

**INTEGRATION OF LEARNING MANAGEMENT SYSTEM
WITH SOCIAL NETWORKING SITES**

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**FACULTY OF COMPUTER SCIENCE AND
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UNIVERSITY OF MALAYA
KUALA LUMPUR**

2018

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**DISSERTATION SUBMITTED IN FULFILMENT
RQUIREMENT FOR THE DEGREE OF MASTER OF
COMPUTER SCIENCE**

**FACULTY OF COMPUTER SCIENCE AND
INFORMATION TECHNOLOGY
UNIVERSITY OF MALAYA
KUALA LUMPUR**

2018

UNIVERSITY OF MALAYA
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ABSTRACT

The purpose of this study is to attain the integration of the LMS with SNS in order to enhance the e-learning process high level of engagement, collaboration and easing the sharing of the educational material by using the advantages and features of SNS, not delivering the content only.

Today, SNS has become a phenomenon and it have been accepted by the age group of the students, such as any websites which influencing many aspects of students life that cause a changing in the student behavior and the educational process including the e-learning systems. In this study understanding the attraction of the social networks change the student behavior which certainly affects the viewpoint of the student to the e-learning system because of the rising of the social networks, the current study aimed, [i] to identify the use of the social networking sites in e-learning, [ii] to investigate SNS features and technologies which can be used for sharing educational materials and enhance collaboration to LMS, [iii] develop a prototype presents the integration of LMS with SNS to use its techniques for enhancing the interaction and collaboration. In order to achieve the objectives, literature review shows the uses of social networks in the e-learning field, and how to use its tools for investigating the collaboration in the e-learning system as pros with avoiding the cons of the social networking sites as e-learning systems and in the educational process. Achieving the objectives of the research need a mix method to have the best understanding and increase the quality of the final results with providing more comprehensive understanding of the study. The results have been collected from the survey and interviews showed the acceptance for integrating learning management systems

with social networking sites for keeping the learning management systems in the same level of the internet rapid change in techniques evolution. The prototype has been developed as intermediate application using the platform of Facebook API for integrating Moodle learning management system to achieve high level of students' engagement in learning management systems by adding more collaboration tools which leads to increase the interaction between the student and the system. The prototype was tested by students, and the results confirmed that integrating LMS with SNS positively affect the goals of this research and enhancing learning management systems the means for achieving the research goals.

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ABSTRAK

Kajian ini adalah bertujuan mencapai pengintegrasian di antara rangkaian laman sosial dan sistem pengurusan pembelajaran bagi mempertingkatkan proses e-pembelajaran di mana bukan sahaja dalam menyampaikan kandungan, tetapi turut memastikan peningkatan tahap penglibatan, kerjasama dan memudahkan perkongsian bahan pembelajaran dengan menggunakan manfaat dan ciri-ciri rangkaian laman sosial. Pada masa kini, rangkaian laman sosial telah menjadi satu fenomena dan telah diterima oleh golongan pelajar, seperti laman sesawang yang mempengaruhi pelbagai aspek kehidupan pelajar yang menyebabkan perubahan terhadap tingkah laku pelajar dan proses pembelajaran termasuklah sistem e-pembelajaran. Di dalam kajian ini, ia bertujuan memahami tarikan rangkaian sosial dalam mengubah tingkah laku pelajar yang pastinya mempengaruhi pandangan pelajar terhadap sistem e-pembelajaran ekoran peningkatan rangkaian sosial. Kajian ini bertujuan untuk: [i] mengenalpasti penggunaan rangkaian laman sosial di dalam bidang e-pembelajaran, [ii] untuk mengkaji ciri-ciri rangkaian laman sosial dan teknologi yang boleh digunapakai bagi perkongsian bahan-bahan pembelajaran dan mempertingkatkan kerjasama dalam sistem pengurusan pembelajaran (LMS), [iii] membangunkan prototaip yang menunjukkan pengintegrasian sistem e-pembelajaran dengan rangkaian laman sosial terhadap penggunaan kaedahnya untuk mempertingkatkan lagi interaksi dan kerjasama. Dalam mencapai objektif kajian, ulasan karya menunjukkan penggunaan rangkaian sosial dalam bidang e-pembelajaran; dan bagaimana menggunakan kaedahnya untuk mengkaji kerjasama dalam sistem e-pembelajaran sebagai kebaikan dengan menyetepikan keburukkan rangkaian laman sosial sebagai sistem e-pembelajaran dan proses pelajaran. Bagi mencapai objektif kajian, ia menggunakan metode campuran dalam mendapatkan pemahaman dan kualiti di dalam hasil terakhir kajian dengan memberikan pemahan yang menyeluruh terhadap kajian. Hasil kajian telah dikumpulkan daripada kaji selidik dan wawancara di mana

telah didapati bahawa penerimaan pengintegrasian sistem pengurusan pembelajaran dengan rangkaian laman sosial bagi memastikan sistem pengurusan pembelajaran seiring dengan perubahan pantas internet dalam perkembangan teknik. Hasil kajian telah dikumpulkan daripada kaji selidik dan wawancara di mana telah didapati bahawa penerimaan pengintegrasian sistem pengurusan pembelajaran dengan rangkaian laman sosial bagi memastikan sistem pengurusan pembelajaran seiring dengan perubahan pantas internet dalam perkembangan teknik. Prototaip telah diuji oleh pelajar, dan hasil kajian membuktikan bahawa pengintegrasian sistem pengurusan pembelajaran dengan rangkaian laman sosial, memberikan kesan positif pada matlamat kajian ini dan mempertingkatkan lagi sistem pengurusan pembelajaran merupakan kaedah dalam mencapai matlamat kajian.

ACKNOWLEDGEMENTS

This year of my master thesis has been a new educational and life experience that I have already begun to take responsibility and experience to face what life is showing me. I would like to take this opportunity to thank all people who have being a part of this journey worthwhile. First, Alhamdulillah and thanks to GOD for his grace. There were times where things were very tough and

GOD give strength to face all the tough things. This was a very long journey I thank GOD always.

I am grateful to Dr. Suraya Binti Hamid who was her excellent supervision, patient, guidance from start to end with continuously encouragement during the tough time that enable me to continue my study and dvelop my abilities and understanding for my study. I am thankful for having her supervision.

My deepest thanks and love to my father, Fareed, my mother, Aycha for their love and support, without forgetting Mr Yarob Rayyan who stand with me all my study period to make sure my dream become reality . I would like to thank God for having them in my life.

I would like to extend my thanks to my friends who was helped me toward this achievement. Also, I would like to acknowledge all of the respondents who evaluate this work. I wish you all the best

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LIST OF ABBREVIATIONS

LMS : Learning management systems

SNS : Social networking sites

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CHAPTER 1: INTRODUCTION

This chapter introducing the research background, problem, objectives, question and scope of the research toward investigating the integration of SNS with LMS. Starting by e-learning and learning management systems, and then discussing the limitation of LMS. In parallel, introducing the social networks then SNS followed by the features of SNS to enhance the cover up the limits of LMS.

1.1 Overview

The birth of the Internet in general and the web 2.0 in particular makes a shift in e-learning and changes the way of teaching and learning in educational field from a top-down system focused in academia and knowledge to a net-worked approach (Balakrishnan, 2013). The term web 2.0 is always linked to the SNS which usually becomes a popular way for generating content, sharing information and discussing of issues. The term SNS is used to describe web-based services that allow users to make personal profiles, create contents, and share messages by connecting them with other users (Tess, 2013), and exemplified in Facebook, Twitter, Myspace and LinkedIn.

Today the social networks are the most common used sites on the web world, for example Facebook as the most popular online social network has over one billion active users at the end of September 2012 (Geeoffrey, 2012). There are also millions of videos on YouTube and more than two billion photos on flicker (Cha et al., 2009).

Worldwide, the term e-learning, online learning, computers in education and flexible learning all these terms used to describe the systems which allow students to achieve and enhance their educational needs and provides students with useful and easy way to achieve their study purposes rather than the traditional education mode (face-to-face

classroom). E-learning offers learners 24/7 access to study material and often support without having to commute which in turn encourages developing independent study culture.

In educational context, the e-learning platforms called as Learning Management Systems (LMSs) which are “internet based, software allowing lecturers to manage materials distribution, assignments, communications and other aspects of instructions for their courses” (Abu Shawar, 2009, p. 3). But the LMS is not intended to replace the traditional classroom setting. LMS’s main role is to support the traditional lecture with course content that can be accessed from campus or the Internet.

In the midst of an e-Learning revolution, LMS usually used by the lecturers to add the content of a course, on a weekly basis as Moodle LMS. Students are able to know the new events, gain new materials on course, have discussion via the forums and submit the assignments, which makes it one of the e-learning basics for the interaction process among the students and their lecturers through the learning process. But student experience is not always good, and adoption of LMS by students is still on the low rate. That’s mostly because of poor LMS usability. On the other hand, the phenomenon of web 2.0 and the social networks affecting students and lecturers behavior. Generally SNS can help the students to find what they miss in the LMS through the online interactive by its collaborative tools and go out from the poor collaboration style of LMS and blackboards, and offer the social connectivity. But it still has problems to depend on it as learning environment. Ashraf, J. Z. (2013). Discussed and listed the reasons for why social networks can’t be dependable and what the limitations are. he started with the privacy and mention of the reality of the users then focusing on wasting the time of the user and how it take the time up to some topics which is not related to

the learning process aims and it is not commonly adopted as formal teaching and learning environments.

The aim of this research is to integrate the LMS with SNS for minimizing the limits of LMS by using the SNS features to investigate the student engagement in the LMS which ensure more collaboration and interaction with keeping the formal learning.

1.2 Statement of Problem

In the last decade, the educational institutions especially universities have started to use the information communication technologies for learning purpose, and in the last few years, Moodle became the most common learning management systems (LMS) used in those institutions to manage materials distribution, assignments, communications and other aspects growing faster than the number of contributors (Macho et al., 2015).

In the current context where is changing on the Internet world is very fast and the Internet is booming, the new changes which caused by the phenomenon of web 2.0 and the rising of SNS have started to make vast impact in all aspects of e-learning environment starting with students, lecturers and LMS. Many studies have shown a high level of criticism directed at the failure of LMS to create an interactive learning environment and to improve learning outcomes, as well as the use of LMS as an administrative tool not as a collaborative tool (Alhazmi & Rahman, 2012).

Students and lecturers as ordinary people use the social networks to keep in touch with friends, communicate with others, know what is happening in his life or doing career on networking, using the social networks technologies like sharing events, notes, photos , files and messaging and chatting systems with high notification systems and information gathering by hashtags system which allow them to currently know what is

happening, and offer these tools and technologies with full collaborative and easy interaction environment, which, in turn, make the platform of SNS preferable for students and teachers to use in communication among each other, even for educational reasons.

LMS requires to cope with the rapid change in e-learning specially and the Internet in general such as gathering and sharing materials and providing the collaboration and interaction techniques which used by the SNS.

The problem statement in this study can be oriented in two points: first point is related to the barriers of sharing and accessing the learning materials such as the lectures and assignments; the second point of the problem is the lack of collaboration because of the accessibility to LMS which improve the students' engagement into LMS and collaboration in wide environment; both can be delivered as the need of keeping the used LMS at the same level of the new changes of the web world by developing prototype for solving the previous problem, using the SNS features to solve the knowledge sharing barriers with enhancing more collaboration of the learning system.

1.3 Research Aims and Objectives:

The aim of this study is to integrate the LMS with SNS technologies, which related to increase the collaboration of the LMS and enhance the educational materials sharing to keep the LMS in pace with the arising changes due to the use of web 2.0 because of the supporting collaboration across time and space in general and social networking in particular by integrating the SNS with the LMS To identify the students' needs and uses of SNS technologies for e-learning.

The objectives of this research are:

- To identify the students' needs and uses of SNS technologies for e-learning.

- To investigate SNS features and technologies can be used for sharing educational materials and enhance collaboration to LMS.
- To develop a prototype for more interaction and collaboration between the student and the LMS and sharing the educational materials by integrating the social network technologies in the e-learning systems for easy usability and accessibility.
- To evaluate the developed prototype to reach to solve the problems.

1.4 Research Question

In order to release the thesis goals and solve the problems, investigations regarding three research questions have been conducted:

First question is *“What is the use of the social networking sites for the students in the normal environment and the learning environment?”*

In order to understand how the students use the social network sites in their life and what are the activities they use to do which lead to understand the effects of the SNS in the students behavior and to know how they use it in their education to know the ability of using social network sites tools and technologies in the educational field.

The second question is *“What are the features and technologies of social networking sites which can help to solve the problem of the sharing barriers and the lack of collaboration?”*

In order to understand technologies and the features we can use to increase the e-learning interaction. Understanding the differences in the technologies between the LMS and the SNS leads to keep the LMS the same pace with the internet world and to choose the best social network we can enhance the interaction and collaboration by using it.

The third question is “*Does the integrated prototype of social networking sites with learning management system suitable to insure the collaboration and engagement?*”

The answer of this question basically about the acceptance and measurement of the integration of LMS with SNS. If it helps to achieve the aims of this study by ensuring accepted level of interaction and usability in LMS.

Research Problem	Research objective	Research question
The barriers of sharing and accessing the learning materials	To identify the students’ needs and uses of SNS technologies for e-learning.	What is the use of the social networking sites for the students in the normal environment and the learning environment?
The lack of collaboration in enhancing the accessibility of LMS which improve the students’ engagement into LMS and collaboration in wide environment	To investigate social networking sites features and technologies can be used for sharing educational materials and enhance collaboration to LMS.	What are the features and technologies of social networking sites which can help to solve the problem of the sharing barriers and the lack of collaboration?
LMS is not in pace with the rapid change of web 2.0 technologies.	To develop a prototype for more interaction and collaboration between the student and the LMS and sharing the educational materials by integrating the social network technologies in the e-learning systems for easy usability and accessibility.	Does the integrated prototype of social networking sites with learning management system suitable to insure the collaboration and engagement
	To evaluate the developed prototype to reach to solve the problems.	

1.5 Scope of the Research

For the goal of this thesis, the limits of LMS with the rising of SNS on the educational environment are important to be considered. The study delimited to speak about the student using of the SNS in the normal life and how they can use it for the educational aspects, and to decide which technologies to be used to cover the limitation of LMS. The research is not limited to the current LMS, it also investigates more interaction and collaboration with the student which is proposed to increase the rate of the usability of the LMS high as the main goal for e-learning systems in the educational institutions, by using the features and technologies of SNS like easy sharing, easy access, easy discussion and distributing for the learning materials. The discussion of this research is the integration of the e-learning system with technologies related to evolution on the web world with the new challenges and changes.

