

Social Networking in Higher Education

- Innovative Use of Web 2.0 Technologies to Promote Learning -

by

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Dissertation submitted in partial fulfilment of
the requirements for the
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CERTIFICATION OF APPROVAL

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A project dissertation submitted to the
Computer and Information Science Programme

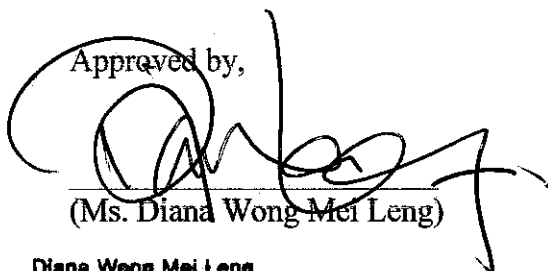
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in partial fulfilment of the requirement for the

BACHELOR OF TECHNOLOGY (Hons)

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CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgments, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



(FARAH IZZATI BINTI MOHD NOOR)

ABSTRACT

This research studies the significance of the current trend of social networking in promoting a better learning experience in higher education. The social learning medium, particularly social networking technologies are compared and analyzed to weigh their level of significance and suitability in the higher learning education standpoint. The approach towards this research will be driven towards understanding the relation between social network and learning 2.0 frameworks. This will include analyzing the former learning experience among students in higher institution and to what extent these institutions involve social learning in their learning process to date. Finally, the contribution derive from this research is a tool that promotes learning 2.0 while leveraging the social networking technologies in order to craft a new paradigm of learning experience in higher education atmosphere.

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CHAPTER 1

INTRODUCTION

1.1 Background

The significance of engaging students in learning effectively has long been recognized and thus higher learning institution for instance, had constantly shift and amend their educational system in order to cope with the changing trends in education. As time passes by, it is not only the system of education that is evolving, but the students themselves have different ways and feel towards learning. In fact, [1] the landscape of e-learning also has transformed from distribution to reflection and collaboration.

Thus, higher learning institutions need to keep in check on the students' preferences and interest in order to make sure that the learning method they implement is up to date and effective for the students to get the most out of it. Nowadays, the trend of learning through social network is emerging and it has indirectly impacts the higher education system. Therefore, institutions need to be alert to draw education system that can provide optimum flexibility among students and thus promote an effective learning environment. Facebook, You Tube, Skype, Twitter, are just a few examples of social networks that are familiar not only among students but educators as well. In fact, recent survey done by Pearson [2] had proven that while everyone had heard about social networks, 30% of the respondents who also include undergraduate lecturers communicate with their students through social networks. In fact, You Tube had shown the highest percentage as the medium of academic communications among educators and students.

As people in general are now moving from content to a more community approach to share information communicates, this research will focus on how higher education can leverage the current trend of social networking in enhancing learning experience among students. It will also underline the gaps of the former e-learning method pursued by most institution including justifying the [3] concept of learning 2.0 that maps the integration of web 2.0, specifically social networking technologies in order to promote an effective and conducive learning experience among students in higher education.

1.2 Problem Statement/Opportunities

- **The popularity of social networking technologies among students and educators. (opportunity)**

The implementation of social networking technologies in higher education is now becoming wider. Social networks are not only for everyone, but students and educators specifically have been taking advantage of this technology as a way of informally communicating academic matters. This is because they realized the power of social technologies in promoting a better and collaborative education environment. In fact, according to Dr. Nora Gamin Barnes, Ph.D., 95% of higher institutions utilized at least one form of social media to recruit prospective students [4].

As higher institution are already employing social networking technologies in the education system as a whole, this opens up an opportunity to further study the significance of software media specifically in the learning perspective to enhance higher learning education system.

- **Revolution of e-learning 2.0 as a mean to learn collaboratively (problem)**

Students now demand for flexibility in seeking knowledge, share and learn, thus divert from the concept of earlier generation of e-learning [1] that rely heavily on transmissive teaching method. It does not on the other hand encourage collaboration and participation while learning itself is a social process that is more than just distributing class material.

Thus, the implementation of e-learning 2.0 is essential as it emphasize on social learning that use social software like blogs, Twitter, podcasts and others. All these encourage a more flexible and active learning environment and thus enhance the learning interest among students.

- **Many social networking technologies that is suitable to be implemented in higher education learning environment. (opportunity)**

Social networks are growing rapidly and it can be implemented in learning environment providing that we select the best technologies that are most suitable in educational perspective. A research by Garcia V. H. M. and Zambrano A. W. R. (2010) had shown that 96% respondents use Facebook for social community, 92% use Wikipedia as web navigator, 89% use You Tube as a mean of sharing and publishing video, 87% use blogger and 78% use slideshare to share presentation is text, audio and video [5].

Thus, developing a learning and development method/approach that leverage the best social networking technologies will be able to promote a fresh and effective paradigm of higher education pedagogy.

1.3 Research Objectives

- To conduct a detailed research on the benefits, trends and implementation of social networking towards higher education learning culture.
- To identify the gaps and problems on the current method of delivering education in higher learning institutions and ways to combat them.
- To make comparisons and benchmarking on the best social media that able to meet higher education learning demands and requirements.
- To develop a tool that will integrate the identified social networking criteria/technology in order to enhance the education system in higher learning institution atmosphere.

