>
<td>Skipped questions</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3 Students work experience

The figure 7 below is a pie chart, which is showing the same information as in the table above.
The information in Table 3 and Figure 6 above from this answer an assumption can be made, that almost all participants know what they wanted to do in the future. The information indicates that almost a half of respondents have a little bit of work experience. A quarter of the participants said that they have lots of work experience and over about a quarter have no experience in the chosen subject.

Since respondents have a single motivation in getting to what they want to do in the future, therefore there is a huge chance that they are very engaged in their studies and that they will use Moodle to get the most out of it. This also indicates that this was the right audience for this study and they can provide more information and suggestion about Moodle.

- **What is your general perception of accessing online services for education purposes?**

  ➢ **Students’ responses - Questionnaire**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very negative</td>
<td>3.8%</td>
<td>2</td>
</tr>
<tr>
<td>Rather negative</td>
<td>3.8%</td>
<td>2</td>
</tr>
<tr>
<td>Neither positive nor negative</td>
<td>30.2%</td>
<td>16</td>
</tr>
<tr>
<td>Very positive</td>
<td>45.3%</td>
<td>24</td>
</tr>
<tr>
<td>Rather positive</td>
<td>17.0%</td>
<td>9</td>
</tr>
</tbody>
</table>

  **Answered questions** 53  
  **Skipped questions** 3

  Table 4. Views for accessing learning materials online

Figure 7 below is a pie chart, which is showing the same information as the one in Table 4 above.
Looking at the information provided in Table 4 and Figure 7 above, it suggests that a big number of participants’ have optimistic views toward online learning. This may suggest that this is the right audience for this study as they may have lots of information and knowledge regarding online learning and different types of LMSs. In addition, most participants are net generation, therefore, this increase the chance of getting more data. A logical conclusion can be made that most of the respondents have a positive view concerning online learning.

- **What is your general perception of online learning?**
  
  - **Students’ responses – Focus group**

<table>
<thead>
<tr>
<th>What is your general perception of online learning?</th>
<th>Nº of participants who think that is…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very negative</td>
<td></td>
</tr>
<tr>
<td>Rather negative</td>
<td></td>
</tr>
<tr>
<td>Neither positive nor negative</td>
<td>2</td>
</tr>
<tr>
<td>Rather positive</td>
<td>2</td>
</tr>
<tr>
<td>Very positive</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 5. Views for accessing learning materials online

The focus group data in Table 5 above indicates that almost all students share the same view toward online learning. This is because the information from the questionnaire reflects the same beliefs among students.

- **Lectures’ responses – Interview**

The same question was asked to lecturers shown in Figure 8 below, but it is a bit different to the question from the questionnaire and focus group above. The information indicates that 40% of lecturers have a very positive view and 20% of respondents of positive view toward blended learning. This means that most students and lecturers have the same beliefs regarding blended learning. This also proves that Moodle is being effectively used by both Cardiff Metropolitan students
and lecturers. This also suggests that even if there are barriers in using Moodle, but these can be overcome easily by users.

![Chart showing general perception on blended learning]

**Figure 8. Interview on use of blended learning**

- **Have you used Moodle before as part of your previous education?**

  - **Students’ responses - Questionnaire**

  Table 5 below is showing responses in percentages and in number.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>52.8%</td>
<td>28</td>
</tr>
<tr>
<td>No</td>
<td>47.2%</td>
<td>25</td>
</tr>
<tr>
<td><strong>Answered question</strong></td>
<td><strong>53</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Skipped question</strong></td>
<td><strong>3</strong></td>
<td></td>
</tr>
</tbody>
</table>

  **Table 5. Used Moodle in previous education**

Figure 9 below is a pie chart, which is showing the same information as the one in the table above. The information from Table 5 above, Table 6 below and Figure 9 below has played a huge role and has given a major importance to the entire study. This is because this question has helped to distinguish the online respondents into two categories including students who have used Moodle and those who haven’t used Moodle before. Therefore, opinions from both sides of respondents will give a strong base to this study and clear understanding of the matter.
Figure 9. Use Moodle in previous education

- Students’ responses – Focus group

| Have you used Moodle before as part of your previous education? | Nº of participants who think that is….
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>2</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 6. Use Moodle in previous education

- Lecturers’ responses - Interview

Lecturers were also asked a question related to the question above, but in a different way to meet their current position. The question was as follows:
- Apart from Moodle have you used other online learning management systems before?

Table 7 below shows the responses in percentages, number and the names of other LMSs that lecturers have used before.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response percentages</th>
<th>Responses account</th>
<th>Number</th>
<th>Response Date</th>
<th>If yes, please specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>40%</td>
<td>2</td>
<td>1</td>
<td>Mar 23, 2016 12:50 PM</td>
<td>Blackboard</td>
</tr>
<tr>
<td>No</td>
<td>20%</td>
<td>1</td>
<td>2</td>
<td>Mar 31, 2016 12:50 PM</td>
<td>Blackboard</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>Apr 1, 2016 12:50 PM</td>
<td>Blackboard, Canvas and Echo360</td>
</tr>
</tbody>
</table>

Table 7. Lecturers other types of LMS they have used before

In Table 7 above, all lecturers have stated that they used Blackboard before and one lecturer stated that they have used two other LMSs including Canvas and Echo360. This indicates that the two lecturers who haven’t used other types of LMSs, may struggle a bit because it can be difficult to switch to a different environment when you
are used to only one environment. The lecturer who had used difference types LMSs before, will not be affected as much as the other lecturers. By comparing students’ with lecturers’ responses, it is clear to see that most lecturers can have problems using Moodle as well as students.

4.3.3. Course related questions

The question in relation to the course was to find out how students use Moodle to access course materials in general and how the lecturers can help students to gain the full benefit of using Moodle. These questions were used in all interviews.

- As part of your course needs, can you tick the appropriate boxes to indicate the purpose why you access Moodle?

**Students' responses - Questionnaire**

Table 8 below is responses to the question above in percentages and in number

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watching video and listening to podcasts</td>
<td>13.7%</td>
<td>7</td>
</tr>
<tr>
<td>Course news and announcement</td>
<td>64.7%</td>
<td>33</td>
</tr>
<tr>
<td>Accessing for past papers</td>
<td>35.3%</td>
<td>18</td>
</tr>
<tr>
<td>Group work tasks/ collaborating with other students on projects</td>
<td>25.5%</td>
<td>13</td>
</tr>
<tr>
<td>Maintaining my e-portfolio or blog</td>
<td>7.8%</td>
<td>4</td>
</tr>
<tr>
<td>Course information</td>
<td>86.3%</td>
<td>44</td>
</tr>
<tr>
<td>Conducting lectures</td>
<td>45.1%</td>
<td>23</td>
</tr>
<tr>
<td>Testing yourself using quizzes</td>
<td>9.8%</td>
<td>5</td>
</tr>
<tr>
<td>Submitting course work</td>
<td>80.4%</td>
<td>41</td>
</tr>
<tr>
<td>Tutorial notes</td>
<td>76.5%</td>
<td>39</td>
</tr>
<tr>
<td>Lecture notes</td>
<td>84.3%</td>
<td>43</td>
</tr>
</tbody>
</table>

| Answered question | 51 |
| Skipped question  | 5  |

Table 8. Why students access Moodle

Figure 10 below is a bar chart summary the information in the table 5 above.
Figure 10 above not all of the options are displayed. Somehow excel could not fit all the option answers in the bar chart. The data in the Table 8 and Figure 10 above indicates that many students access Moodle for Course information, Lecture notes, Tutorial notes, Submitting course work and Course news and announcement. A small number of students' access Moodle for watching video and listening to podcasts, testing themselves using quizzes, and maintaining my e-portfolio or blog. A conclusion can easily be drawn from this data that students are more interested in activities that have direct importance to their course work than activities such as Contacting lectures and Group work tasks/ collaborating with other students on projects.

- Can you tick the appropriate box below to indicate your preferred time that you access lecture notes?