Also we are not intending to use all the SNS features to support our learning system. In fact there are many features can be used for the learning systems, but using the collected data to understand the students' needs and determine what are the needed features for the study and what we can use for learning process to solve the limits of LMS by investigating the collaboration and the interaction between the LMS and the student to achieve the research aims such as messaging, notifications and sharing the educational materials.

1.6 Research Report Organization

1.6.1 Chapter One: Introduction

Chapter one starts by a brief introduction of concept of e-learning, LMS, and SNS. The limits of LMS which can be covered by the features of SNS, the problem, the research objectives, research questions and the scope of the research. Research report organization as introduced at the end of this chapter.

1.6.2 Chapter Two: Literature Review

The first part of the second chapter reviews the concepts of e-learning, blended learning, collaborative learning and LMS. The second part reviews the concept of social networks, SNS and taking the Facebook as example and showing the use of SNS in e-learning, the use of SNS as LMS and the integration of SNS in LMS.

1.6.3 Chapter Three: Research Methodology

The third chapter includes the methodology and the reasons to choose the methodology for this study. The description of the survey is selected sample and the content of the survey, the interviews and interviewed students and the challenges during collecting the data.

1.6.4 Chapter Four: Results and Discussion

Chapter four presented the collected data such as statistics by figures and tables produced by Microsoft excel containing the results displayed with brief analysis and discussion of the content for the surveys, also in contain the interviews answers with coding process and displayed in tables with brief discussion.

1.6.5 Chapter Five: Prototype Implementation and Testing

Chapter 5 presents the prototype of the integration of SNS into LMS, developed based on the needs to solve the LMS limitations and SNS features and technologies from the previous chapter, furthermore, several screenshots of the implemented integration.

1.6.6 Chapter Six: Discussion and Conclusion

Chapter six includes the general conclusion of this study and continues with the limitations of this study and it ends with the future works on this

CHAPTER 2: RESEARCH LITERATURE REVIEW

This chapter reviews the concept of e-learning, blended learning, collaborative learning and LMS, also it reviews social networks, SNS and the use of SNS in e-learning as LMS and the integration of SNS with LMS.

2.1 E-Learning

The new technologies have created new opportunities for education. And the rapid change of the technologies has created new sustainable challenges. Nowadays the educational institutions provide educational and e-learning systems, which enhance the quality of teaching and learning and the skills for the learners. Arbaugh (2002) defined e-learning as the use of the Internet and the modern communication technologies by users to learn specific content. The specific content can be detailed as the learning materials, deliver instruction and information. The term e-learning has been declared as encompassing: —Flexible learning as well as distance learning, and the use of ICT as a communications and delivery tool between individuals and groups for supporting the students and improving the management of learning. Turvey (2009) affirms that the definitive of e-learning is the communication and interaction between the individuals based on the idea of evolving e-learning above.

The term e-learning has been defined in a range of different ways of definitions. Khan (2005) defines e-learning as “an innovative approach to deliver learner center, facilitated and interactive learning environment with well-designed to any one, any place, any time by employing the attributes of the different digital and communication technologies beside the other forms of learning materials for open, flexible and distributed learning environment”. (p.3). Most of the definitions share three parts for each definition for e-learning, the first part is linked to it is approach or a way used by

the learners and students, the second part is the part of using the modern communication and technologies and the third part is the purpose of it which includes the learning purpose.

2.2 Blended learning

Education technologies is growing at a heavy rate with the rising of social networks becoming more challenging for the educational field because of the effects on the students behavior and the e-learning systems.

Nowadays educational most of educational institutions use the internet and web 2.0 technologies for sharing the educational materials, posting and receiving assignments, contacting with the lecturers or video conference lectures. The use of these technologies in the educational fields can be termed as blended learning according to (Dekhane, Smith 2011) they defined the blended learning as the shift from face to face interaction to the amount of technological interaction which will lead to increase the opportunities or continue with full face-to-face and add a technology part. In addition, the blended learning contains some approaches, such as participating in online class, visiting web sites, receive supervision under supervisor and online communities.

Blended learning have become to be popular method of delivering knowledge and the educational materials. Higher education institutions have only the main idea of the blended learning to provide the learning opportunity for the students in the last decade, it refers to online delivery, an arrangement of instructional methods and also face to face instruction, according to Naaj (2012) it also defined as a combination of instructions of face to face learning and the electronic learning whether if its formal or informal learning

Blended learning also defined by (Rahman, Husiiein, & Aluwi 2015). As one of the most common learning approaches among higher education colleges and institutions which integrates traditional as is face to face teaching with the web based learning for many reasons; it introduces new opportunities for students and teachers to interact meaningfully with technology, provides more flexibility in the teaching and learning process and the online instruction can overcome the limitation of time and place by accessing anytime anywhere. (Hau et al, 2013).

2.3 Collaborative e-learning

collaborative learning is huge term can be launched for a lot of educational approaches involving joint intellectual effort by teachers, students or teachers and students together. Usually, students like working in groups two students or more, mutually searching for answers, understanding, meaning or creating project or product. The activities of collaborative learning widely use, but most center on students exploration or application of the course material, not simply the teachers presentation or explication of it. Smith and MacGregor (1992). Collaborative learning usually described as a group of learner they collaborate for exploring, understanding, writing, discussing, problems solving and other activities. Substantially, collaborative learning refers to the situation which learners attempt studying together (Dillenbourg, 1999).

According to (Razali et el. 2013). The most effective learning is the learning when the students are working collaboratively and expressing, discussing, changing their ideas, and working together to find a group solution to the problem. In online environment, which the teams and the groups is online, refers to instructional activities to the students, the work together online to achieve common educational goals is called e-collaborative learning.

The interchange between the e-learning and the collaborative learning is called as collaborative e-learning, this term can be explained from the definition of the collaborative learning as the use of the internet and the electronic communications for constructing and solving the problems through engagement of two learners or more. The employment of the internet and the electronic communications adding to the collaborative learning is good approach for contributing the e-learning process. E-learning in a collaborative environment can happen at any time in social networks which provides suitable infrastructure for collaborative learning while students are using the social networks features and tools for educational purpose. (Blasco-Arcas et al., 2013) showed that collaborative learning investigated the interactivity among the students and teachers and investigated the students' engagement with the e-learning system, developed the relationship among students and teachers and enhanced the student better performance. Social networks allows students to schedule their activities, chat together online, mapping their minds, discussing their studies, solving their assignments and other types of learning activities. In the midst of the rapid growing of SNS such as Facebook and twitter, the integration of social network technologies into e-learning systems will provide the e-learning systems with more efficiency and motivation to encourage students to use the e-learning, increasing the interaction which will support the e-learning systems more than previous forms. (Al-Rahmi & Zeki, 2016) The integration of LMS with SNS will provide opportunities for students and teachers for more collaboration to improve the performance and engagement among the student and the system.

2.4 Learning Management System (LMS)

Learning management system (LMS) defined as the "software applications that deliver educational technology or training programs that also handle the facilitation of the learning process" (Lam, 2016) it done by delivering and managing the educational

materials with tracking and estimating the progress to achieve the goals. In other words, LMS applications deliver the content and track the progress of the students with issuing the related reports.

LMS and also known as course management system (CMS) or virtual learning environment (VLE) is one of the most common terms found in e-learning researches and the most frequently used as e-learning system. LMS defined as a software package that enables the management and delivery of learning content and resources to students. Most LMS are web based commercial the users can access to it any time anywhere to the content and the administration (Ellis, 2009, p. 1). LMSs have overcome the academic infrastructure since the middle of the 90s, most of the universities and the educational institutions having institutional LMS implementation, in order to link the students with their university resources, organize, and help to deliver educational content such as the assessment and modules. Nowadays the learning management systems (LMS) known as the infrastructure of the e-learning process with technology, service and content management, it is providing the facility of assessment and measuring the student performance in interactive learning process. LMS becomes the traditional approach to e-learning which used to manage and organize the courses and to submit the course activities. It usually represented as the online platform for course syllabus releasing, hand-outs distribution, assignments management, and course discussion to students, teachers. Although LMS such as Blackboard, Moodle, and Sakai has been used by numerous universities all over the world to support and improve learning outcomes for their students; it is primarily designed to manage the courses and has limited impact on education. The essential limitations of LMS include limited interaction channel and collaboration manner between learners and educators, restricted interaction and collaboration scope within courses. These limitations make LMS not

competent for supporting e-learning in the new era which views learning as collaborative social process. (Du et al., 2013)

2.4.1 Moodle

Moodle is an open source LMS designed to provide students, lecturers and institutions with a single robust, secure and integrated system to create a personalized learning environment tightly integrated set of tools from social constructive perspective. LMS Moodle has been adopted by many people and organizations around the world with more than 80000 registered site in 234 countries serving over 103 million user (Moodle, 2017). According to Muhsen et al. (2014) Moodle is composed from independent modules; plug-ins. In order to ensure better understanding of a whole Moodle architecture, these modules will be presented in groups according to their purpose or use. From this perspective, there are six groups of modules are Communication module, Productivity module, Student involvement module, Administration module, Course delivery modules and Curriculum design module.

Lazakidou & Retalis (2010) used Moodle in their strategies for supporting collaborative learning in problem solving. The applied strategy started by observing the problem using synergo.com and using the Moodle for sharing and downloading the educational materials, after that using the activities such as chatting and having the support by Moodle, then continue chatting and having the support with small group, then starting to find the solution in the self-control stage using Moodle and synergo, finally, having space for the individual solution in the stage of self-regulation using the same platform software. By focusing on this study, chatting and sharing the educational materials have been used for enhancing the collaborative environment for the students which can be used easily inside the Moodle platform.

2.5 Social networks

The social networks cover a large range of the web based platforms and applications which allow users to collaborate, interact, communicate and share data. Thus social networks offer the easy access to web based application and sites that people can use in order to participate in, create their own profiles, getting more information and share their information, in addition to share the actions and reactions which happening around them.

There are many definitions of the term social networks, Northern Illinois University define the social network as the social structure consisting of individuals or organizations that are like-minded and are tied by specific types of interests, values, visions, friendships, kinships, lifestyles, etc. Xu, G. (2011). Social networks are not connecting between people only, but also adding great value for the educational section and other organizations. The most popular SNS such as Facebook, twitter, Hi5, YouTube, Friendster, Google plus, and Windows Live Space.

Social networks also defined as web-based services that allow users to construct a public or semi-public profile within a limited system, indicate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system. (Boyd, Ellison, 2007). The kind and the names of these connections may vary from site to another one. Social networks mostly allow users and participants to upload profile photos, introduce themselves and add or change the content of their profiles. Diversity in SNS is clear between the sites for example Facebook encourage the users to upload their photos, present information about them and their friends and share their daily events and what are their minds, Twitter draws especially the opinions of the leaders and politicians, and who are always connected to the latest news and trends and directed towards professional development and personal

accomplishments, MySpace and Friendster shows that feature where participants can post messages that all of their Friends can read. Social networks provide the users with a service that reflects their relation with people around them through internet. This means users can communicate and interact with each other using the services such as instant messages, direct messages or it can be termed as messaging system. In short, SNS provide its users with professional platform where they can share their ideas, daily events, actions from their individual environment, teacher rating, questioning and answering, message boards and groups discussion. On the other hand, social networks features consist of social interaction which means how the people connect to social network and how they communicate with other people inside the network such as the forum discussion, data portability articulate that users have the opportunity to export and import the information to and from another resources which opening the door for the ease the integration with another sites, privacy signifies to the privacy of the users and who they allow to see and interact with the content they share in their profiles and personalization mean how people can decorate and design their own profiles or blogs and decide how to show it to others.

According to (Davis III et al., 2012). The term social networks is used as an umbrella for all social media and computer mediated communication, not limited to Facebook, twitter, LinkedIn and MySpace, the term social networks technologies can be used for the services of the SNS from creating, engaging, and sharing new participant or new content, in web based environment through multi way communication

2.5.1 Social networking sites (SNS)

Since the rising of the SNS, millions of users attracted to use it, many of them have integrated these sites into their daily activities. Till now, there are a lot of SNS,

supporting wide area of interests and activities, offering a lot of technological features and its features are fairly consistent with the emerged cultures around.

SNS also differ in the level to which they integrate new information and communication tools, such as mobile connectivity, photos, videos sharing and blogging.

Social networks defined as “web-based services which allow users to construct a public or semi-public profile within restricted system, articulate a list of other users with whom they share a connection, and view and cross the list of connections and those made by others within the system”. During we use the term SNS to describe this phenomenon, also the term “social networking sites” appear and used alternately. (Ellison, 2007).

2.5.2 Social networks and e-learning

A survey conducted by the Pew Research Center’s Internet & American Life Project in 2013 shows that young adults are most category to use the major social media. Concurrently, other groups interested in different sites and services (Duggan & Brenner 2013). This age group is forming the student age group, so this is sufficient for education industry to attract students to use the social network as learning tool.

From the educational perspective, social networks is also learning tool for the university students, since the social network itself offer similar environment to the learning environment. The university learning environment itself is a social system of students interacting with each other for sharing the academic and the university context. The shifting of the students social networks to online social network to apply what they do in their social life into online social network is creating social networks as e-learning system. This online social network will be benefit for the students because it’s offering blended and collaborative learning environment system in the same time, this using will

establish and maintain the relationship between the students themselves and between the student and the learning environment. Social networks not only help the higher education students in their studies, but also it helps them to obtain more acceptances in the university environment. This will make the learning process more effective.

Usually, students like to discuss their studies in groups related to their particular courses; they normally form groups and start to discuss the assignment face to face. This social interaction shifted to the online social networks, with the rising social networks impact on students' life, students start to form online groups to share their experience and collaborate to solve the study problems. In another word social networks can support and help the student to use it as e-learning environment.

The use of social networks in e-learning environment will make it useful for the students. According to Yu et al. (2010), collaboration between students will provide them a set of information from multiple sources, and help fulfill them for growing networking needs and, therefore, improve their social learning effectiveness.

The social networks provide chance for students to communicate with each other and teachers and to share orders related to their studies using their accounts or groups they create for discussing about their courses. According to Ismail (2010), Facebook, as well as other social networks, can be used as a platform for sharing course contents, it can link the students in materials related to their studies to expand the students' knowledge and support learning activities.

2.5.3 Social networks as e-learning system

Social networks can be used as course management software. LaRue, (2012). Use the Facebook as a course management software in a case study, Facebook used to enhance student learning and to find more opportunities outside the classroom. By using

Facebook as course management software, it can be easy to increase the interaction among the student and others and enable a blended learning environment. The introducer use the Facebook based upon the following reasons: Facebook offered similar features provided in the course management software, most of students have already Facebook accounts, students and teachers probably checked Facebook at least twice weekly, the course was based upon the Internet and its use in society, the number of the students is seven students and under control easily and the Facebook offer a private rooms and groups. To apply using Facebook as course management software they search on Google to find related article about using Facebook in courses, then they start by choosing and preparing the course, after that they create the private group for the course and finally they held the face to face sessions to follow up with the course and the activities.

In this work, students described the course in words as fast paced, stimulating, interactive and fun, and using Facebook was natural incentive for the students. Students involving in this work, helps them to create their own knowledge, and to answer the question about the use of social media utilities to promote education, by understanding the social media utilities is necessary.

The use of Facebook as course management software helps to increase the student skills and the rich interaction environment makes the students feel that they have more resources and increase the collaboration by the ability to post the information. The limitation of this work is the student number in the class, to control a group or a family group we cannot depend on Facebook as learning system for large student number in the class. According to the results of this work, Facebook has an excellent platform to run online courses. Nowadays most of the features of course management software are available in social networks, the recommendations for Facebook in this work as a future

work is already done from the ability to upload files and attaching files inside the messages.

In this work, Tsai et al. (2011) proposed a collaborative approach to enhance the student a learning experience based on the principles of the web 2.0. In this case study they use wiki sites to study a set of factors with critical evaluation to make the approach successful. The factors are research, knowledge base, motivation, presentation, social aspects, and feedback and support. To integrate web 2.0 activities into classroom there are some constraints and regulations need to be considered before the integration physical social and administrative; the physical constraints is about the typical university classes and attending lectures from the students, the social constraints linked to the feelings of the people involved to each other in the educational environment, the related administrative constraints to the changes of the course content after using the web 2.0 to manage the courses and there are other constraints such as the quality of the work, technical support, grading criteria and evaluation.

In this work, they started with a pilot and case study selection for the students to create blogs sites and choosing the topics for the research of the semester. Then, studied the factors related to the design of the class. After that, designed the class to be suitable to fulfil the objectives of the courses. After that, the supporting of the web to the collaboration from identifying the partners in the community, enabling the personalizing learning, evaluating, communicating, and progress tracking and sharing the web finds. Finally grading and evaluating criteria for the student work.

This work aims to enhance the student the skills of publishing the research works and to motivate the students to study by using the social networks and the environment they like to use in their daily life special the wikis sites.

2.5.4 Integrated system

The integrated system is a design of an improved system for two or more information systems by incorporating a portion of the functional or technical elements of one information system into another Tran, K. H., & Hoang, T. (2015)

The integration of social networks in the e-learning system was done by Popescu (2014) in an integrated environment. The discussed problem in this work related to the change in the environment of the student which made new needs as they describe “internet generation” to offer them collaborative learning. This work rational is to support the collaborative learning by providing integrated access to all web 2.0 tools, retrieve student actions with each tool and store them in a local database, summarizing student activities and compute scores based on the records of the student activities. This could be important for self-monitoring and self-evaluation for the students. Also, the platform of the work takes advantage of the social motivation for learning. To complete this work they start by data collection and analysis from the previous studies to choose the most suitable tool to decide what to add in the first version. Then integrate the web 2.0 with creating new application and finally validate the platform and the goals of the application.

This work focused on sharing posts and materials and recording student activities and actions in the higher education context which build the student personal environment. The limitation of this work linked to create new platform which makes the work loses the advantage of the presence of the students on social networks. The suggestions for this work summed up in extending the platform with annotation mechanism, rating, tags, comments, peers.

Enhancing e-learning experience with online social networks by (Jwaifell, Al-Atyat 2015) was focusing on adapting the e-learning with the changes in the internet world for

answering the needs of the new schools communing; the contribution of the work was to make the e-learning environment richer in the content of the e-learning and in the collaboration and interaction. To achieve the main goal of this work they have proposed solution was by innovating and improving the existing e-learning platforms, raising the e-learning interaction with the social networks and materials sharing among the users of the social networks. In the part of the integration of social networks in e-learning platforms to change the role of the student from being passive to active able to define the learning process and solving the problems instead of just receive the learning material. They start by creating modules called personal learning environment box (PLEBOX). The modules of this work are „Wall“ module which is used for placing the posts and the comments, „Chatroom“ module which may be used for real time, The Groups module for creating groups, the RSS module to share RSS Feed and finally the links module that is used to share the links of resources between the users. The performance evaluation of this work shows that over 70% of students and the teachers both agreeing that the platform has an attractive design and they believe that it is easy to use and half of them strongly agree that the platform is useful, more that 70% were satisfied and finally all students agreed that the modules are useful for materials sharing.

2.6 The issues of using social networks for e-learning

There are many barriers to use social networks as e-learning systems. Students don't only gain benefits of using the opportunities of social networks, there are also some issues and barriers regarding the use of social networks to consider it as a tool for e-learning.

Using the social networks for e-learning needs the student awareness for using the social network to help the student in his educational environment, and how to increase the awareness of using the social networks. For example users can keep in touch with

friends and family, especially the people not seen on regular basis, look for old friends, contact with others. (Aïmeur, Gambs & Ho, 2009), subsequently, to increase the awareness of using social networks in e-learning is important to develop a method for using social networks in e-learning.

The privacy of using the social networks is main issue while most of social networks give the users the freedom to design and to choose the information they want to show as they like in their profiles. However, due to the lack of awareness and suitable privacy tools, huge quantity of users' data, including picture, videos and personal information are easily falling into hands of others such as authorities or strangers (Aïmeur, Gambs & Ho, 2009). The number of users who take privacy as top issue when they use social networks is increasing.

Security problem is important issue, registering in social networks need email address and password as main step for registration. Social networks allow users to hide their information and put privacy on their information. Social networks almost ask to provide true personal details such as date of birth. However, social networks don't authenticate the user information, such as the name, date of birth and the address. In other words, on Social networks, such as Facebook, the user can generate fake profile easily, (Light & McGrath, 2010). This may lead to more issues related to the security because some users will use it to hack into others email accounts; or using some fake identification or to conduct criminal action.

Other issues can affect the use of social networks in e-learning such as the time spending on social media, which lead to waste the time of the student under the inability to control the information, another issue is the social style of the social networks. From this issues, the conclusion is social networks have a lot of functions can be benefit for the e-learning. In the same time, common issues have it attraction on the student

attention. The issues of using social networks can't be ignored, so integration of social networks in e-learning system with using the benefits and avoiding the issues will be catalyzer for better e-learning system.

2.7 Literature map

A literature map is a tool to help the researcher to clarify the relationship between the parts of the publication and the research question and to clarify whole the literature in one map. "This map is a visual summary of the research that has been conducted by others, and it is typically represented in a figure." (Creswell, 2003, p. 39). The main idea of drawing the map is to present the main topics as outline of the literature. The figure is flow chart for the literature map for this study.

University of Malaya

Table 2.1: literature map

E-learning	<ul style="list-style-type: none">• Arbough 2002• Turvey 2009• Khan 2005
collaborative learning	<ul style="list-style-type: none">• Smith & MacGregor 1992• Blasco_Arcas 2013• Razali et al 2013• Al-Rahmi, W. M., & Zeki, A. M. 2016
blended learning	<ul style="list-style-type: none">• Dekhane & smith 2011• Rahman, A. A., Husiiein, N., & Aluwi, A. H (2015)• Abou Naaj M. Nachouki M. and Ankit A. (2012)
LMS	<ul style="list-style-type: none">• Lam, Q. S. (2016)• Ellis 2009• Du, Z., Fu, X., Zhao, C., Liu, Q., & Liu, T. (2013)
Moodle	<ul style="list-style-type: none">• Muhsen et al.(2014)• G Lazakidou, S Retalis (2010)
Social Networks	<ul style="list-style-type: none">• Xu, G. (2011)• Boyd D.M & Ellison N.B 2007• Davis III et. El 2012
Social Networks and e-learning	<ul style="list-style-type: none">• LaRue, E. M. 2012• Tsai et al. 2011
Social networks as learning management system	<ul style="list-style-type: none">• Duggan & Brenner 2013• Yu, Tian, Vogel & Kwok 2010• Ismail 2010• Ellison 2007
Integrated system	<ul style="list-style-type: none">• Tran, K. H., & Hoang, T. (2015)• Popescu 2014• Jwaifell, & Al-Atyat 2015
Issues of using social networks for e-learning	<ul style="list-style-type: none">• Aïmeur, Gambs & Ho, 2009, Light & McGrath, 2010

2.8 Summary

This chapter reviewed the relevant fields to the research topic: e-learning, social networks. In the same time, discuss the types and the terms of e-learning and the common ways of using e-learning in the institutions; also discuss the uses of the ability of using social networks in the learning process with showing examples. The literature also shows suggested issues to be considered when using social networks in the learning process. At the end, the literature map was presented to provide a scoping document for this research topic.

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CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The aim of this chapter is to explain the used research methodology to achieve the research objectives. The chapter provides explanation of the research chosen method and it illustrates the used tool for data collection and data analysis.

3.2 Methodology

In the current situation, LMS and the phenomenon of the rising of the social networks as basic player in the daily life and activities of the students generate a large change in the concept of the Internet and this change tends to affect the student's behavior.

To attain the objectives of this research; to keep the LMS in pace with the rapid change of web world for full collaborative and interaction platform of the social networks and the changes of the concept of the Internet, and to increase the usability and the learning materials accessibility for the LMS, the research questions are investigated and answered. The answers of the three questions achieve the goals from conducting this research.

There are seven sections introduced in this chapter: research design, chosen research method, survey process, interview process, data collection method, data analysis method and summary.

3.3 Research Design

This section describes the research design for this research. The research design presents an overview for the methodology in Figure 3.1.

The first step of this research design includes a background of this research which provides an overview of the social networks, e-learning, relation between SNS and e-learning, related work and research objectives. The second step presents the use of SNS in e-learning and the integration of LMS with SNS. After that, in the third step of this design, the data collection by using the surveys and interviews is demonstrated. Then in the fourth step, the analysis of the collected data is explained. Then in the fifth step, designing and implementing the prototype are shown. Finally, the evaluation and the conclusion of this study are offered.

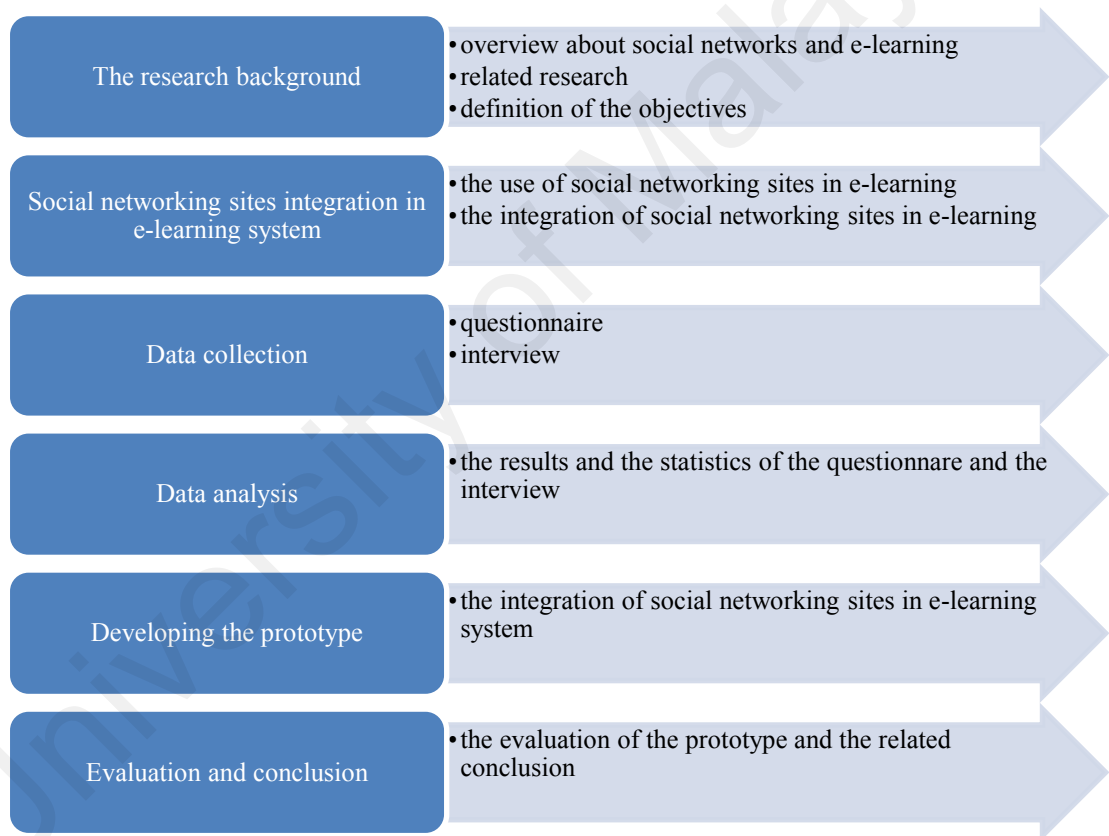


Figure 3.1: Research Design

3.4 Chosen Research Method

A methodology for research entails the theoretical principles and frameworks that provide the guidelines for undertaking research (Sarantakos, 2005).

The majority of researchers identified and defined two approaches and the third one is mix between the two approaches, the first one is the qualitative research which used for the qualitative data collection and analysis was selected for exploring and understanding the meaning that individuals or groups ascribe to a social or human problem (Creswell, 2009). “Qualitative research methods were developed in the social sciences to enable researchers to study social and cultural phenomena... Qualitative research involves the use of qualitative data, such as interviews, documents, and participant observation data, to understand and explain social phenomena.” (Myers, 1997 p. 2). In the other hand, the quantitative research is a type of educational research that relies on the collection of data subject to quantitative analysis. It is generally a means for testing objective theories by examining the relationship among variables (Creswell, 2009). It also explained by Creswell (2003, p.18), the approach is “which the investigator primarily uses post positivist claims for developing knowledge, employs strategies of inquiry such as experiments and surveys, and collects data on predetermined instruments that yield statistical data”.

When considering the changes in the e-learning environment and student behavior which influence to integrate the LMS with SNS, qualitative data such as interviewing and related studies are appropriate for this study.

However, to complete this study, a questionnaire is useful to establish broader to know the number of the students and the percentage which prefer to use the social networks for the educational purpose and what are the results of which tools and technologies that increase the interaction and usability rate.