**Student responses - Questionnaire**

Table 9 below is showing the responses in percentages and in number.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before lecture</td>
<td>27.5%</td>
<td>14</td>
</tr>
<tr>
<td>After lecture</td>
<td>56.9%</td>
<td>29</td>
</tr>
<tr>
<td>For revision only</td>
<td>33.3%</td>
<td>17</td>
</tr>
<tr>
<td><strong>Answered question</strong></td>
<td></td>
<td><strong>51</strong></td>
</tr>
<tr>
<td><strong>Skipped question</strong></td>
<td></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

Table 9. Student preferences for accessing lecture notes

Figure 11 below is a bar chart, which contains the same information as the one in the table above. Table 9 above and Figure 11 below indicate that many students access the lecture notes on Moodle most after the lecture. This can be to review the notes after the lecture or download it, which proves that there is no urgency of posting
notes on Moodle before the actual lecture. The information showed that a considerable number of students access the lecture note on Moodle only for revision. Again, this supports the argument above that lectures can post notes on Moodle after the session.

![Figure 11. Student preferences for accessing lecture notes](image)

- Can you tick the appropriate box below to indicate how often do you access Moodle per week?

  ➢ **Students’ responses – Questionnaire**

  Table 10 below is showing responses in percentages and in number

  | Can you tick the appropriate box below to indicate how often do you access Moodle? |
  |---------------------------------|------------------------|------------------------|
  | Answer Options                  | Response Percent | Response Count |
  | More than 4 times a day         | 11.8%             | 6                      |
  | 2-4 times a day                 | 33.3%             | 17                     |
  | Once a day                      | 17.6%             | 9                      |
  | 2-4 time a week                 | 23.5%             | 12                     |
  | Once per week                   | 9.8%              | 5                      |
  | Once a month                    | 3.9%              | 2                      |
  | **Answered question**           | **51**            |                        |
  | **Skipped question**            | **5**             |                        |

Table 10 Number of times that students access Moodle

26
Figure 12 below is a pie chart containing the same information as the one in the Table 10 above.

![Pie chart showing access times to Moodle](image.png)

Figure 12. Number of times that students access Moodle

- **Students’ responses – Focus group**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Nº of participants who access….</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 4 times a day</td>
<td></td>
</tr>
<tr>
<td>Once a day</td>
<td>1</td>
</tr>
<tr>
<td>2-4 time a week</td>
<td>5</td>
</tr>
<tr>
<td>Once per week</td>
<td></td>
</tr>
<tr>
<td>I don’t know</td>
<td></td>
</tr>
</tbody>
</table>

Table 11. Number of times that students access Moodle

The majority of online respondents in the Table 11 above, suggested that they access Moodle between 2 to 4 times per day. A quite big number of respondents suggested that they access Moodle 2 to 4 times per week and a reasonable number of respondents said that they access Moodle once per week.

A majority of participants in the focus group said that they access 2 to 4 times per week and one person said they access it once per day. Overall the information proves that is being used students by many respondents effectively as each person's schedule is different from one another. Therefore, as long as if they can access Moodle at least every week is a positive action.

- **What would prefer to be included in the lecture notes?**

- **Students’ responses – Questionnaire**

Table 12 below is showing responses in percentages and in number. Participants were allowed to choose more than one answer and this is why there is a higher number of responses than the actual number of respondents.
What would prefer to be included in the lecture notes?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Images</td>
<td>70.0%</td>
<td>35</td>
</tr>
<tr>
<td>Animations</td>
<td>38.0%</td>
<td>19</td>
</tr>
<tr>
<td>Diagrams</td>
<td>74.0%</td>
<td>37</td>
</tr>
</tbody>
</table>

Answered question 50  
Skipped question 6  

Table 12. Additional materials in lecture notes

The information in Figure 13 above suggests that many students prefer to have images and diagrams in their lecture notes and less students preferred to have animations in the lecture notes. A conclusion can be drawn that images and diagram are the best types of educational tools, which should be included in the notes.

- Do you read your lecture notes out loud to yourself?

  Students’ responses – Questionnaire

<table>
<thead>
<tr>
<th>Do you read your lecture notes out loud to yourself?</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>40.0%</td>
<td>20</td>
</tr>
<tr>
<td>No</td>
<td>60.0%</td>
<td>30</td>
</tr>
</tbody>
</table>

Answered question 50  
Skipped question 6
Table 13. Reading the lecture notes aloud

<table>
<thead>
<tr>
<th>Do you read your lecture notes out loud to yourself?</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Yes</td>
</tr>
<tr>
<td>□ No</td>
</tr>
</tbody>
</table>

Figure 14. Reading the lecture notes aloud

The information from both Table 13 and Figure 14 above indicates that more respondents don’t read the lecture notes aloud, but still few respondents read their lecture notes aloud.

- Can you enter in the box below the number of slides do you prefer to have per lecture note?

  Students’ responses – Questionnaire
  Can you enter in the box below the number of slides do you prefer to have per lecture note?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answered question</td>
<td>48</td>
</tr>
<tr>
<td>Skipped question</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 14. Preferred number of slides per lecture
The information in both Table 14 and Figure 15 above indicates that most respondents preferred for a lecture to have 15 to 20 slides.

- Can you ticket below to indicate types of teaching that you prefer to have? (You can tick more than one)

  Students’ responses – Questionnaire

  Can you ticket below to indicate types of teaching that you prefer to have? (You can tick more than one)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>66.0%</td>
<td>33</td>
</tr>
<tr>
<td>Seminars</td>
<td>62.0%</td>
<td>31</td>
</tr>
<tr>
<td>Tutorials</td>
<td>54.0%</td>
<td>27</td>
</tr>
<tr>
<td>Study at home using Moodle/internet</td>
<td>32.0%</td>
<td>16</td>
</tr>
</tbody>
</table>

  Answered question 50
  Skipped question 6

Table 15. Choices on types of teaching
Figure 16. Choices on types of teaching

The information in Table 15 and Figure 16 suggests that most respondents preferred to have more traditional learning and few respondents preferred online learning. This question has caused a bit controversy to a question in section 4.2.2, which asked respondents for their general view toward online learning. Most respondents have positive views about online learning, so now it is a bit difficult to understand their perception exactly, but a conclusion can be made that most respondents preferred mixed learning.

4.3.4. Questions on the usage of Moodle

The question on the usage of Moodle, were asked in order to understand individual views and experiences of each participant about the use of Moodle at Cardiff Metropolitan. These questions were used in all interviews, including questionnaire and focus group and individual interviews.

- How long did it take you to be familiar with Moodle?
  
  Student responses – Questionnaire
  The Table 16 below is showing information about students’ acquaintance with Moodle.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strait from the start</td>
<td>47.1%</td>
<td>24</td>
</tr>
<tr>
<td>After a week</td>
<td>29.4%</td>
<td>15</td>
</tr>
<tr>
<td>Within a month</td>
<td>19.6%</td>
<td>10</td>
</tr>
<tr>
<td>Within two months</td>
<td>2.0%</td>
<td>1</td>
</tr>
<tr>
<td>Still not familiar yet</td>
<td>2.0%</td>
<td>1</td>
</tr>
<tr>
<td>Answered question</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Skipped question</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
The information in Table 16 and Figure 17 above suggests that many students were familiar with Moodle straight from the beginning. Going back to the question in section 4.2.2, a question was asked to respondents about if they have used Moodle before, over half of the participants suggested that they have used Moodle before. This is why again, most respondents to this question suggest that they were familiar with Moodle straight from the beginning. The information also suggests that many respondents become familiar with Moodle by experimental trial and error. Only one person suggested that they still have problems using Moodle, this can be because they did not have enough time to attend the training.

- **Students’ responses – Focus group**

<table>
<thead>
<tr>
<th>How long did it take you to be familiar with Moodle?</th>
<th>Nº of participants who were familiar…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strait from the start</td>
<td>1</td>
</tr>
<tr>
<td>After a week</td>
<td>5</td>
</tr>
<tr>
<td>Within a month</td>
<td>1</td>
</tr>
<tr>
<td>Still not familiar</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

Table 17. Familiarity with Moodle

The information in Table 17 above indicates that the focus group responses are similar to the online answers.

- **Lecturers responses - Interview**

Figure 18 below shows that all the three lecturers have adapted to Moodle at different times. One lecturer adapted straight from the beginning, another one after a week and another one within a month. By comparing data provided by students in Table 17 above and lecturers in Figure 18 below, it indicates that the adoption of Moodle is more or less the same within the two groups.
• Can you tick the appropriate box to express to which level do you agree or disagree with the following statements?

Students Responses – Questionnaire

Table 18. What students think about Moodle’s help?