Many studies in the research field show that employing a mixed-methods approach can give a broader understanding of the study, explain a research problem, increase the quality of the final results and provide a more comprehensive

understanding of analyzed phenomena (Creswell, 2009). Moreover, Christensen (2004) stated that research results are stronger when they are based on a variety of methods, as the researcher can confirm, explain, and verify the data. Creswell (2003, p. 208) pointed out that “With the development and perceived legitimacy of both qualitative and quantitative research in the social and human sciences, mixed methods research, employing the data collection associated with both forms of data, is expanding”. Using mix method offers solid way for researchers to gain rich qualitative and quantitative data in order to attain the research objectives. A mix research method is a combination of qualitative and quantitative data because of the collected data is done by both qualitative and quantitative research method.

In the case of integration of the social networks with the LMS to answer the research questions which will release out objectives we need to use the mixed methods. Interviews as a qualitative method and questionnaires as a quantitative method were conducted to collect data for this research; both elements were involved in this research.

Face-to-face interviews used to find out the qualitative data and questionnaires conducted to obtain the quantitative data, the results from these questionnaires like multiple choices and yes or no questions needed to be analyzed quantitatively. Moreover, the results from the interviews as the qualitative aspects of this research and qualitative analysis method could be used. The mixed method was designed to handle this research study.

3.5 Survey Process

In order to obtain enough survey responses, the researcher asked the students directly at the Main library and Faculties of the University of Malaya to fill the survey. The sample of the survey represents the higher education students at the University of Malaya of 17192 as in 2015 with random sampling size of 104 students. Thus 104

survey sheets have been offered to the students at the University of Malaya which has 13 academic faculties at the rate of eight students for each faculty distributed for their degree and gender. Each respondent should have answered 20 survey questions. The number of completed survey questions is 100.

There are 20 survey questions. Most of the questions are single questions or multiple choice questions. The survey is designed to find behaviors, attitudes and the knowledge of students towards the integration of SNS into LMS for higher education. The attitude is identified by students' opinion about what they think about integration of LMS with SNS. An example question in the survey is "In your opinion, does integration of social networking sites with learning management systems help to give you more engagement in e-learning system?" the behaviors are showed by the students about if they had plans or what they are going to do. Two examples questions in the survey are "Do you often use social networking sites to discuss course related topic with classmates?" and "Are you willing to use social networking sites for e-learning?" The knowledge of the students represented in the questions about if the students know about social networking sites and if they use the LMS in their studies such as Moodle. Examples about the knowledge questions in the survey are "Does your department have an e-learning system such as Moodle?", "Do you often use Social Networking sites?" or "How long have you been using social networking sites?" The results of the survey questions provide direct and indirect answers for the research questions. The final questions of the survey are attached in **Appendix A**. The questionnaire consists of three sections of questions; the first section is section A which is related to the demographics of the respondents, the second section is section B which contains the questions about the respondent experience of e-learning and using the social networking sites in the daily life, and the third section is section B which covers the part of using of the social networks in e-learning and the integration of LMS with SNS. In order to collect the

data from the questionnaire questions, a matrix has been designed to provide the details of which research question has been covered in the questionnaire questions. The questionnaire has eight general questions for basic information about the students and their background about e-learning and social networks; three questions are related to the first research question, three questions cover the second research question, three questions are about the third research question and two questions concern the fourth research question. This matrix is attached in **Appendix C**.

3.6 The Interview Process

The interview questions are open-ended questions and designed to investigate deeply more details about the students' attitudes, behaviors and understanding toward the integration of LMS with SNS. The questions of the interviews are attached in **Appendix B**. There were eight interviewees involved in this research study. The conducted interviews were 8 interviews and these interviewees were selected from the students who participate the survey according to the answer of the last question if they are willing to have the interview. In the light of the interviewees' preference, 8 interviews conducted as face to face or e-mail interviews in University Malaya Library. There were seven face to face interviews and one interview by e-mail.

There are different answers for each question because of the open-ended questions and the differences of the opinions of the interviewees. And it would be interesting to identify whether different background higher education students have dissimilar attitudes and behaviors towards the use of SNS with LMS such as the different qualification (postgraduates and undergraduates) higher education students opinions in integrating the SNS for e-learning. In order to collect data from the interviews, the matrix prepared for the interview questionnaires for helping to understand the

relationship between the research questions and the interview questionnaires. This matrix is attached in **Appendix C**.

The aim is to collect and analyze the data for the eight interviews in order to obtain the answers to the research questions. It is of challenging to ask the research questions to the interviewees directly because of the lack of understanding the research questions. If the interviewees were directly asked the research questions during an interview, the answers from interviewees might have possibly uncovered some aspect of the research design requirement. It is needed to give them a brief explanation of the topic and questions.

3.7 Data Collection Method

The goal of data collection is to answer the research questions. Each question can be linked to data collection element with the process of data collection. After all, a link between research questions and data collection tools is built to ensure that the research is properly completed.

This section displays the data collection methods in this research which contains questionnaire, documents, interviews and observations. In this research, the questionnaires and interviews are conducted into the research approach. The documents can be represented by the literature review. The following part provides more detailed information.

3.7.1 First Step: Documents (Literature Review)

The main resource for the secondary data in this research is the academic resources which are represented in books, e-databases, conferences and journal papers. At this level, the literature review identifies the existing issues, problem and the solution according to the defined research topic, objectives and the research question. Generally,

the literature resources are journals, books and conference papers; however, it does not mean that there is no good selection of literature from online resources.

In this stage, the collected resources are reviewed to provide background information for this research, and to assist in exploring and examining the growing use of LMS with SNS so as to situate this thesis results in a wider context. The literature review can assist the researcher to attain useful information relevant to the research topic, and to know how much data could be found and how much could not be currently found, which may then collected from surveys and interviews. Meanwhile, a literature map is set up by the researcher and used to classify all found literature to help furthering the research.

3.7.2 Second Step: Questionnaires and Interviews

In this phase, the primary data gathering for this thesis is accomplished by conducting a survey (see **Appendix A** for the survey questionnaire) and interviews (see **Appendix B** for the Interview Questions) with higher education students. Quantitative data is collected using a survey questionnaire and qualitative data is collected through interviews.

All results of the survey are fully gained after the target responses were collected. The collected data from the survey is filled in different formats such as Excel and Word format.

The collected data from the interviews for this research focuses on the topic about the integration of LMS with SNS by higher education students. The interviewees are selected from 8 survey respondents who are higher education students, it was assumed by the researcher that they have adequate background to understand the research questions, yet some of them needed explanations during the interview which

were provided. During the face-to-face interviews, the process of each interview was transcribed.

In brief, surveys that include multi-choice and rating scale questions (quantitative analysis) and interview open questions (qualitative analysis) were used to obtain comparable and structured data. Interview data provided in-depth information and refined the survey results.

3.8 Data Analysis Method

There are two types of data in this research study: quantitative data (survey data) and qualitative data (interview result), the tools and methods were used as data analyses for each type of data were suitable for both.

3.8.1 Quantitative Data Analysis: Survey Results

Full results of surveys were obtained after enough respondents were received through the survey. The data from the survey was filled in different data formats such as Excel format and Word format. After that, all data was categorized according to participants' education level, namely: undergraduate and postgraduate. Then the data was summarized to generate categories or themes such as the graphs and the tables. Then the data was analyzed and studied in different types like graph and table by software such as Microsoft Word and Excel which helps to identify the results for helping to find out possible answers to the research questions.

As the results of the survey were collected and filled by Excel format directly, Microsoft Excel 2010 was chosen to be the analysis tool in the present research study. Excel's tool is useful in ease analyzing the data, the function of the Filter tool has power and useful in this project. A set of survey results that met specific criterion would be seen clearly and easier to analyze.

3.8.2 Qualitative Data Analysis: Interview Results

To identify and categorize the understanding and expectations of the higher education students regarding the integration of social networking sited in e-learning system, interview data analysis is basic to complete this research study. “The process of data analysis involves making sense out of text and image data. It involves preparing the data for analysis, conducting different analyses, moving deeper and deeper into understanding the data, representing the data, and making an interpretation of the larger meaning of the data.” (Creswell, 2003, p.190). They are summarized into the following steps:

- Prepare and organize the data to analyze it
- Read the data
- Begin detailed analysis with coding
- Using the coding process to generate a description of the setting or people as well as categories or themes for analysis
- Describe how to represent the data
- Making an interpretation or meaning of the data.

In words, looking carefully through all the gathered data from interview then distinguish the data by two categories: answers from students who use SNS in e-learning and accepting the idea of the integration of LMS with SNS and the answers from the students who use SNS in e-learning. But still have problems with the integration.

In the same time, it generates categories or themes including tables, graphs, and text. For example, the transcript notes during each face to face interview were studied in more details and classified into some themes such as usage and attitudes of the students. This data was fed into some software (such as Microsoft Word,

Excel, or Access) to be analyzed and summarized in different graphs, tables and text were produced to help the researcher identify what information could be of use in answering the research questions.

3.9 Designing and Implementing the Prototype

The prototype was created to measure the integrated platform of Moodle with Facebook towards the main goal of this study for improving the LMS performance and the student engagement.

Moodle as a open source learning management system platform available on the internet. The URL for the prototype location is <http://godaddy.com>, and its work on Facebook API platform. The tools used to design the prototype is PHP, Java script and HTML editor

3.10 Prototype

The prototype was named “Moodlef”. Moodlef is simple intermediate Facebook application which enables the student to follow up with their accounts in Moodle LMS and be updated with the new activities in Moodle such as lectures, messages forums and assignments. In addition, it has been tested with 20 students have been selected randomly among the students who participated in the questionnaire in university of Malaya library.

3.11 Summary

The mixed research methodology (qualitative and quantitative research method) was chosen for this thesis. By means of mixed research method, more detailed information regarding the integration LMS with SNS were collected to identify and analyze which SNS they often use in e-learning, why they use these sites and how they use these sites, what are the features of SNS that can be used to improve and enhance LMS.

In this research study, the chosen mixed research method contains literature review, questionnaire and interview. The Literature Review is used to review current and past literature in order to collect the basic information about the research topic and questions, to find out some identified issues about the research topic, and to help understanding this research topic intensively. Questionnaire and interview in this research study are used to collect detailed and in-depth information to investigate, analyze and find answers to the research questions.

The prototype designed to achieve the research objectives stated in the first chapter and it has been tested by the students in the study to evaluate the application

University of Malaysia

CHAPTER 4: DATA COLLECTION AND ANALYSIS

4.1 Introduction

This chapter will show the collected data from the survey and the interview, which already has been discussed in chapter 3. Qualitative and quantitative data, survey results and interview results, are presented and analyzed in this chapter. The survey data were gathered from 100 surveys and the interview data were collected from eight interviews.

The survey data were separately coded and organized by tools such as Microsoft Excel, Word. The interview data were collected, summarized and coded to generate categories or themes.

4.2 Survey Data

- **Demographic information about the survey participants**

All survey respondents were higher education students at University Malaya, and included postgraduate and undergraduate students. The respondents were 104 students from university Malaya. Of these, 104 the fully answered questionnaire were 100, 51 were male and 49 female. There were 29 postgraduate and 71 undergraduate respondents. See table 4.1

Table 4.1: Demographic information of survey respondents

	Number
Male students	51
Female students	49
Undergraduates	71
Postgraduates	29
Total	100

- **Experience and awareness of e-learning, social networks, social networking sites**

Four survey questions were related to this topic and reflects the experience and awareness about the topic, and each question was summarized as a table or figure to help with analysis.

Table 4.2 presents the percentage of respondents who were aware that e-learning services were available in campus.

Table 4.2: Students' percentage of LMS awareness

	Number
Don't know	5
Yes	95
Total	100

Most respondents (95%) answered that they know about the e-learning services were available on campus, which shows that most students had experience with e-learning.

The figure 4.1 below shows the responses to the question if e-learning is useful or not. 75 respondents strongly agree or agree that e-learning is useful, 40 respondents strongly agree, 35 respondents agree. 12 respondents had no support for positive or a negative comment on this question. The rest of the respondents (15) strongly disagree that e-learning is useful.

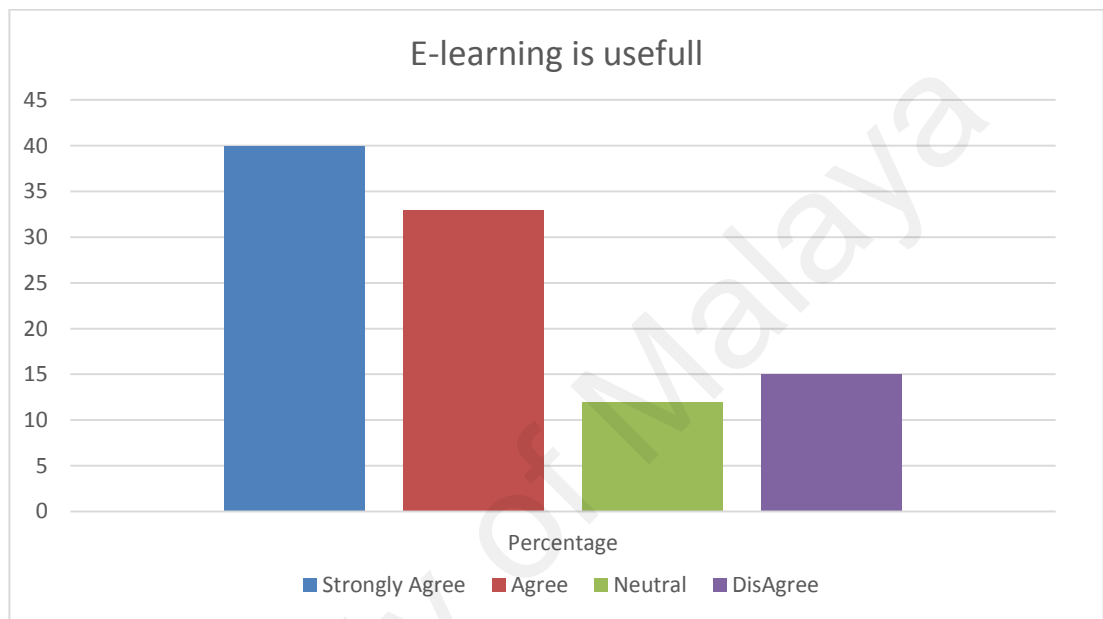


Figure 4.1: Respondents' opinions percentage about e-learning

According to the figure 4.2 which shows respondents answer if they are using SNS or not, it is apparent that about 94 out of 100 respondents often use SNS such as Facebook, Twitter and Instagram etc. only 6 respondents they didn't often use SNS. This question is to know if students use SNS for applying the integration of LMS with SNS (See figure 4.2 below).

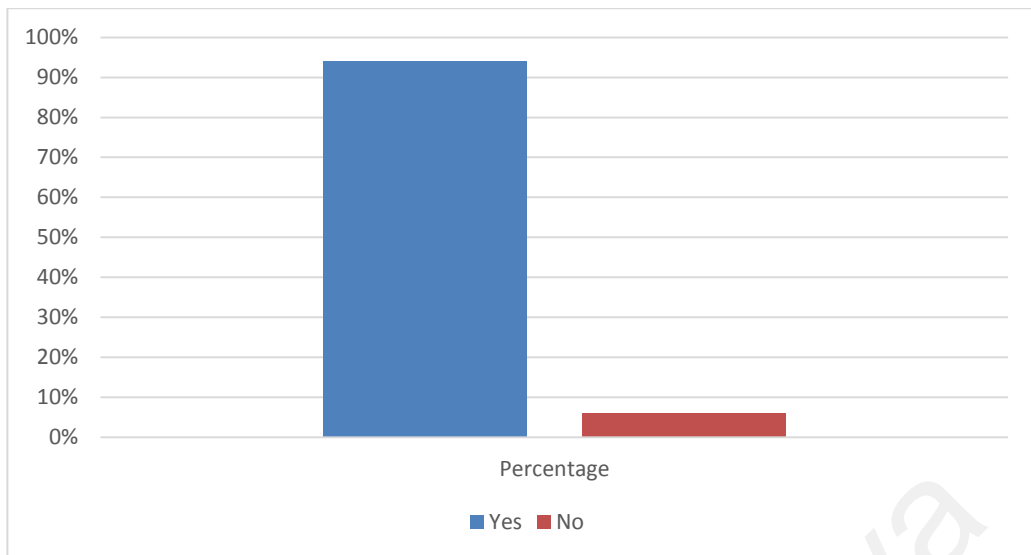


Figure 4.2: Respondents' percentage who often use social networking sites

The next figure shows that 42 respondents answered that they had been used social networking sites for more than three years. 38 respondents said that they had been used social networking sites for two or three years. 18 respondents answered that they used social networking sites for about one or two years. 2 respondents only said that he used social networking sites less than one year. These results shows that most students have more than 1 year experience for using social networking sites and they have enough experience for using social networking sites for e-learning. (See figure 4.3)

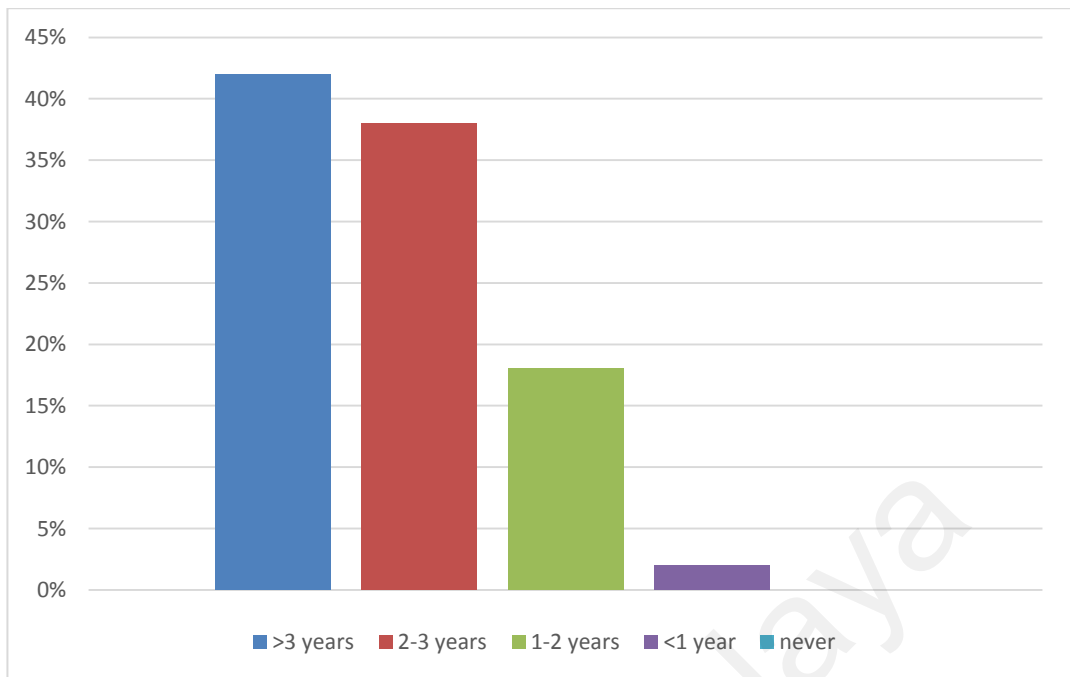


Figure 4.3: The period that respondents who have been using social networking sites

- **The Use of social networking sites in e-learning**

The remaining questions in the survey are related to the relationship between the e-learning and the social networking sites. Which are shown in the next figures.

The next figure 4.4 shows the respondents answer if they use of the social networking sites to discuss the educational materials with class mates, 22 respondents answered that they are always using social networking sites to discuss course related topic with classmates using social networking sites, 24 respondents answered that they are using social networking for the same purpose, 36 respondents said that sometimes they use social networking sites to discuss course related topic with classmates, 10 respondents answered seldom and 8 respondents only answered that they never use it to discuss course related topic with classmates.

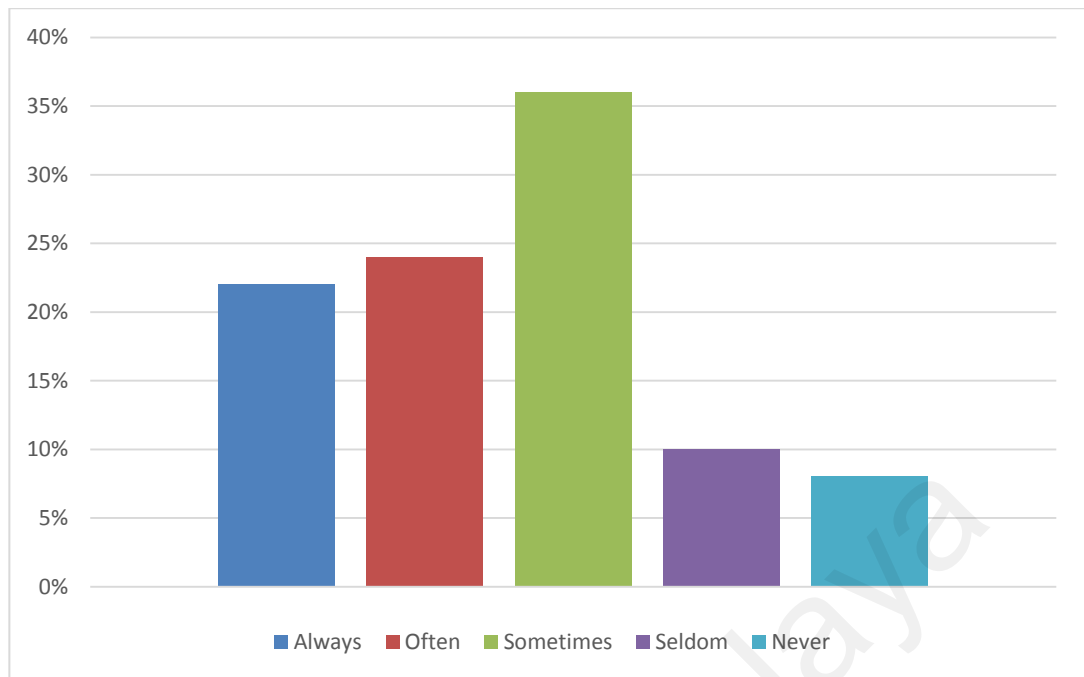


Figure 4.4: The percentage of students using Social networking sites to discuss course related topic with classmates.

The table 4.3 shows the Ways of discussing course related topics with others most respondents discuss course related topics with other people by either Face to Face (82). The second level is popular to discuss educational material with other people way Email (86). The third level popular ways to discuss course material with other people is SNS (54) and phone (40) is in the fourth place. There are only 14 choices to use other way to discuss course related topics with classmates, friends or lecturers. These results are telling us that more than half of the students are using SNS for discussing related topics to their studies.

Table 4.3: Discussion ways for the course related topics with others

	Number
Face to Face	82
Email	86
Social Networking Sites	52
Phone	40
Others	14

The table 4.4 shows the respondents preference to of SNS preference on campus. Facebook, Myspace, Twitter, Instagram were 4 popular SNS that the students usually visit. The first option for social networking site that higher education students would like to use at campus is Facebook with 99 respondents out of 100, followed by Instagram (78), Twitter (12), Myspace (2) and 5 respondents are using others SNS.

Table 4.4: Which social networking sites the higher education students like to use

	Number
Facebook	99
Instagram	78
Twitter	12
Myspace	2
Others	5

The following figure 4.5 shows the frequency of the use of SNS to find their mates in the university. 30 respondents answered that they are always using social networking sited to contact their classmates to study with them, 35 respondents which was the highest percentage of the respondents that they answer they often use the SNS for that

purpose, 27 respondents they choose the answer sometimes, 6 respondents said seldom and 2 respondents said never. The results reflects that 92 respondents out of 100 its familiar to them using SNS to find or to contact classmates to study with them.

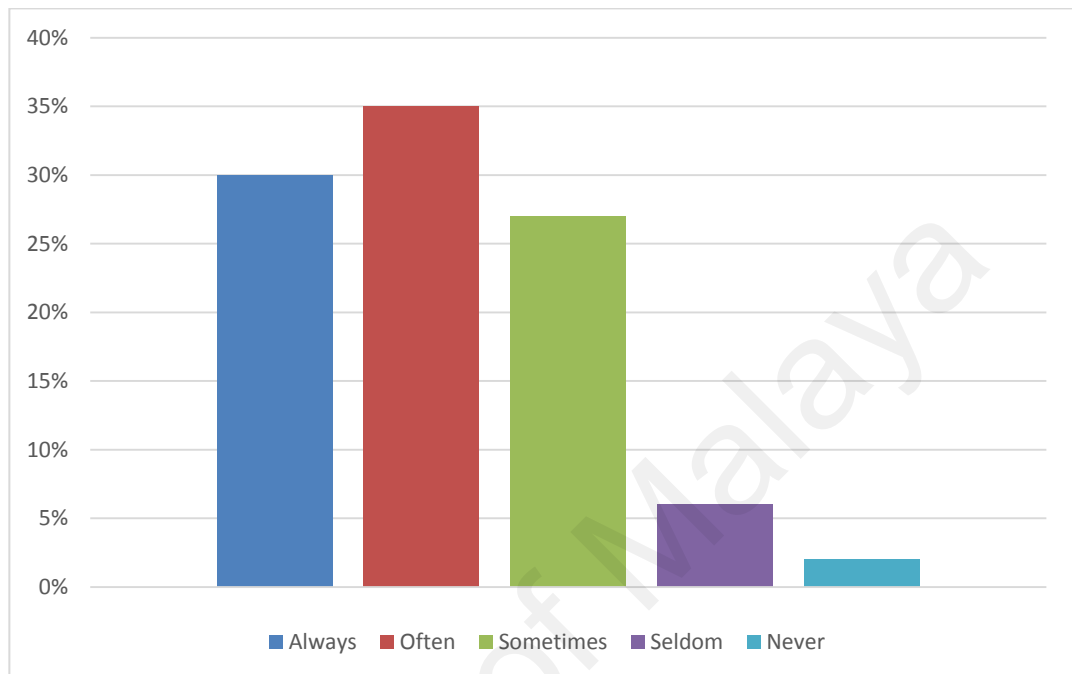


Figure 4.5: The use of social networking sites to find classmate to study with

The next question of the survey is about the factors which affect the use of the SNS in e-learning at campus. The answers according the respondents were distributed as 66 respondents out of 100 answers that the networks speed is the most effective factor which affect the use of the SNS in e-learning, 38 of the respondents choose the network access as a factor, 30 choose network security and 6 choose others. (See the Figure 4.6 as below)

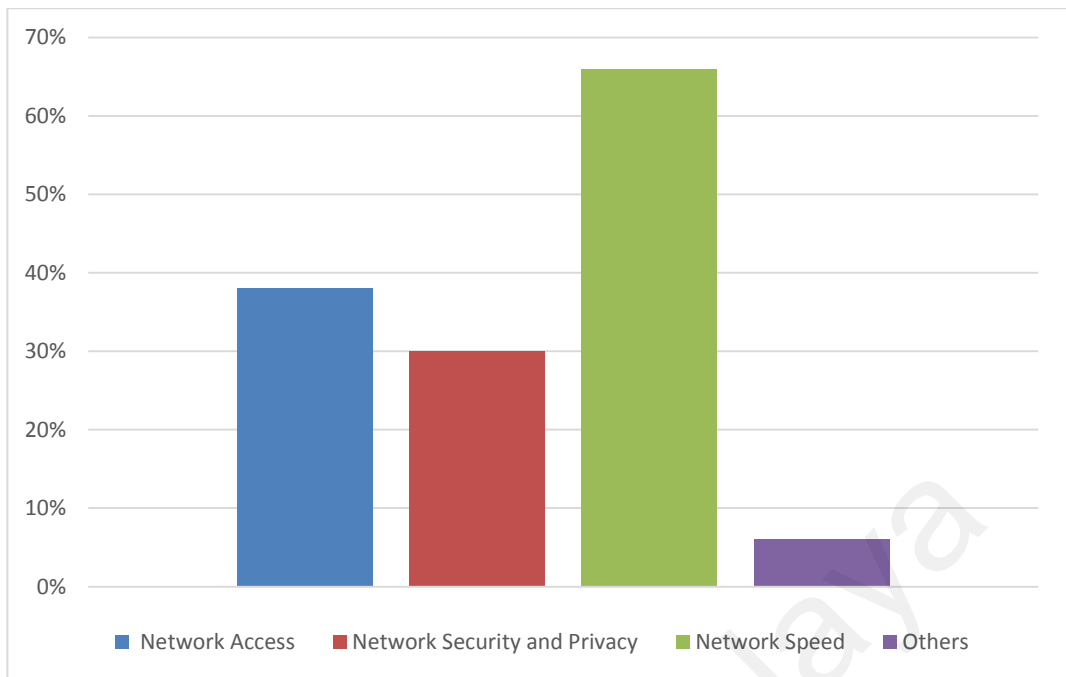


Figure 4.6: Affecting factors of using social networking sites in e-learning

Figure 4.7 shows the answers of the respondents to the question “What features of social networking websites facilitate your e-learning?”. The features of social networking websites that most higher education students prefer is Instant Messaging with 76 respondents, then viewing friend’s webpages and blogs with 58, 42 of the respondents choose making friends, 40% said adding friends and create social groups and join groups and 4 only choose others.