Figure 19 below is a bar chart summary of the information in Table 18 above. The information in Table 18 above and Figure 19 below suggests that most of students have agreed with all the 7 statements while few students disagree with them. This suggests that Moodle is useful to many students, but at the same time Moodle cannot cover the need of all students. The first statement on this question, was very important to students as well as to the faculty.
Figure 19. What students think about Moodle’s help?

**Statement 1**

“Moodle is meeting my learning needs of the course”

- **Students’ responses – Questionnaire**

![Diagram showing student responses to Moodle's help]

Figure 20. Moodle is meeting learning needs
This question in Figure 20 above was very crucial because the purpose of an LMS is to help students to gain access to learning materials as well as to different number of activities such as online quizzes, assessments and forums as describe by Kulshrestha & Kant, 2013 in section 2.3 in the above notes.

Figure 20 above shows that all respondents have agreed with this question apart from 2 participants who suggested that it was not applicable. There is not a clear explanation of why these two participants did not disagree or agree with the statement since it was a multiple choice question only. Based on this circumstance in this particular situation, a conclusion can be drawn up that since no one disagreed with this question, it means that Moodle is the right LMS for Cardiff Metropolitan. Even students who had struggle using Moodle, but acknowledge that Moodle meet their needs for the course.

**Statement 2**

“Using Moodle has enhanced my knowledge and my understanding abilities of lectures, tutorials and presentations”

**Students’ responses – Questionnaire**

![Moodle Enhanced Knowledge and Understanding Abilities](image)

Figure 21. Moodle enhanced knowledge and understanding abilities

Figure 21 above indicates that 7 respondents strongly agree, 20 respondents agree and 15 respondents somewhat agree, which showed that almost all respondents believe that Moodle is helping them to improve their learning performance or somewhat helping them.

**Statement 3**

“Moodle facilitates group work”

**Students’ responses – Questionnaire**

Figure 22 below shows that the statement was not completely agreed by most respondents. Even though the number of respondents who have agreed with this statement is higher than the number of respondents have disagreed, still the number of respondents who have differed is also higher compared to other statements. This
suggests that Moodle doesn’t completely help group work or some students haven’t used this feature at all. Even though this question doesn’t correlate with other questions, still it was an important question to be included in this study.

Jacobs and his colleagues suggest that the aim of using a forum is to set the basis of a pedagogical innovation in education with the expectancy of students to be able to get help and ideas from other students. The assumption of this method is to allow students to have a better acquiring of course works as well as getting them ready for work with a reliable academic broad-minded knowledge, which can be used in different areas (Hamzeh, Farook & Jacobs, 2010).

![Moodle facilitates group work](image)

Figure 22. Moodle facilitates group work

Many authors, including Topping, Ehly, Ghosh and Kleinberg believe that if a forum is used correctly, it will offer more than just being a tutors’ tool for transmitting information to students. A forum can be beneficial in various ways including allowing students to support each other through cooperative studying and also it has been proven in research that forums can offer students lots of education advantages (Topping & Ehly, 1998).

From the information coming from the two sources above, a conclusion can be made that a forum is a valuable feature that Moodle possesses and universities should encourage students to use it regularly.

**Statement 4**

“Assessments and tests posted on Moodle have helped me improve my understanding of course materials”

- **Students’ responses** – Questionnaire
Figure 23. Importance of assessments and test delivered in Moodle

Figure 23 above suggests that many respondents have agreed that the use of assessments and tests on Moodle have helped them to gain a better understanding of the course materials. A small number of respondents thought that it was not true, but still the agreed number is higher. Therefore, a conclusion can be drawn that this statement was agreed by most of the respondents.

**Statement 5**

“I am happy using Moodle as part of my educational support”

- **Students’ responses – Questionnaire**

Figure 24. Students are happy using Moodle

Figure 24 above indicates that almost all respondents agree with this statement, which means again that Moodle is the right LMS for Cardiff Metropolitan. Only two respondents disagree with this statement even though almost all respondents have
agreed with statement 1. This may suggest that these two participants have accepted Moodle because is the only choice. To be categorically sincere, it is logically impossible to meet every individual student’s need. A sensible conclusion can be drawn from this situation that since the statement 1 was one of the most crucial statement, this means it had to somehow cover this statement too.

- **Students’ responses – Focus group**

<table>
<thead>
<tr>
<th>Nº of participants who think that….</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
<tr>
<td>May be</td>
<td>1</td>
</tr>
<tr>
<td>Depending on the situation</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 19. Students are happy using Moodle

- **Lecturers responses - interview**

Lecturers were asked the same question, but in a different way as shown Table 20 below.

<table>
<thead>
<tr>
<th>Are you happy to keep using Moodle?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Answer Options</td>
<td>Response percentages</td>
</tr>
<tr>
<td>Yes</td>
<td>40%</td>
</tr>
<tr>
<td>Not helpful at all</td>
<td>0%</td>
</tr>
<tr>
<td>May be</td>
<td>20%</td>
</tr>
<tr>
<td>Depending on the situation</td>
<td>0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Date</th>
<th>Other (please specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mar 16, 2016 10:57 AM</td>
<td>But don't have a choice. It is mandatory</td>
</tr>
<tr>
<td>2</td>
<td>Apr 1, 2016 10:57 AM</td>
<td>I have no choice</td>
</tr>
</tbody>
</table>

Table 20. What lecturers think of Moodle?

Table 20 above shows that two lecturers suggested that they were happy using Moodle and one said maybe. Also two of them have commented that they do not have a choice. This question cannot really be compared to the answers gave by students, this is because students were not given comment choice, so they were not able to make any comment to this question.

**Statement 6**

“I would like more tools and resources on Moodle for more support with my learning experiences”

- **Students’ responses – Questionnaire**
Figure 25. Moodle need tools and resources

Figure 25 above indicates that more respondents have agreed with this statement. In the meanwhile, this also caused a bit of contradiction to statements 1, 2 and 5. Students agreed with these three statements that suggested that Moodle meets their course needs, helps them to improve their performance and that they were happy using Moodle. A conclusion can be drawn from this situation that Moodle is a correct choice LMS for many respondents, but its features can be improved further in order to provide more assistance and to meet the need of all students.

- **Lecturers responses – Interview**
The question above was asked to lecture into two questions, which including:

- **What do you like about Moodle? Please specify in the box below**

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Date</th>
<th>If yes, please specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mar 23, 2016 12:50 PM</td>
<td>Not much, but can be used in a basic format</td>
</tr>
<tr>
<td>2</td>
<td>Mar 31, 2016 12:50 PM</td>
<td>Ease of use, including handling assignment marking, being able to see when students access files and drag and drop facilities</td>
</tr>
<tr>
<td>3</td>
<td>Apr 1, 2016 12:50 PM</td>
<td>Neither helpful nor not helpful. Too many options. Choices limited to the template. Moodle has a better appearance than Blackboard</td>
</tr>
</tbody>
</table>

Table 21. Advantages of Moodle

The information in Table 21 above indicates that lecture number 1 suggests that they use Moodle in a basic way. This means they cannot provide a lot of information regarding Moodle. The lecture number 2 suggested that Moodle is easy to use and lecture number 3 believe that Moodle has a better appearance than Blackboard.

- **What would you like to be changed about Moodle?**

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Date</th>
<th>If yes, please specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mar 23, 2016 12:50 PM</td>
<td>Make it more intuitive</td>
</tr>
</tbody>
</table>
Table 22. What need to be improved in Moodle?

In Table 22 above, all lecturers have provided information on the things that they Moodle to improve such as being intuitive, being able to provide feedback video and audio on the assessments. In additional, another lecturer suggests that it will be better if they could be able to including external stylesheet into Moodle and also if Moodle could be accessed from different browsers.

By comparing the responses of students in Table 20 and Figure 25 above with the lecturer’s answer in Table 21 and Table 22, it indicates that both lecturers and students shared the same views on adding more tools and resources in Moodle.

Statement 7

“I believe that Moodle can help me be a better student”

▶ Students’ responses – Questionnaire

Figure 26. Role of Moodle in student’s performances

Figure 26 above indicates that most of the respondents agree that Moodle can help them to be very good in their studies. Few respondents have disagreed with this statement. This statement is a little bit similar to the statement 2 above, but the difference is in the respondents’ responses. The information in Figure 21 above,
indicates that the number of strongly agreed was a bit low compared to the information in Figure 26 above.