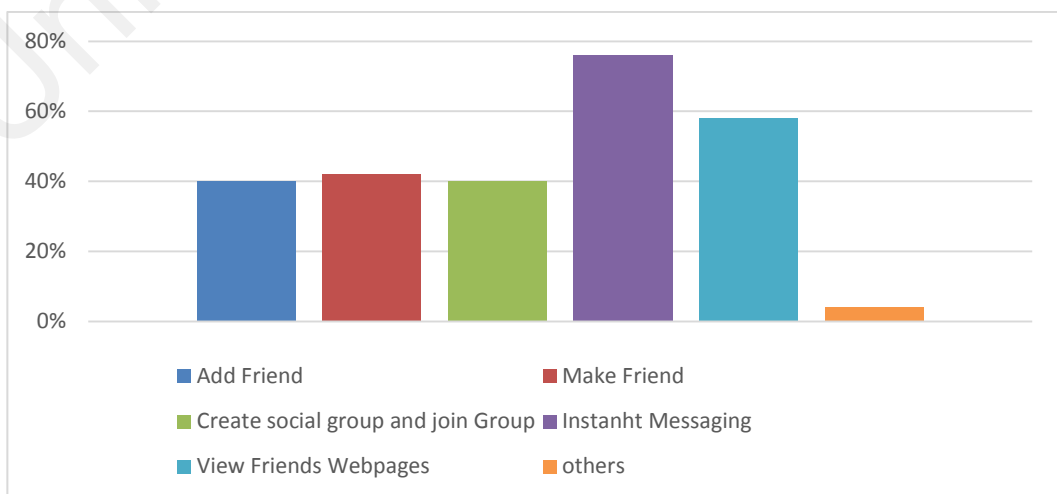


Figure 4.7: Features of social networking websites that facilitate e-learning

The attitudes of the higher education students in relation to the use of SNS in e-learning are clearly seen as optimistic and encouraging. 71 students thought it was helpful for them in more than one course when they used SNS in e-learning, 17 students said that its helpful for them in one course. On the other hand, there were 12 students computing students who did not accept it was helpful. (See figure 4.8 below).

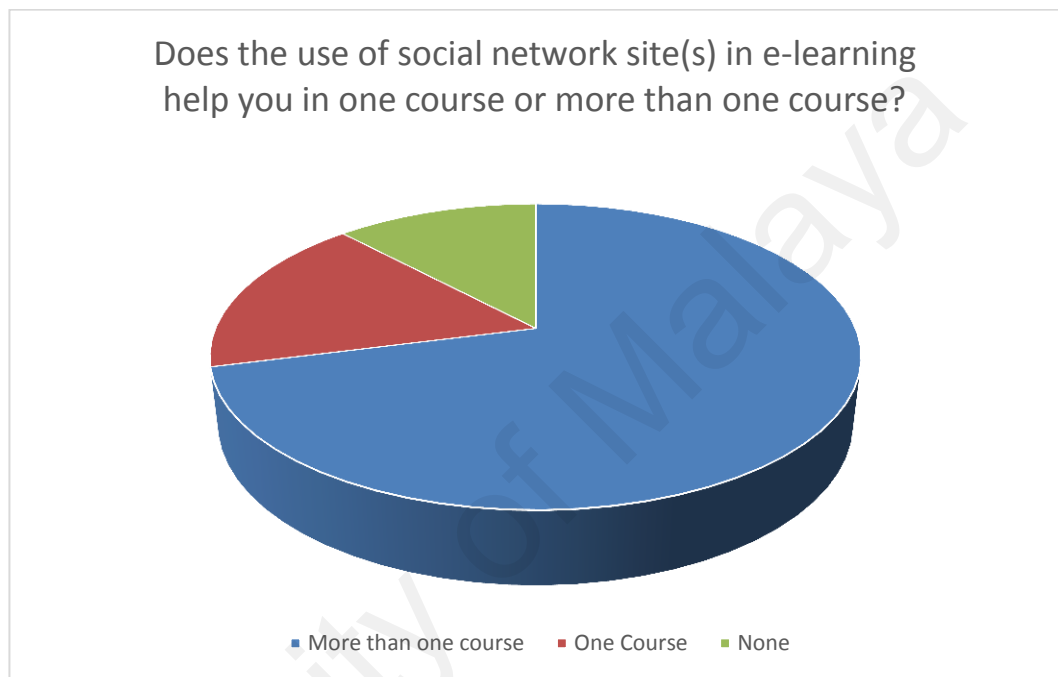


Figure 4.8: Opinions if using social network site(s) helps in e-learning in one or more than one course.

The figure 4.9 is also shows the attitudes of higher education students if the integration of learning management systems with social networking sites ease sharing and finding the educational materials. The answers of the question shows that 70 respondents out of 100 agreed that SNS help to share the educational materials with 25 strongly agreed, 45 agreed that it will be ease sharing and finding the educational materials, 14 said it's neutral, 9 disagree and 7 strongly disagree

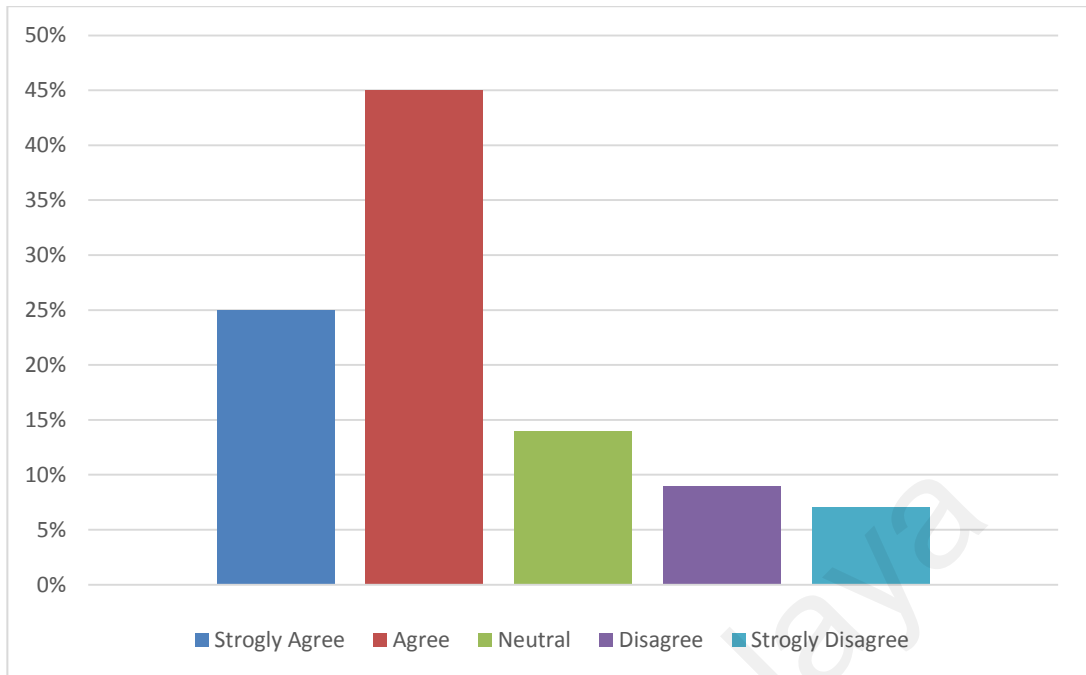


Figure 4.9: Social networking sites and sharing educational materials.

The next figure shows the respondents opinion if the integration of LMS with SNS helps to give more engagement. The answers were more into the side of accepting and agreeing with 26 strongly agree, 41 agree, 15 neutral, 6 disagree and 12 who strongly disagree as shown in the figure 4.10 below.

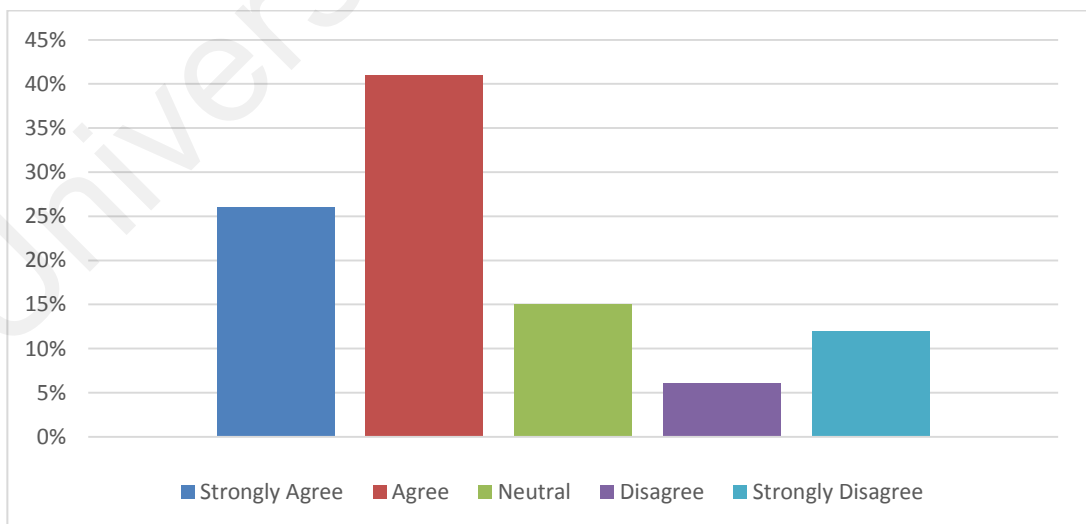


Figure 4.10: Students' engagement in LMS when it's integrated with social networking sites.

The Table 4.5 below shows the tendency of the respondents of using the SNS in e-learning if they are willing to use it. The result were over 90 out of 100 the respondents have plans to use it, 44 answered yes they will use it, 48 and only 8 respondents didn't have plans to use it.

Table 4.5: Tendency of being willing to use social networking sites for e-learning

	Number
Yes	44
Maybe	48
No	8

The following table 4.6 showed the respondents opinions if SNS must be integrated and used in e-learning. The results shows the vision of the respondents" toward the integration of LMS with SNS and it shows more resistance for the change comparing with the last table with 34 said yes, 40 said maybe and 26 said no.

Table 4.6: Respondents" opinion if social networking sites must be integrated in LMS in the future

	Number
Yes	34
Maybe	40
No	26

The last figure in the survey below shows the opinion if the integration of learning management systems with social networking sites will play an important part in improving e-learning process in the future. The answers were going to fully agreeing

with 94 out of 100 distributed in 40 respondents strongly agree, 54 agree, 2 neutral, 4 disagree, 2 only strongly disagree as in figure 4.11.

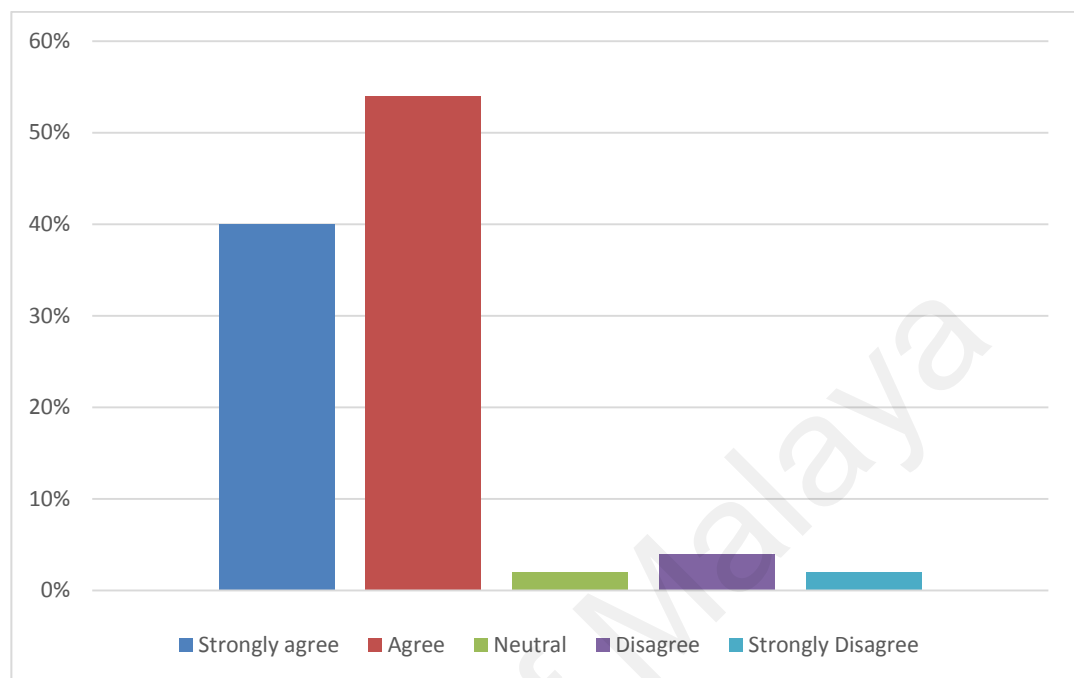


Figure 4.11: The future of integration of learning management systems with social networking sites

4.3 Interview data

Each participant was given to a unique code name instead of their real name. To protect the participants' privacy and to keep their information confident, their answers have been collected and summarized as mentioned in section 3.8.2

4.3.1 Interviews Results

The students' selections for the interview were according to their willing to be interviewed by answering the last question in the questionnaire. The interviews results of eight students were given the codes A, B, C, D, E, F, G and H, three of them are post graduate and five are undergraduate students.

- **What are the advantages of using social networking sites for e-learning? Why?**

Participant A

Participant A believed that Social networking sites allow users to share their interests such as ideas, opinions, communication and Group study. Social networking sites were perfect to discuss what they were interested in their studies.

The advantage of social networking sites for e-learning is opening easy communication way and giving discussion space for the students.

Participant B

Participant B felt that it is so easy to collect and gather more and different opinions about a topic, and he believe that more opinions means more information.

Participant C

Participant C believe that the most important advantage of using social networking sites is the use of social networking sites as e-learning resource and a lot of e-learning resources use social networking sites to share their information and educational materials. And he believes that social networking sites save time more than the used e-learning system and traditional way of learning.

Participant D

Participant D said that social networking sites gives him easy and comfortable way to communicate his mates more than the e-mail and the e-learning system for sharing and downloading the educational materials from his mates. He said also that he depends on social networking sites to know new people who share the same interests in the educational content and planning to meet them to study together.

Participant E

Participant E thought that social networking sites is helping to communicate his study mates and to share his opinions and he is use it also for group discussion with his mates.

Participant F

Participant F said that he is believing that the advantage of using social networking sites in e-learning is the easy and the fast access which make the communication with the and sharing the learning materials faster and easier than the e-learning system and he used to join groups with his mates to discuss related topics to his courses and solving the assignments.

Participant G

Participant G said that the advantage of using social networking sites because it offer groups studying area and it can be used as communication channel between him and the other classmates.

Participant H

Participant H said that he is thinking that the advantages of using social networking sites can be listed in two points; the first one about using it as communication tool and the second is easing the sharing of educational materials.

The eight students answer for the first interview question about the advantages of using the advantages of social networking sites for e-learning were summarized and coded in the following table.

Table 4.7: Respondents' answer about the advantages of using SNS for e-learning

	Sharing	Communication	E-learning resource	Easy and comfortable	Groups studying
A	X	X			X
B	X		X		
C	X		X	X	
D	X	X			
E	X	X			X
F		X		X	
G		X			X
H	X	X			

- **What are the disadvantages of using social networking sites for e-learning?**

Why?

Participant A

Participant A believed that social networking sites security is one of the most effective disadvantages with the privacy of the users. When the students use social networking sites his personal information such as name, e-mail and location will be displayed to others.

Participant B

Participant B said that some users are using fake personal information such as name, location and Age which will cause a problem with e-learning because of the authentication and privacy issues. And there were some problems with the online information resource updating and trusting.

Participant C

Participant C said that using social networking sites in e-learning got a lot of disadvantages, the most important two according to his opinion is; it is not easy to find the direct information by using social networking sites and you need a lot of time to find valuable information.

Participant D

Participant D felt that it is not easy to stat disadvantages of using social networking sites in e-learning. In his opinion using social networking sites without time management will be time wasting because of the other uses of social networking sites like chatting and adding friends.

Participant E

Participant E said that he is using social networking sites for his social perspective, and using it for e-learning will create a problem with privacy for him.

Participant F

Participant F believed that it's difficult to have immediate conversation through social networking sites. And he gave an example that sometimes his mate or his friend

was not online to contact immediately to ask him about any study problem and to discuss any educational topic with him.

Participant G

Participant G thought that it's not easy to keep his social networking sites privacy if his accounts linked or integrated with the learning management system and also using social networking sites would waste time because of contacting others in the same time will take the attention from studying.

Participant H

Participant H said that he cannot depend on the social networking sites for taking the educational materials and sometimes it's not trusted resources and the second disadvantage in his opinion that his partners not online always to have their answers.

Table 4.8: Respondents' answer about the disadvantages of using social networking sites for e-learning

Participant	Security and Privacy issues	Hard to get answers immediately from SNS	Time wasting	Learning resources
A	X			
B	X	X		X
C		X	X	X
D			X	
E	X			
F			X	
G	X		X	
H		X	X	X

- **What experience do you have about using social networking sites in e-learning?**

Participant A

Participant A use Social networking sites as Facebook to discuss assignments with other students, and using Facebook for receiving the educational materials from his mates.

Participant B

Participant B is using social networking sites to contact his class mates for educational purpose such as sending and receiving documents.

Participant C

Participant D didn't have any experience with using social networking sites in e-learning.

Participant D

Participant C had many uses for social networking sites in e-learning. He send and receive educational documents by social networking sites, discuss educational topics and assignments with class mates, contacting his mates to determine meetings among each other.

Participant E

Participant E had experience with joining class mates groups in Facebook for discussing the educational topics such as assignments and explanations, the students' issues and suggestions.

Participant F

Participant F used Facebook to contact his class mates. Also he used twitter to follow some information resources and using twitter hashtags for some topics.

Participant G

Participant G said that he had experience with Facebook by exchanging educational materials with his mates, also he had experience of joining the students groups where they discuss a lot of details related to their studies.

Participant H

Participant H used Facebook to contact his classmates and he joined classmates groups for discussing the assignments and planning for discussion meeting with his mates.

Table 4.9: Respondents' answer about the experience they have about using social networking sites in e-learning

Participant	Discussion	Exchanging educational materials	Contact	Little used	Other experience
A	X	X			
B		X	X		
C				X	
D	X	X	X		
E	X				
F	X				X
G		X	X		
H	X		X		

The respondents' answers show their experience of using SNS for e-learning purposes which is shown in table 4.9. Most of the respondents use SNS for discussion, exchanging educational materials, contacting their mates where we notice that participant C has no experience for using SNS for e-learning purposes while participant F uses it in a different way to find resources by watching the relevant twitter hashtags.

- **How many people do you know are using social networking sites? How many of these people use it sites for e-learning? What do you think about their attitudes of social networking sites for e-learning?**

Participant A

Participant A said that everybody around him is using social networking sites. About the second section of people using social networking sites for e-learning he said that many of his friends and class mates used social networking sites for

contacting or discussion about topics related to their studies. And they are using social networking sites positively in their studies and work.

Participant B

Participant B said that all of his friends except the old people are using social networking sites. The students of his classes used social networking sites for sending and receiving the learning materials such as lectures and assignments.

Participant C

Participant C said that he many people used social networking sites, but mostly young people were using it. Also he didn't know if his mates used social networking sites for e-learning except contacting each other for meeting or planning to meet. And they mostly used search engine for e-learning.

Participant D

Participant D said that he had a lot of students on Facebook and all of his class mates were using Facebook groups for discussion and planning to study together. Their attitudes were always positive.

Participant E

Participant E said that huge number of people around the world used social networking sites for communication and browsing the news and he had no certain information about using it for special e-learning topics but he believed that student could use it for communication about their studies and discussion about some topics. The attitudes more than neutral in the positive side.

Participant F

Participant F said that most people around him used social networking sites such as Facebook, many of his students used social networking sites for e-learning topics such as discussion and solving assignments and Facebook groups is useful for collaborative learning and giving them space to discuss and communicate their mates online instead of meeting each other.

Participant G

Participant G said that most people on his age are using social networking sites in their life, and mostly all his classmates used social networking sites in groups they have made to discuss anything related to their study and its very useful.

Participant H

Participant H said that all people are using social networking sites nowadays except the old people in the age of his parents and who's older than them. About the people using social networking sites for e-learning, he said that students" nowadays mostly using social networking sites for learning purpose and its helpful.

Table 4.10: Respondents' answer about their mates use for SNS and their attitudes toward using SNS in e-learning

Participant	Lots of people using Social Networking Sites	Lots of people using SNS for e-learning	Positive attitudes	Neutral	Negative attitudes
A	X	X	X		
B	X	X	X		
C	X			X	
D	X	X	X		
E	X	X	X		
F	X	X	X		
G	X		X		
H	X	X	X		

The participants' answers for these questions are showing that all of them have people around them use SNS, while all participants said that people around them are using SNS for e-learning except participant C. The figure also showing that 7 participants have positive attitudes toward using SNS for e-learning, only participant c has neutral attitudes, and no participants have negative attitudes toward using SNS for e-learning.

- **Are there any features of social networking sites affect your decision to use social networking sites to help with your e-learning? How do these features affect your decision? What features help your e-learning?**

Participant A

Participant A said that social networking sites had some features to ease his study such as easy way to contact his study mates, easy access and it offered him a space to discuss related topics with his mates.

Participant B

Participant B said that the groups and the interactive environment of social networking sites are the most important features which gave him free area to discuss and share any educational topic with his friends.

Participant C

Participant C said that he is not sure if these features will be helpful but he thought that groups might be helpful for the students to discuss and having e-learning activities such as studying together.

Participant D

Participant D said that instant messaging and direct contacting is one of the most effective features he needed to contact his mates for any related topic to his study also he believed that sharing features is important to know more information when any mate share topics related to his study.

Participant E

Participant E believed that the ability to have notification by using social networking sites is one of the most important features which keeping him in updates from his friends, also he said that sending the educational documents by instant messaging is important because he could ask any mate to send him any file.

Participant F

Participant F said that groups and instant messaging is very important to discuss any topic and assignment with his mates, also he said that sharing features is important because students could share any information topic or resource to each other which making a lot of issues easy.

Participant G

Participant G said that groups are very important for collaboration in e-learning also the notification system of the social networking sites important to keep the person updated with the changes and the new addition and his own interests.

Participant H

Participant H said that instant messaging is very important to keep himself in direct contacting with his mates but it has another alternative like mobile calls or new messenger such as Whatsapp or Viper, but he believed that sharing and notification is more important.

Table 4.11: Respondents' answer about the features of SNS which affects their decisions to use it in e-learning

Participant	Blogging and sharing	Instant messaging	Groups	Notification
A		X	X	
B	X		X	
C			X	
D	X	X		
E	X	X		X
F	X	X		
G			X	X
H	X	X		X

- **In your opinion, does integration of social networking sites with learning management system helps you now and future? If yes, how? If no, why?**

Participant A

Participant A said yes. It would be helpful to be updated with their studies, also it would be great way to keep in touch with his mates.

Participant B

Participant B answered definitely. It would ease sharing and collecting the educational materials.

Participant C

Participant C said he is not sure if it will be helpful with the rapid change in the technology world, with being more engaged and easy access.

Participant D

Participant D said yes, social networking sites integration would help his e-learning. Social networking sites created friendship like colleagues that kept in touch with them and they will be updated with the e-learning system.

Participant E

Participant E said yes, it would help him to download the educational resources and share it with easy access.

Participant F

Participant F said yes, because it would be good to be updated with the new changes in the internet technologies.

Participant G

Participant G said yes, because it would help him to be updated with system also he would share the educational materials easily with easy access to the learning management system.

Participant H

Participant H said yes, it would help him to be connected with his mates all the time and being updated if they post anything related to his study and if they did any activity by the learning management system.

Table 4.12: Respondents' answer about their opinions in integrating SNS with LMS

Participant	Being updated	Easy access	Sharing resources	Easy connection with mates
A	X			X
B			X	
C	X	X		
D	X			X
E		X	X	
F	X			
G	X	X	X	
H	X			X

- **In your opinion, does the integration of social networking sites with learning management systems helps in sharing the educational materials and increase your engagement in learning management system?**

Participant A

Participant A said definitely yes for both sharing the educational materials and increasing his engagement with the e-learning system.

Participant B

Participant B said yes, it will ease sharing the educational materials and he will be more interactive with the e-learning system.

Participant C

Participant C said yes for ease the sharing of the educational materials but he is not sure about being more engaged the e-learning system.

Participant D

Participant D said yes, it would help him to find the educational materials and being updated with the e-learning means more engaged.

Participant E

Participant E said yes, he is sure about easing of getting the educational materials but he is not sure about being more engaged in the e-learning system.

Participant F

Participant F said yes he is sure about both and he believed that the new technologies always helpful.

Participant G

Participant G said yes, it would be helpful in both sides and it would enhance the learning management system more collaboration in addition to sharing the educational materials and ensuring more engagement to the e-learning system.

Participant H

Participant H said yes, it would be easy to access to the educational materials and discussing it, about the engagement it will enhance more engagement when it would be linked to the learning management system.

Table 4.13: Respondents' Answer if the integration of SNS with LMS helps in sharing the educational materials and increase your engagement in LMS

Participant	Sharing educational materials		More engagement in e-learning system	
	Yes	No	Yes	No
A	X		X	
B	X		X	
C	X			X
D	X		X	
E	X		X	
F	X		X	
G	X		X	
H	X		X	

4.4 Summary

In this chapter, the results of the survey for 100 students' details were displayed in the ratio 1:1, male to female. The results showed most of the students agreed the idea of using social networking sites in e-learning, where 92 students out of 100 used social networking sites for learning purpose, 67 students agreed that social networking sites will investigate more engagement and will help them in sharing the educational materials and 94 students agreed that the integration of social networking sites in e-learning will play an important part in improving e-learning process in the future. The interviews results showed the advantages, disadvantages of integration social networking sites in e-learning, the students' experience of using social networking sites for learning purposes and their recommendations for integration of the social

networking sites in e-learning such as the features (notifications, instant messaging, sharing and ease access), mobile internet, training and manual for use and updating continuously. Consequently, the next chapter presents the implementation and testing based on the possible findings.

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CHAPTER 5: PROTOTYPE IMPLEMENTATION AND TESTING

This chapter displays the implementation part of the research. The prototype integrates Moodle LMS with Facebook. Facebook has been chosen to be integrated with the Moodle because of two reasons. The first one is that Facebook usage ranking among the students is the most used social networking site. The second reason is that Facebook is the only social networking site that provides the ability to enhance more features that the study needs. LMS is the name for the prototype which simplifies Facebook application for modified version of Moodle LMS that enables the students to be engaged in the LMS and eases their access to Moodle with using Facebook features in their study. Facebook and Moodle have been chosen to meet the users' requirements according to the respondents' answers as high using rates among them and most compatible with their needs and the features as they have been mentioned in the phase of collecting the data.

5.1 Description of implementation

Nowadays, implementing web applications and websites are easy for developers because of the free web2.0 tools which allow developers to use them for creating applications generally. Also, Moodle LMS software is free and open source that gives users the ability to plug in their additions, and Facebook allows developers to create their own applications and adds them freely.

To apply this prototype in the web, it is suggested to purchase the host and the domain. The used tools for developing the prototype are JavaScript, PHP, HyperText Markup language (HTML) editor and WAPM.

The Prototype is simple Facebook application which plays the role of mediation among the student and the Moodle. It enables students to know the updates of their

lectures in Moodle and follows up with all updates such as messages, assignments and lectures.

In other words, the application will ease the achievement to the learning materials for the students which means sharing for the educational materials will be easier, increasing the students' engagement in Moodle which ensure more interaction among the students and the e-learning system.

5.2 Prototype Module

In this part, the functions of the applications will be explained. According to the study factors and the research goals of the integrating social networking sites into e-learning with taking Facebook as the social networking site of the application and Moodle LMS.

5.2.1 Home page

The implemented prototype home page contains the imported activities for this study from Moodle, which makes the application as intermediate platform among both. It in turn enhances the students' ability to follow up with all updates through the Facebook application and eases the achievement to the educational materials. Figure 5.1 shows the implemented home which contains the following buttons; messages, lectures and assignments.



Figure 5.1: Home Page of the application

5.2.2 Courses

Students will be allowed to achieve their lectures easily and access to their courses activities; lectures, forums, quizzes etc. by pressing on the button of courses in the home page of the application. Figure 5.2 shows the result of retrieving the new submitted lectures from Moodle to application.