- **Students' responses – Focus group**

From the information provided in Table 23 and Figure 27 below suggest that focus group participants have agreed with many statements, including that Moodle is meeting the learning needs, Moodle has enhanced knowledge, and Moodle is being used effectively and they are happy using Moodle. On the other hand, participants have also agreed with the statement, which suggest that more tools and resources on Moodle can be increased.

7) **To which extend do you agree or disagree with the following statements:**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Somewhat agree</th>
<th>Not Applicable</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Moodle is meeting my learning needs of the course</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Using Moodle has enhanced my knowledge and my understanding abilities of lectures, tutorials and presentations.</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Moodle is used in a very limited way on my course</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Moodle facilitates group work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Assessments and tests posted on Moodle have helped me improve my understanding of course materials</td>
<td>1</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) Moodle is a one-stop for all my study needs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g) Moodle is being used effectively in my course</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h) I am happy using Moodle as part of my educational support</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) I would like more tools resources on Moodle for more support with my learning experiences</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 23 Moodle statement answers focus group
Are you aware of the Moodle help button, on top of your Moodle page?

Students’ responses – Questionnaire

Table 24 below is showing the responses in percentages and the number.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>39.1%</td>
<td>18</td>
</tr>
<tr>
<td>No</td>
<td>56.5%</td>
<td>26</td>
</tr>
<tr>
<td>If no (please specify)</td>
<td>4.3%</td>
<td>2</td>
</tr>
</tbody>
</table>

Answered question 46  
Skipped question 6

<table>
<thead>
<tr>
<th>Number</th>
<th>Response Date</th>
<th>If no (please specify)</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mar 23, 2016 12:16 PM</td>
<td>Never used</td>
<td>Didn't know there was one</td>
</tr>
<tr>
<td>2</td>
<td>Mar 16, 2016 11:02 AM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 24. Aware of Moodle help button
The information from Table 24 and Figure 28 above had helped in understanding the problem that some students still facing with Moodle. Since over a half of respondents suggested that they have never noticed the Moodle help button. It means, if this button was noticeable, students who had or still have problems could have got help and overcome their barriers in the use of Moodle.

### Students’ responses – Focus group

<table>
<thead>
<tr>
<th>Are you aware of the Moodle help button, on top of your Moodle page?</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No (if no, please specify below)</td>
</tr>
<tr>
<td></td>
<td>Not visible</td>
</tr>
<tr>
<td></td>
<td>Less attracting</td>
</tr>
<tr>
<td></td>
<td>Never seem to catch my eye</td>
</tr>
<tr>
<td></td>
<td>Never need help</td>
</tr>
</tbody>
</table>

Table 25. Aware of Moodle help button

The focus group information in Table 25 above suggested that all participants have never noticed the Moodle help button. The responses to this question have covered the fact that some Moodle users have experienced problems or still experiencing problems using Moodle.

### Lecturers’ responses – Interview
The information in Table 26 indicates that two out of three lectures stated that they are aware of Moodle help button, which is totally different from students’ answers. It’s difficult to know why there is a disagreement between the two groups of participants, again this can be due to the fact that students and lecturers have different experiences of using Moodle. Lecturers were also asked another question in relation to this question, which is shown in the Table 27 below.

### Lecturers’ responses – interview

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response percentages</th>
<th>Responses account</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very reliable</td>
<td>20%</td>
<td>1</td>
</tr>
<tr>
<td>Reliable</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Never use it</td>
<td>20%</td>
<td>1</td>
</tr>
<tr>
<td>Not helpful at all</td>
<td>20%</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 27. How helpful is the information from help button?

The answers in Table 27 above consist of mix responses. This is because one lecturer said that the information they get from the help button was reliable. Another lecturer stated that they never use it and another said that the information was not helpful at all.

- Which type of file format would you prefer to use in delivering lessons on Moodle?
- Student responses – Questionnaire

Table 28 below shows the responses in percentages and in numbers.

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Office Word</td>
<td>88.4%</td>
<td>38</td>
</tr>
<tr>
<td>Open office</td>
<td>14.0%</td>
<td>6</td>
</tr>
<tr>
<td>Microsoft PowerPoint Presentations</td>
<td>62.8%</td>
<td>27</td>
</tr>
<tr>
<td>Prezi Presentations</td>
<td>14.0%</td>
<td>6</td>
</tr>
<tr>
<td>Video tutorials - lecturer delivering lecture in a video</td>
<td>25.6%</td>
<td>11</td>
</tr>
<tr>
<td>Acrobat PDF</td>
<td>32.6%</td>
<td>14</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>2.3%</td>
<td>1</td>
</tr>
</tbody>
</table>

Answered question 43

Skipped question 9

Table 28. File format preferences.
Figure 29 below is showing the responses in percentages only.

Figure 29. File format preferences.

The information in the Table 27 and Figure 29 above indicates that most students preferred that lecture notes to be delivered in word processor than PowerPoint. The next preferred file format was PowerPoint and the other choices were the least preferred.

- Students’ responses – Focus group

<table>
<thead>
<tr>
<th>File Format</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Office</td>
<td>5</td>
</tr>
<tr>
<td>OpenOffice</td>
<td></td>
</tr>
<tr>
<td>PDF</td>
<td>4</td>
</tr>
<tr>
<td>Other (please specify in the box below)</td>
<td></td>
</tr>
</tbody>
</table>

Table 29. File format preferences.

The information from the focus group in Table 29 above shows that most of the participants indicated that they preferred Microsoft office and PDF. This is similar to the online questionnaire where the first choice was Microsoft office products and then PDF.

- Lecture responses – Interview

The same question as the one above was asked to lecturers, but few choices, which is shown in Figure 30 below. Most lecturers preferred to use Microsoft office this means Word and PowerPoint. Since students preferred word processor and PowerPoint, which are Microsoft products, this means that both students and lecturers preferred the same file format for lecture notes.
Did you know that you can change your Moodle profile picture or the university can do it on your behalf if want to use your ID picture on your Moodle profile?

**Student responses – Questionnaire**

Did you know that you can change your Moodle profile picture or the university can do it on your behalf if want to use your ID picture on your Moodle profile?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>71.7%</td>
<td>33</td>
</tr>
<tr>
<td>No</td>
<td>28.3%</td>
<td>13</td>
</tr>
</tbody>
</table>

Answered question 46
Skipped question 6

Table 30 Moodle profile picture changing
The answers to the question in Table 30 and Figure 31 above, doesn’t produce a controversy to the question in the above notes about the awareness of Moodle help button, but has exposed an interesting matter to the study. This is very fascinating because, almost three quarters of respondents are aware of changing their picture on their Moodle profile and why they not aware of Moodle button. A conclusion can be made that students are doing their best to familiarise themselves with. Since they are able to know that Moodle profile picture can be changed.

**What types of device do you use to access Moodle?**

- **Students’ responses – Questionnaire**

<table>
<thead>
<tr>
<th>What types of device do you use to access Moodle? (You can tick more than one.)</th>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computer</td>
<td>58.7%</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Laptop</td>
<td>93.5%</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Tablet</td>
<td>30.4%</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Mobile phone</td>
<td>65.2%</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Smart TV</td>
<td>2.2%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Smart 4K TV</td>
<td>2.2%</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Answered question** 46

**Skipped question** 6

Table 31. Devices use to access Moodle
The information in Table 31 and Figure 32 above indicates that many respondents use laptops, desktop computers and mobile phones to access Moodle. A small number of respondents use a tablet and few respondents use smart TV and smart 4K TV to access Moodle.

- **Students’ responses – Focus group**

<table>
<thead>
<tr>
<th>Devices</th>
<th>Nº of participants who use.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computer</td>
<td>5</td>
</tr>
<tr>
<td>Laptop</td>
<td>6</td>
</tr>
<tr>
<td>Tablet</td>
<td>5</td>
</tr>
<tr>
<td>Mobile phone</td>
<td>5</td>
</tr>
<tr>
<td>Smart TV</td>
<td>0</td>
</tr>
<tr>
<td>Smart 4K TV</td>
<td>0</td>
</tr>
</tbody>
</table>

The information in Table 32 above, is more or less the same to the information in Figure 32. A conclusion can be made that most respondents use laptops and mobiles, which means that Moodle should be designed to meet large and small screens. To be more specific, laptops have different screen sizes and this can be hard to determine the sizes of screen that every student use. Thus, the design of Moodle should to be focused more on small screen devices as large screen devices can easily access any site.

- **Do you have the need to use a translator to translate your notes to your own language?**

- **Students’ responses – Question**

**Do you have the need to use a translator to translate your notes to your own language on Moodle?**

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Computer</td>
<td>5%</td>
<td>10</td>
</tr>
<tr>
<td>Laptop</td>
<td>10%</td>
<td>20</td>
</tr>
<tr>
<td>Tablet</td>
<td>20%</td>
<td>40</td>
</tr>
<tr>
<td>Mobile phone</td>
<td>30%</td>
<td>60</td>
</tr>
<tr>
<td>Smart TV</td>
<td>40%</td>
<td>80</td>
</tr>
<tr>
<td>Smart 4K TV</td>
<td>50%</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure 32. Devices use to access Moodle
Table 33. Have a translator on Moodle

<table>
<thead>
<tr>
<th>Answered question</th>
<th>Skipped question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>13.0%</td>
</tr>
<tr>
<td>No</td>
<td>87.0%</td>
</tr>
</tbody>
</table>

Table 33. Have a translator on Moodle

Figure 33. Have a translator on Moodle

The information from Table 33 and Figure 33 above suggests that only few people have need to have a translator to translate the notes on Moodle. This indicates that none English first language speakers will benefit from a translator to understand messages that are posted on Moodle such as announcements.

- Overall, how would you score Moodle from the experience that you have as a Moodle user, from 0 to 10? 0 being very bad and 10 for excellent.

**Students' responses – Focus group**

<table>
<thead>
<tr>
<th>No of participants</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Table 34. Moodle score – focus group

**Lecturers responses – Interview**

<table>
<thead>
<tr>
<th>No of participants</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 35. Moodle score – interview

The score of 5 in both Table 34 and Table 35 above, can be considered as in between not good nor bad either. This means that these respondents may not be
happy with Moodle, but still there are points that are beneficial to them. Many respondents have given Moodle a score between 6 and 10, this indicates that Moodle is a good LMS for Cardiff Metropolitan.

Chapter 5 – Conclusion

5.1. Conclusion

The use of triangulation of data collection methods has allowed this study to get an effective understanding of challenges and opportunities of using Moodle from different perspectives. The purpose of this study was to investigate the challenges and opportunities of using Moodle at Cardiff Metropolitan by students and Lecturers. Overall the results indicate that there are more opportunities than challenges. This was also proven by Chewa and Chitumbo, 2012 in section 2.6 in the notes above. One major point that could help overcome challenges in the use of Moodle at Cardiff Metropolitan is the help button, which is where Moodle users can get help quickly and it was not noticeable by many users. Based on the results of this study, the following detailed conclusions are drawn:

5.2. General questions

The general questions, which is section 4.3.2 included in the study in order to get more information about the background beliefs of respondents. The information indicates that many respondents are happy with their chosen course, which they can benefit more from university facilities in general. This statement backs the argument of Alkhanak and Azmi in section 2.3 opportunities of using Moodle in education in the notes above.

The information also suggests that many respondents have positive views toward online learning and over a half of online respondents and few from focus group have used Moodle before. This has supported the information provided by Lytras & Corti, 2012 in section 2.5 Moodle Background history in the notes above.

5.3. Questions relating to course delivery online materials

Section 4.3.3 was included in the study in order to understand how respondents access Moodle and what they believe to be their priority in term of accessing course materials. Also, this information collected from this section was meant to help the investigation to find out more different of barriers to the use of Moodle.

Most respondents have prioritised the course news and announcement, course information, submitting course work, tutorial and lecture notes. Group work tasks/ collaborating with other students on projects was given a lower priority, which is one of the negative ways in using Moodle. Students should be encouraged to interact with one another through Moodle as this will help them improve their learning ability
by taking part in discussions and posting questions related to course work as suggested by Zakaria & Daud, 2013, Anderson, 2004 and Hamilton, 2009 in section 2.6 in the note above.

The results indicate that many respondents preferred to access lecture notes after the section has a past and a large number of respondents use Moodle 2 to 4 times per day while the majority use Moodle 2 to 4 times per week. A more interest fact that was discovered in this section was that 1/3 of online respondents use Moodle to read the lecture notes during revision time only. This means that it is not going to be possible for these students to overcome problems that they have in using Moodle.

Another impressive fact that was found out was, that 40% of online respondents read notes aloud. Hatano suggests that reading aloud provide the ability to improve reading skills. This practical knowledge, it is used unintentionally subject to how it was adapted. This is a skill gain via the influence of a difference expertise (Hatano, 1988).

The information from this section also indicates that the majority of respondents preferred to have 15-20 slides per lecture. Also a majority number of respondents are willing to attend lectures, tutorials and seminars while one third of respondents preferred to study online through the use of Moodle. This mix of preference on types of learning style, support Fadde & Vu, 2014 argument in the section in 2.2 Potential LMS use in education. In additional, most respondents indicated that they preferred to have images and diagrams in the lecture notes.

5.4. Questions on the usage of Moodle

The questions on the usage of Moodle section 4.3.4 were meant to answer the main topic of this dissertation. The results indicated that most of online respondents were familiar with Moodle straight from the start while in the focus were familiar after a week and with lecturer each of the three become familiar at different times. This why one the lecturer said they have become familiar with Moodle by the experimental trial and error. The result in this section indicates that respondents have agreed that Moodle facilitates group work, which was a bit of a contradiction to the information collected from section 4.3.2. Respondents suggest that they access Moodle more for other activities than group work. A logical conclusion can be made even though they access other activities more than accessing for group work, but the real fact is that they believe that Moodle has enabled them to do group work. This means that respondents are gaining the full advantage of Moodle as stated by Zakaria & Daud, 2013 and Hamilton, 2009 in section 2.6 opportunities of using Moodle in education in the notes above.

A majority number of respondents stated that they have never noticed Moodle help button and few of respondents who have noticed the Moodle help button some of them have never used it and one respondent stated that the information from the Moodle help button was not helpful at all. So far, this was one thing that may be contributing in problems that Cardiff Metropolitan Moodle users are still having. If users become more aware of the Moodle help button therefore, they will know where to go when they have a problem related to use of Moodle.
The result in this section indicates that many respondents use different types of devices to access Moodle, but the most used are laptops and mobile phones. This information has proven Adayana, 2015 and McIntosh, 2016 arguments to be right on the use of mobile by students in section 2.5 Moodle Background history in the notes above. A small number of respondents indicated that they will benefit from having a translator tool in Moodle. This can be considered as a part of the tools that Moodle needs to improve in order to support students with their study’s needs. In additional, many respondents favoured course materials to be delivered in Microsoft file format such as Word and PowerPoint while 25% of respondents preferred PDF.

The information from this section, it indicates that both lecturers and students who have taken part in this study have given Moodle a good score, which was between 5 + 10. This proves that Moodle is a right LMS for Cardiff metropolitan and this has also supported the arguments of Chew & Chitumbo, 2012 to be right in section 2.5 Moodle Background history and also Lopes, 2011 and Daoud, 2007, pp. 205-210; Goyal & Tambe, 2015 in section 2.9 Moodle as a designated LMS for Cardiff Metropolitan in the notes above.

5.5. Recommendations

- The use of Moodle’s forums, wikis and group work should be encouraged by Cardiff metropolitan in order to stimulate students to reach their potential needs and to have the habit of using these facilities. A similar advice is given by Senge, 1990; Earle, 2002 in the section 2.9 Moodle as a designated LMS for Cardiff Metropolitan in the notes above.

- More training should be given to lecturers as well as students in order to reinforce the change and support the new innovation as stated by Senge, 1990; Earle, 2002 in the section 2.9 Moodle as a designated LMS for Cardiff Metropolitan and by Hamilton, 2009 and Lwoga & Sanga, 2007 in section 2.8 strategies to overcome Moodle challenges in the notes above.

- Promoting of Moodle functions should be one of the main priorities in order to help lecturers and students to overcome barriers in using Moodle. This can be done by using a slideshow, which shows different Moodle functions on top of the Moodle landing page more reasonable advice on the use of new technology is given by Hativa & Lesgold, 1996 and Roueche, John, Baker and Rose, 2014 in section 2.8 strategies to overcome Moodle challenges in the notes above.