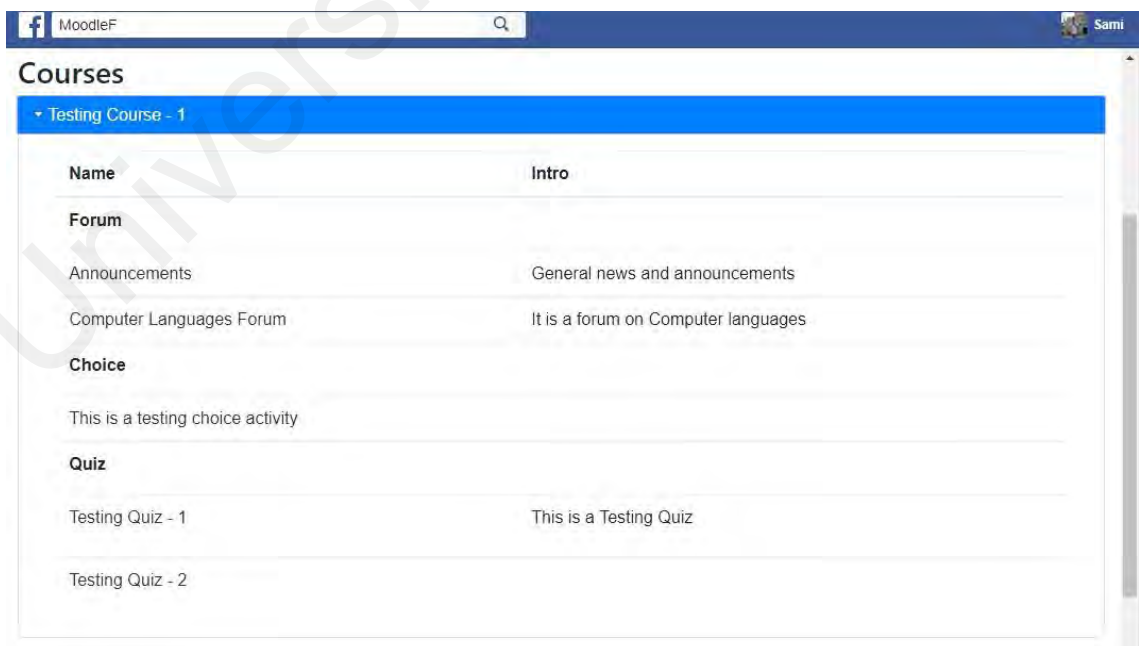


Figure 5.2: The course activities as shown in moodlef

5.2.3 Messages

The messages button in the home page will link the students to his messages in Moodle which makes the students updated with all new messages in their Moodle accounts and read the messages. The received messages as delivered to Moodle application as shown in figure 5.3



Figure 5.3: The received messages through the application

5.2.4 Assignments

As shown in figure 5.4, the student can go through the new assignments by pressing on assignment button in home page.

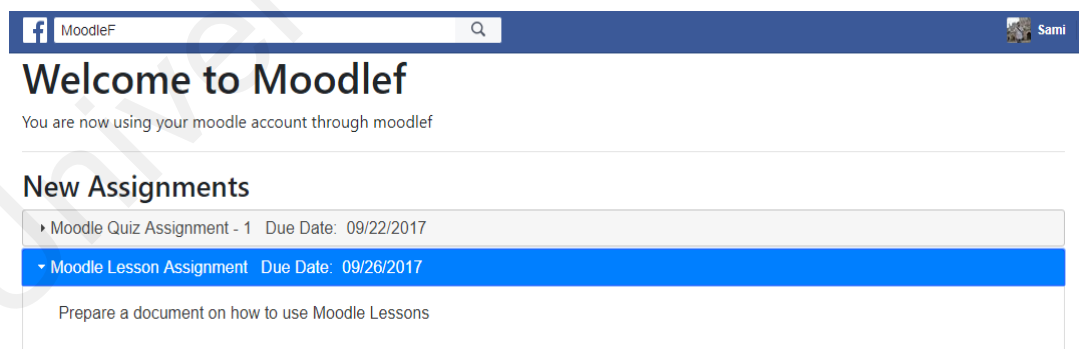


Figure 5.4: The assignments as delivered to moodlef application

5.2.5 Notification

The application depends on sending the notifications of the activities to students' Facebook accounts to keep the student updated and engaged in Moodle by using the Moodle plugin of Facebook Live Stream Box.

5.2.6 Authentication

Associating Moodle with Facebook accounts is saving the student time and eases logging in their Moodle accounts, it allows students to achieve their needs without logging in Moodle and helps to engage the students more in Moodle.

5.3 Testing and evaluation

After the completion of the application, a group of 20 students from the University of Malaya who participated in collecting the data were selected randomly to use the application among the students who participated in phase one of survey process to evaluate the integrated application based on the main objectives of this study.

The result of the first question which related to student engagement in Moodle is shown in figure 5.5, where 13 students out of 20 said that they feel more engaged with using the app, 5 students said that they feel neutral and 2 students answered that they feel they feel more engaged without the application.

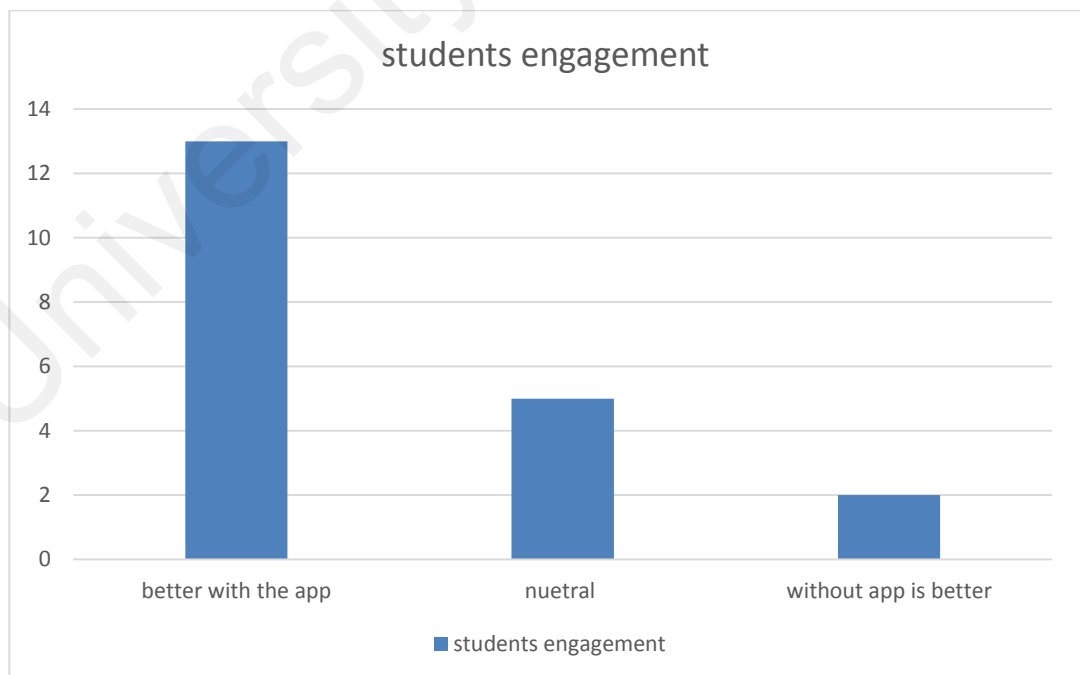


Figure 5.5: Students' engagement with the prototype

The second question was about the access to the educational materials and the tasks. 16 students were positive and answered that the application ease achieving and sharing the educational materials, 3 students find it neutral and only one student answered that he find it negative. As shown in the next table.

Table 5.1: Students' achievement for the educational materials

Agree	Neutral	Disagree
16	3	1

The third question was about if the application helps them to use the collaborative tools of Moodle after the integration with Facebook, the answers was distributed as shown in the following table with 11 student answered yes, 7 students said that its neutral and 3 students said the application change nothing about collaboration.

Table 5.2: Students' acceptance for the prototype collaboration

Accept	Neutral	No
11	7	3

The fourth question was public question if the application generally satisfy the users, the answers was positive with 17 answered yes, 2 students answered neutral while 1 student said no as shown in table.

Table 5.3: Students' acceptance for the prototype

Yes	17
Neutral	2
No	1

The last question was about their suggestion for improving the application proficiency at present and the future. The answers for this question were the first student said that using more powerful features and being updated with the new features in the internet world. Also making it compatible with the mobile learning will be useful, the second student said that using more powerful features will be helpful and supplying training for the students to ensure that they know how to use all the features, the third student believed that using features to protect the student privacy will be helpful and making sure that all students know how to use it, the fourth student said that using social networking features in e-learning will be helpful to enhance e-learning more collaboration and to make the student more engaged in the system, Student 6 said that using more techniques and features will be fine with protecting the privacy and he specified some features like hashtags and notifications by SNS also using mobile internet with manual for how to use the system, the seventh student said that he hoped that the integration will enhance the e-learning system more functions, also he hoped that the integration with the mobile technologies will keep him updated with the course details in the system, the eighth student hoped that thinking about more features to enhance more collaboration and more caring from the lecturers for the existing e-learning system to ensure the succeeding for the integrated system, the ninth said that the application needs more developing for applying and using the forums through the application not only linking them to Moodle itself, the tenth suggested linking the Facebook messenger with Moodle through the application to keep the privacy to allow him talking with his mates through Facebook, the eleventh student said that making the application compatible with the mobile will be more useful, the twelfth student suggested keeping the application updated with the new features and coming technologies will make it more professional and suggest manual for using after every new update, the thirteenth student said that keeping the application updated through

Facebook and using more Facebook features will be great, fourteenth student said that using mobile technologies and adding more features to discuss and access the forums through the application, fifteenth student said that adding more features to allow the students to send messages through the application will be a good added value not only showing the received messages, sixteenth student suggested keeping the student privacy for his Facebook is very important with adding more features, Students seventeen suggested giving the access from the application to Facebook groups, the eighteenth student suggested that adding more features by time and keeping the application updated with new technologies, nineteenth student said that improving the forums through the application will be enough and will satisfy him more than the current application and the last student suggested adding more features to enhance more collaboration through the application such as students' group chatting. The next table is summarizing the students' answers. Each participant was given to a unique code instead of their real name, from S1 to S20 to protect their privacy and to keep their information confident according to the methodology as shown in 3.6.

Table 5.4: suggestions about for improving the application at present and future

Participant	More features	Mobile internet	Training for using	Continuous updating
S1	X	X		X
S2	X		X	
S3	X		X	
S4	X		X	
S5	X	X		X
S6	X	X	X	
S7	X	X		
S8	X			
S9	X			
S10		X		
S11		X		
S12	X		X	X
S13	X			X
S14		X		
S15	X			
S16	X			
S17	X			
S18				X
S19	X			
S20	X			

5.4 Summary

This chapter presented the prototype implementation. An application was used to be intermediate application for integrating Facebook as social networking site with Moodle LMS. Snapshots of the application were provided with details of their contents. Students used to have e-learning platform in their educational life before and after the integration. Their answers have been collected about student engagement, collaboration and accessing to the educational materials and activities. The sixth chapter concludes the conclusion of the current study and suggest future works for it limitations.

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CHAPTER 6: DISCUSSION AND CONCLUSION

6.1 Conclusion

The advancement of information technology in the last decades leads the schools to integrate the Internet in the learning process to deliver their subjects and comes out by e-learning term, which refers to the use of information and communication technology for educational purposes and becomes important area of school education (Kong et al., 2014). Many educational institutions consider LMS as the most significant initiative system for teaching and learning. The LMS is the tool by which course information is given out to students. (Pilli, 2014).

The rising of the Internet accessibility, leads the SNS to be the fastest spreading cultures. In fact, it has become the most widespread communication tool over the world. Simply social media refers to media used for SNS such as Facebook which are growing vastly and widespread (Pilli, 2014). E-learning is one of the fields which totally affected by SNS which playing diversified in higher education. Students are using SNS such as Facebook to communicate with their classmates and share files and documents. Teachers also, can upload their educational materials. Both teachers and students use SNS for their interests. Students can find an expert in a field they are interested in and they can follow them. (Boyd & Ellison, 2007).

Integrating SNS in e-learning enables students to assist the operation of delivering curriculum (Liu, 2010). For many reasons SNS are used as LMS because of sharing the same platform of arrangements and updates and have more similar characteristics.

The research aims to integrate SNS with LMS to achieve the research objectives which were:

- To identify the students' needs and uses of SNS technologies for e-learning.
- To investigate SNS features and technologies can be used for sharing educational materials and enhance collaboration to LMS.
- To develop a prototype for more interaction and collaboration between the student and the LMS and sharing the educational materials by integrating the social network technologies in the e-learning systems for easy usability and accessibility.
- To evaluate the developed prototype to reach to solve the problems.

The research questions were:

- What is the use of the SNS for students in the normal environment and the learning environment?
- What are the features and technologies of SNS which can help to solve the problem of the sharing barriers and the lack of collaboration?
- Does the integrated prototype of social networking sites with learning management system suitable to insure the collaboration and engagement?

All the objectives above were achieved during this study. Moreover, the answers of the research questions were found as follow. At the early stages of this research the definitions and the main concepts of e-learning and collaborative learning were conducted. Also, the uses of SNS in e-learning and what features can be used to solve the research problems of sharing the educational materials and the lack of collaboration through the integration of SNS with LMS. Facebook has been chosen to be social networking site as the most used from the students according to questionnaire and

Moodle has been chosen as the Learning management system. Also, the collected data helped to develop the prototype by determining the needs and choosing the techniques to be used in the prototype. Results showed the advantages, disadvantages of integration SNS with LMS, the students' experience of using SNS for learning purposes and their recommendations for integration of the SNS in e-learning

The integration of Facebook with Moodle was through Facebook API to have intermediate platform among both. The application enhance the students the ability to be updated with the new posted lectures, assignments and received messages.

6.2 Research Limitation

The first limitation of this research relates to the changes in Facebook API platform strategies and codes and the compatibility among Facebook and Moodle, which needs to develop suitable plugins periodically. The second limitation relates to respondents answering the questionnaire the sample has been chosen randomly from different fields and from different age groups which create problem with understanding all the questions. The third limitation relates to testing the prototype and the users privacy in the application. Some students' claims that their Facebook accounts are private and they don't prefer to use it as part of the e-learning system. Even though, the students have good experience for using the prototype. Moreover, they find it helpful in their study and easy. The results might be different if the prototype has been tested by other respondents.

6.3 Future Work

The study can be extended to cover more SNS and more techniques through it. The study aims to engage the student into e-learning to investigate collaboration and to be updated through the integration of SNS with LMS, although the prototype enhance the students some features to ensure the goals, the work needs to be extended and to care

about the privacy section. Future work can be also extended in the field of using the SNS space for more activities such as quizzes and SNS messengers“ applications for more notifications for the students.

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