- Finally, this was a small study and was completed by a limited to a number of university students and lecturers who have dedicated their time to answer the study questions. Being that there have been many studies have already done on this subject, but a university should not rely on these secondary data as each research is conducted to be used for a particular organisation and for a specific geographic environmental requirement. Therefore, it is very important that each university conduct their own research and a very truthful and reliable research before deciding upon introducing a new LMS. This was a very important study topic, which could have provided crucial information that was supposed to be helpful for Cardiff Metropolitan. Future research that could be done are:

I. There is a need of conducting a large scale study of different types of open source learning management systems on the market that can be used by universities apart from Moodle.
II. Further research can be done get opinions of students from different universities within a particular city on the use of learning management systems in term of effectiveness and the weakness of the software.

III. In addition, there is a need to find out how students use group work, wiki and forum within learning management systems in various universities. The focus of this study can be based on how students are motivated, interact, collaborate and improve their academic skills.

Chapter 6 – References

6.1. References


Dede, 1999. Constructivism in the classroom: If I teach this way am I doing my job?. *Learning and Leading with Technology*, 6(9), p. 27.


Dong, 2008. *Challenges and Opportunities in Migrating to Web-based Information*, JÖNKÖPING: JÖNKÖPING UNIVERSITY.


Educause, 2014. *ECAR Study of Undergraduate Students and Information Technology*, Louisville: EDUCAUSE.


Kennedy, 2005. *Challenges in evaluating Hong Kong studentsí perceptions of Moodle*, Hong Kong: Kennedy.


McIntosh, 2016. Vendors of Learning Management and E-learning Products, Coquitlam: Trimeritus eLearning Solutions Inc..
Moeller & Reitzes, 2011. integrating technology with student-centered learning, Quincy: Nellie Mae Education Foundation.
Moodle, 2016. We think Moodle, all day, every day.. [Online] Available at: https://moodle.com/hq/ [Accessed 26 Feb 2016].

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List of abbreviations

<table>
<thead>
<tr>
<th>Full sentence</th>
<th>Abbreviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information communication technology</td>
<td>ICT</td>
</tr>
<tr>
<td>Learning management systems</td>
<td>LMS</td>
</tr>
<tr>
<td>Blended online learning</td>
<td>BL</td>
</tr>
<tr>
<td>web-based information services</td>
<td>WBIS</td>
</tr>
</tbody>
</table>

Glossary

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedagogy</td>
<td>The process and method of tutoring, particularly as an educational topic or a hypothetical thought (OxfordDictionaries, 2016)</td>
</tr>
<tr>
<td>comprehension</td>
<td>Being able to understand clearly (merriam-webster, 2016).</td>
</tr>
<tr>
<td>deliberated</td>
<td>Delicately valued or measured; intentional; planned (dictionary.com, 2016).</td>
</tr>
<tr>
<td>The Net Generation</td>
<td>It is an age group of young people born between 1982 and 1991 who have grown up in an environment in which they are constantly exposed to computer-based technology. (Sandars &amp; Morrison, 2007)</td>
</tr>
</tbody>
</table>
7. Appendix
A. Ethics approval form
CARDIFF METROPOLITAN UNIVERSITY
APPLICATION FOR ETHICS APPROVAL

When undertaking a research or enterprise project, Cardiff Met staff and students are obliged to complete this form in order that the ethical implications of that project may be considered.

If the project requires ethics approval from an external agency (e.g., NHS), you will not need to seek additional ethics approval from Cardiff Met. You should, however complete Part One of this form and attach a copy of your ethics letter(s) of approval in order that your School has a record of the project.

The document Ethics application guidance notes will help you complete this form. It is available from the Cardiff Met website. The School or Unit in which you are based may also have produced some guidance documents, please consult your supervisor or School Ethics Coordinator.

Once you have completed the form, sign the declaration and forward to the appropriate person(s) in your School or Unit.

PLEASE NOTE:
Participant recruitment or data collection MUST NOT commence until ethics approval has been obtained.

PART ONE

Name of applicant: Corinne Ngandu
Supervisor (if student project): Dr Pancos Georgiades
School / Unit: CSM
Student number (if applicable): St20042296
Programme enrolled on (if applicable): Business Information Systems BSc Hons
Project Title: Challenges and Opportunities of using Web-based Information Services in higher education: Students and Lectures perspective of Moodle.
Expected start date of data collection: 20th Feb 2016
Approximate duration of data collection: 4 weeks
Funding Body (if applicable): N/A
Other researcher(s) working on the project: None
Will the study involve NHS patients or staff? No
Will the study involve taking samples of human origin from participants? No

Does your project fall entirely within one of the following categories:
- Paper based, involving only documents in the public domain No
- Laboratory based, not involving human participants or human tissue samples No

Application for ethics approval v4 March 2015
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Practice based not involving human participants (e.g. curatorial, practice audit) | No
Compulsory projects in professional practice (e.g. Initial Teacher Education) | No
A project for which external approval has been obtained (e.g., NHS) | No

If you have answered YES to any of these questions, expand on your answer in the non-technical summary. No further information regarding your project is required.
If you have answered NO to all of these questions, you must complete Part 2 of this form

In no more than 150 words, give a non-technical summary of the project

The dissertation will be to investigate web-based information services that are currently being in use at Cardiff metropolitan, in particular Moodle. Since Moodle is a central of learning materials distributed to students and submission of assignments. Research data will be collected from students and lectures using questionnaire forms.

The purpose of the research is to find out views of participants on the use of Moodle as a web-based information services. Various literatures will be investigated and analysed to find out the views from different Moodle users from other institutions. Different viewpoints from students and lectures from Cardiff metropolitan will be analysed to get a better understanding of any problem that is affecting end users in using Moodle in term of navigation and accessibility. Once all the data is collected and analysed, then a common summarisation will be drawn to answer general problems that are effecting all Moodle users.

DECLARATION:
I confirm that this project conforms with the Cardiff Met Research Governance Framework
I confirm that I will abide by the Cardiff Met requirements regarding confidentiality and anonymity when conducting this project.

STUDENTS: I confirm that I will not disseminate any material produced as a result of this project without the prior approval of my supervisor.

Signature of the applicant: [Signature] Date: 19/01/2016
FOR STUDENT PROJECTS ONLY
Name of supervisor: Panicos Georgiades
Date: 20/02/2016
Signature of supervisor: PGeorgiades

Research Ethics Committee use only

Application for ethics approval v4 March 2015
PART TWO

A RESEARCH DESIGN

A1 Will you be using an approved protocol in your project?  No
A2 If yes, please state the name and code of the approved protocol to be used
No Applicable
A3 Describe the research design to be used in your project

This research will follow interpretivism approach due to the fact that data will be collected through questionnaires, interviews and focus groups. The collected data, will then be analysed to get a clear understanding of different viewpoints of participants. The information needed for this research will be collected from a limited number of Cardiff Metropolitan students and lectures, therefore strategy for this research is an inductive method. Primary data will be collected using questionnaire, which I will construct from my own experience as Moodle user and from different literatures. The questions will be distributed electronically via email and physically to students and lectures whenever it’s possible due to time limitation.

The sampling techniques that will be used for this research is a purposively sampling. This is because the research will be conducted only to a group of students, in particular to post graduates students and lectures as they may be able to answer all the questions. In order to get a good understanding of the research questions it will be favourable to have at least 50 participants. The focus group will take place with students who will volunteer to participate in the research. Data will be analysed using both quantitative and qualitative techniques as some data will be analysed in text and other data will be represented in graphs for an effective understanding by readers.

The collected data will be securely stored by myself. The electronic version will be stored in two different USBs, on my personal laptop and on One Drive, which can only be accessed with a password. Questionnaire forms will be stored in a secure location in my house where no one else has access but I. No name, date

---

1 An Approved Protocol is one which has been approved by Cardiff Met to be used under supervision of designated members of staff; a list of approved protocols can be found on the Cardiff Met website here
CARDIFF METROPOLITAN UNIVERSITY
APPLICATION FOR ETHICS APPROVAL

of birth or identity number will be collected from participants for the use of this research. Before starting
the interview participants will be given the consent forms to inform of their right in taking the survey.

<table>
<thead>
<tr>
<th>A4 Will the project involve deceptive or covert research?</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>A5 If yes, give a rationale for the use of deceptive or covert research</td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>A6 Will the project have security sensitive implications?</td>
<td>No</td>
</tr>
<tr>
<td>A7 If yes, please explain what they are and the measures that are proposed to address them</td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

B PREVIOUS EXPERIENCE

B1 What previous experience of research involving human participants relevant to this project do you
have?
None

B2 Student project only
What previous experience of research involving human participants relevant to this project does your
supervisor have?
Over 20 of student dissertation and research at both undergraduate and postgraduate level.

C POTENTIAL RISKS

C1 What potential risks do you foresee?

1. Not being able to reach the expected number of participants.
2. Not getting all questionnaire forms back on time.
3. Risks of not meeting the research deadline.
4. Not getting honest opinions, if responders are not interested in the topic or not serious about the
   topic.
5. Sickness and other family occupations.

C2 How will you deal with the potential risks?

1. To ensure that I have got my expected number of participants, I have to use different types of
   interviews, including questionnaire forms, interviews and focus groups.
2. To make sure that I collect all questionnaire forms, it will be wise to do more focus groups as it is
   easier to collect the forms straight after the meeting.
3. I have divided the days of the week to work on different assignments in order not to miss the
   dissertation deadline.
4. To make sure that participant takes this serious I have included a few explanations about the
   research on top of the questionnaire forms. I will also have to read this again to participant
   before starting the focus group about the purpose of this research.
5. When it comes to sickness, it is something that I can’t control or avoid. As a mother, my first
   obligations is look after my family, but I can manage other problems such as babysitting and
   hospital appointments with friends and family to help me with.
CARDIFF METROPOLITAN UNIVERSITY
APPLICATION FOR ETHICS APPROVAL

When submitting your application, you **MUST** attach a copy of the following:

- All information sheets
- Consent/assent form(s)

An exemplar information sheet and participant consent form are available from the Research section of the Cardiff Met website.
B. **Online questionnaire**

Challenges and Opportunities of using Web-based Information Services in higher education: Students and lecturers’ perspective of Moodle.

I am a final year student at the Cardiff School of Management. The aim of my research is to investigate the difficulties that Moodle users faced when using Moodle for their general educational purpose. Please complete each question by ticking the appropriate box and also any comment is welcome as it will provide more understanding of Moodle. At the end of the questionnaire, you will be asked to submit your responses. Submission will be taken as voluntary informed consent. All your responses are confidential and will only be used for the purposes of this research. Thank you in advance for taking the time to complete this survey.

Corinne Ngandu  
Cardiff School of Management  
Cardiff Metropolitan University  
Llandaff Campus, Western Avenue,  
Cardiff, CF5 2YB

1) What is your gender?  
☐ Female  ☐ Male

2) What is the main reason of your subject choice?  
☐ Interested in it  
☐ Career prospects  
☐ There were no other better choices  
☐ Don’t know

3) Do you have any work experience in your area of study already?  
☐ Yes, a lot  
☐ a little  
☐ None

4) What is your general perception of accessing online services for education purposes?  
☐ Very negative  
☐ Rather negative  
☐ Neither positive nor negative  
☐ Very positive  
☐ Rather positive

5) Have you used Moodle before as part of your previous education?  
☐ yes  ☐ No

6) As part of your course needs, can you tick the appropriate boxes to indicate the purpose why you access Moodle?  
☐ Lecture notes  
☐ Tutorial notes  ☐ Submitting course work
☐ Testing yourself using quizzes  ☐ Group work tasks/ collaborating with other students on projects
☐ Contacting lectures  ☐ accessing for past papers
☐ Course information  ☐ Course news and announcement
☐ Maintaining my e-portfolio or blog  ☐ watching video and listening to podcasts

7) Can you tick the appropriate box below to indicate how often do you access Moodle per week?
☐ More than 4 times a day
☐ 2-4 times a day
☐ Once a day
☐ 2-4 time a week
☐ Once per week
☐ Once a month

8) Can you tick the appropriate box below to indicate your preferred time that you access lecture notes?
☐ before lecture
☐ After lecture
☐ For revision only

9) How long did it take you to be familiar with Moodle?
☐ Straight from the start
☐ After a week
☐ Within a month
☐ Within two months
☐ Still not familiar
10) Can you tick the appropriate box to express to which level do you agree or disagree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Somewhat agree</th>
<th>N/A</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moodle is meeting my learning needs of the course</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using Moodle has enhanced my knowledge and my understanding abilities of lectures, tutorials and presentations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle facilitates group work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessments and tests posted on Moodle have helped me improve my understanding of course materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am happy using Moodle as part of my educational support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would like more tools resources on Moodle for more support with my learning experiences</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I believe that Moodle can help me be a better student</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11) Are you aware of the Moodle help button, on top of your Moodle page?

☐ Yes  ☐ No (if no, tick a box for your reason below)

☐ Less attracting  ☐ Never seem to catch my eye  ☐ Never need help

12) Did you know that you can change your Moodle profile picture or the university can do it on your behalf if want to use your ID picture on your Moodle profile?

☐ Yes  ☐ No

13) What types of device do you use to access Moodle?

☐ Desktop Computer  ☐ Laptop  ☐ Tablet  ☐ Mobile phone  ☐ Smart TV  ☐ Smart 4K TV
14) Which types file format would you prefer Moodle notes to be delivered in? You can tick more than one.
- Microsoft Office Word
- Open Office
- Microsoft PowerPoint Presentations
- Prezi Presentations
- Video tutorials - lecturer delivering lecture in a video
- Acrobat PDF
- Other (please specify in the box below)

15) Do you have the need to use a translator to translate your notes to your own language?
- Yes
- No

16) Do you read your lecture notes out loud to yourself?
- Yes
- No

17) What would prefer to be included in the lecture notes?
- Images
- Animations
- Diagrams

18) Can you enter in the box below the number of slides do you prefer to have per lecture note?

19) Can you ticket below to indicate types of learning materials that do you prefer to have?
- Lectures
- Seminars
- Tutorials
- Study at home using Moodle/internet

Any comment
C. **Individual interview**
Challenges and Opportunities of using Web-based Information Services in higher education: Students and lectures perspective of Moodle.

I am a final year student at the Cardiff School of Management. The aim of my research is to investigate the difficulties that Moodle user faced when using Moodle for their general educational purpose. Please complete each question by ticking the appropriate box and also any comment is welcome as it will provide more understanding of Moodle. At the end of the questionnaire, you will be asked to submit your responses. Submission will be taken as voluntary informed consent. All your responses are confidential and will only be used for the purposes of this research. Thank you in advance for taking the time to complete this survey.

243843144001
Corinne Ngandu
Cardiff School of Management
Cardiff Metropolitan University
Llandaff Campus, Western Avenue,
Cardiff, CF5 2YB
Tel: +44 (0)29 2041 XXX

1) What is your general perception on a blended learning?
☐ Very positive
☐ Very negative
☐ Neither positive nor negative
☐ Positive
☐ Negative

2) Apart from Moodle have you used other online learning management systems before.
☐ Yes (please state below) ☐ No

3) How long did it take you to be familiar with Moodle?
☐ Straight from the start
☐ After a week
☐ Within a month
☐ Within two months
☐ Still not familiar (can you specify it in the box below)
4) How effective would you say the Moodle navigation system is? In terms of uploading files, deleting and editing.
- Very easy
- Easy
- Alright
- Difficult
- Very difficult

5) Are you aware of Moodle help button, on top of your Moodle page?
- Yes
- No (if no, tick a box for your reason below)
- Not visible
- Less attracting
- Never seem to catch my eye
- Never need help

6) How helpful is the information you get from the help button?
- Very reliable
- Reliable
- Never use it
- not helpful at all

7) Can you briefly describe what you like about Moodle?

8) Can you briefly describe what you dislike about Moodle?

Exam

9) Which type of file format would you prefer to use in delivering lessons on Moodle?
- Microsoft office
- OpenOffice
- Video tutorial
- PDF
- Other (please specify in the box below)

10) Are you happy to keep using Moodle?
- Yes
- No
- May be
- Depending on the situation
11) Overall, how would you score Moodle from 0 to 10? 0 being very bad and 10 for excellent.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Please share any other thoughts or comments here.

D. **Focus group interview**
Challenges and Opportunities of using Web-based Information Services in higher education: Students and lectures perspective of Moodle.

I am a final year student at the Cardiff School of Management. The aim of my research is to investigate the difficulties that Moodle user faced when using Moodle for their general educational purpose. Please complete each question by ticking the appropriate box and also any comment is welcome as it will provide more understand of Moodle. At the end of the questionnaire, you will be asked to submit your responses. Submission will be taken as voluntary informed consent. All your responses are confidential and will only be used for the purposes of this research. Thank you in advance for taking the time to complete this survey.

Corinne Ngandu  
Cardiff School of Management  
Cardiff Metropolitan University  
Llandaff Campus, Western Avenue,  
Cardiff, CF5 2YB  
Tel: +44 (0)29 2041 XXX

Number of participant:
1) What is your general perception of online learning?

<table>
<thead>
<tr>
<th>Perception</th>
<th>No of participants who think that is....</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very negative</td>
<td></td>
</tr>
<tr>
<td>Rather negative</td>
<td></td>
</tr>
<tr>
<td>Neither positive nor negative</td>
<td></td>
</tr>
<tr>
<td>Rather positive</td>
<td></td>
</tr>
<tr>
<td>Very positive</td>
<td></td>
</tr>
</tbody>
</table>

2) Have you used Moodle before as part of your previous education?

Yes
No

3) How often do you access Moodle?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>No of participants who access....</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 4 times a day</td>
<td></td>
</tr>
<tr>
<td>Once a day</td>
<td></td>
</tr>
<tr>
<td>2-4 time a week</td>
<td></td>
</tr>
<tr>
<td>Once per week</td>
<td></td>
</tr>
<tr>
<td>I don’t know</td>
<td></td>
</tr>
</tbody>
</table>
4) How easy is it to access to Moodle?

<table>
<thead>
<tr>
<th>Difficulty</th>
<th>No of participants who think that was it….</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very easy</td>
<td></td>
</tr>
<tr>
<td>Easy</td>
<td></td>
</tr>
<tr>
<td>Alright</td>
<td></td>
</tr>
<tr>
<td>Very difficult</td>
<td></td>
</tr>
<tr>
<td>Difficult</td>
<td></td>
</tr>
</tbody>
</table>

5) How effective would you say the Moodle navigation system is? In terms of finding your course notes, uploading assignments and submission links.

<table>
<thead>
<tr>
<th>Difficulty</th>
<th>No of participants who think that was it….</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very easy</td>
<td></td>
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<tr>
<td>Easy</td>
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<td></td>
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<tr>
<td>Very difficult</td>
<td></td>
</tr>
<tr>
<td>Difficult</td>
<td></td>
</tr>
<tr>
<td>I don’t know</td>
<td></td>
</tr>
</tbody>
</table>

6) How long did it take you to be familiar with Moodle?

<table>
<thead>
<tr>
<th>Familiarity</th>
<th>No of participants who were familiar….</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight from the start</td>
<td></td>
</tr>
<tr>
<td>After a week</td>
<td></td>
</tr>
<tr>
<td>Within a month</td>
<td></td>
</tr>
<tr>
<td>Still not familiar</td>
<td></td>
</tr>
</tbody>
</table>
7) To which extend do you agree or disagree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Somewhat agree</th>
<th>Not Applicable</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Moodle is meeting my learning needs of the course</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Using Moodle has enhanced my knowledge and my understanding abilities of lectures, tutorials and presentations.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Moodle is used in a very limited way on my course</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>d) Moodle facilitates group work</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>e) Assessments and tests posted on Moodle have helped me improve my understanding of course materials.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) Moodle is a one-stop for all my study needs</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>g) Moodle is being used effectively in my course</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h) I am happy using Moodle as part of my educational support</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) I would like more tools resources on Moodle for more support with my learning experiences</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

8) Are you aware of Moodle help button, on top of your Moodle page?
   □ Yes  □ No (if no, please specify why)

   N° of participants who think that is:
   Not visible
   Less attracting
   Never seem to catch my eye
   Never need help

9) Did you know that you can change your Moodle profile picture or the university can do it on your behalf if want to use your ID picture on your Moodle profile?
   □ Yes  □ No
10) What types of device do you use to access Moodle?

<table>
<thead>
<tr>
<th>Device</th>
<th>No of participants who use...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop</td>
<td></td>
</tr>
<tr>
<td>Laptop</td>
<td></td>
</tr>
<tr>
<td>Tablet</td>
<td></td>
</tr>
<tr>
<td>Mobile phone</td>
<td></td>
</tr>
</tbody>
</table>

11) Which type of file format would you prefer to access on Moodle for course material?

<table>
<thead>
<tr>
<th>Format</th>
<th>No of participants who preferred...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft office</td>
<td></td>
</tr>
<tr>
<td>OpenOffice</td>
<td></td>
</tr>
<tr>
<td>PDF</td>
<td></td>
</tr>
<tr>
<td>Other (please specify in the box below)</td>
<td></td>
</tr>
</tbody>
</table>

12) Are you happy to use Moodle again in the future?

<table>
<thead>
<tr>
<th>Happiness</th>
<th>No of participants who think that...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
<tr>
<td>May be</td>
<td></td>
</tr>
<tr>
<td>Depending on the situation</td>
<td></td>
</tr>
</tbody>
</table>

13) Overall, how would you score Moodle from the experience that you have as a Moodle user, from 0 to 10? 0 being very bad and 10 for excellent.

<table>
<thead>
<tr>
<th>No of participants</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
</table>
# Dissertation Schedule

<table>
<thead>
<tr>
<th>Stage of the dissertation writing process</th>
<th>Number of days/weeks</th>
<th>Start date</th>
<th>End date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STAGE ONE: Reading and research</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Research to find a reliable practicable question</td>
<td>4 weeks</td>
<td>29-Sept-2015</td>
<td>30-Oct-2015</td>
</tr>
<tr>
<td>b) Reading and investigating into chosen topic</td>
<td>4 weeks</td>
<td>30-Oct-2015</td>
<td>27-Nov-2015</td>
</tr>
<tr>
<td><strong>STAGE TWO: The detailed plan</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STAGE THREE: Initial writing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Writing initial abstract and introduction</td>
<td>4 weeks</td>
<td>11-Dec-2015</td>
<td>11-Jan-2016</td>
</tr>
<tr>
<td>b) Reading past papers and extracting important information</td>
<td>4 weeks</td>
<td>11-Jan-2016</td>
<td>11-Feb-2016</td>
</tr>
<tr>
<td><strong>STAGE FOUR: The first draft</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Compile sections into the first draft of the dissertation</td>
<td>2 weeks</td>
<td>11-Feb-2016</td>
<td>25-Feb-2016</td>
</tr>
<tr>
<td>b) Check if there a coherence within sections and their sub-sections</td>
<td>1 week</td>
<td>25-Feb-2016</td>
<td>03-March-2016</td>
</tr>
<tr>
<td>c) Check the length of the dissertation</td>
<td>1 week</td>
<td>03-March-2016</td>
<td>10-March-2016</td>
</tr>
<tr>
<td>d) Results and discussing collected data</td>
<td>2 weeks</td>
<td>10-March-2016</td>
<td>24-March-2016</td>
</tr>
<tr>
<td><strong>STAGE FIVE: Final draft</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Recheck the conclusion and recommendation</td>
<td>1 week</td>
<td>24-March-2016</td>
<td>31-March-2016</td>
</tr>
<tr>
<td>b) Final proofread and final editing</td>
<td>1 week</td>
<td>31-March-2016</td>
<td>07-April-2016</td>
</tr>
<tr>
<td>c) Prepare for submission</td>
<td>1 week</td>
<td>07-April-2016</td>
<td>16-April-2016</td>
</tr>
<tr>
<td>d) Compile bibliography and appendices</td>
<td>1 day</td>
<td>16-April-2016</td>
<td>17-April-2016</td>
</tr>
<tr>
<td>e) Get the dissertation bound</td>
<td>2 days</td>
<td>18-April-2016</td>
<td>20-April-2016</td>
</tr>
<tr>
<td>f) Submit your dissertation</td>
<td>1 day</td>
<td>21-April-2016</td>
<td>22-April-2016</td>
</tr>
</tbody>
</table>