1.4 Scope of Research

This research will be done in a defined scope to make sure it is measurable and specific.

1.4.1 Research breakdown

The research will focused on the relationship between social networking technologies and its significance in the higher education context. Therefore, below are three significant clusters in which the studies will be based upon (*a detailed breakdown of this research is presented in the methodology section*);

- **Study on the various methods and approaches that higher education system implements to promote a conducive learning environment.** It involves finding the gaps and mistakes of the former learning approaches by measuring the effectiveness of that current practice.
- **Study on the current trends in social network, its pros and cons as well as its impact towards societal behaviors, particularly students and educators.** It involves weighing the popularity, familiarity and user's review of different social network sites including knowing the reason and effect of such results on social lifestyle and behaviors.
- **Study on the impact/relation of social networks towards higher education learning environment and how the education system can be improved from leveraging the social network technologies.** It includes analyzing and selecting the best social network technology to be implemented in higher education perspective and to what extent that technologies can shape a better learning environment among students and educators.

1.4.2 Target Users

The study will focus mainly towards the students and educators in higher education comprising colleges and universities in Malaysia. The scope will cover specific selection of social networking technologies that will be best implemented for students as well as for the educators/lecturers.

The reasons for choosing higher education context rather than lower education level are due to the following reasons;

- a. Maturity and ability to grasp a new system implementation faster.
- b. Familiarity with many social networks.
- c. Suitability of social networking elements towards higher education

1.4.3 Category of Social Network Sites

Only a few social network sites will be chosen as indicator of measurement in order to carry out this study. They are selected based on the *purpose, users' familiarity, importance and high frequency of usage* among users [5]. The categories are as follow;

- Social network service (Facebook)
- Social bookmarking website (Del.icio.us/Digg)
- Video media / slide sharing (YouTube / Scribd/ Slideshare)
- Collaborative editable website (Wiki/ Google Docs)
- Blog (blogger/ Wordpress)
- Micro blog (Twitter)
- Voice call and chats (Skype/ Gtalk)
- Group discussion (Google Group)
- Friends' Update and Activities (Foursquare)

All of these technologies will be analyzed to see whether they are suitable to be implemented in higher education or not.

1.4.4 Development

For development purposes, a web-based learning system will be develop in which the system will integrates selected social networking technologies in order to promote a better learning experience. It will be implementing web 2.0 to come out with the concept of e-learning 2.0 that maps a collaborative and interactive learning environment. The site will be called Elearn Community.

CHAPTER 2

LITERATURE REVIEW

2.1 Malaysia Higher Education System

Higher Education System is categorized into three main groups: *polytechnic, college and university*. However this study will only cover the scope for college and university. In Malaysia, [6] there are about 20 public universities, 32 private universities and four foreign university branch campuses; 485 private colleges and 37 public colleges. Malaysia higher education sector which is under the jurisdiction of the Ministry of Higher Education (MOHE), [6] covers certificate, diploma, and undergraduate (Bachelor's Degree and professional studies) as well as postgraduate levels (Master's Degree and PhD levels). Indeed, these higher institutions do play a significant role in determining the future of the nation. In fact, it has been a motivation for the Ministry of Higher Education (MOHE) to transform Malaysia into a centre of educational excellence as well as emphasizing a very high priority to internationalize the higher education sector.

2.2 Importance of Providing an Effective and Conducive Learning Environment

In order to materialize the mission of the Ministry of Higher Education (MOHE), it is very crucial for the higher learning institutions to produce well-rounded qualified graduates to serve the needs of the nations and the world. Thus, the predominant way of achieving this is by providing the best education, ensuring that the learning process are effective and able to hook up student's interest and passion. In fact, research on Promoting Collaborative Learning in Higher Education [7] has outlined three design principles via features in promoting learning; (i) *Engage Learners in the Instruction of Their Peers*, (ii) *Reuse Student Artifacts as a resource of Learning* and (iii) *Involve Learners in Assessment Process*. (See Figure 2.1)

Course Name	Principles	Engage learners in instruction of their peers	Reuse student artifacts as resource for learning	Involve learners in assessment processes
Educational Philosophy		Whole-class collaboratively constructed Wiki table to summarize jigsaw activity about philosophical approaches	Table summarizing philosophical approaches, constructed earlier by students, used for an analysis activity	Students develop criteria and participate in peer assessment of "ideal school" projects presented by their peers
Learning and instruction in online environments	Features	Mini-course designed, developed & instructed online by students	Student participation in online mini courses developed and instructed by peers	Students evaluate the functioning of their peers as instructors of mini-courses
Assessment of educational projects		Theoretical topics in assessment taught by students via online and face to face discussions	Final projects based on contents gained in lessons instructed by peers	Multidimensional assessment of performance and assessors

Figure 2-1: Application of the three design principles via features in the 3 courses. [7]

The strength of these design principles are analyzed and they are; *developing an educational perception, coping with challenges in online learning and instruction as well as preparation of the learners as future assessment experts* [7]. From here, we can conclude that the framework of learning system in an institution needs to be analyzed and revised in order to produce the best and effective backbone to support students learning process and experience. With the correct methodology and approach, students will feel connected, engaged with the curricula and thus learn better.

2.3 E-Learning Approach in Higher Education Learning

E-learning as the name implies is teaching and learning process made electronically. There are three courses of e-learning mainly catered for online-distance learning courses, traditional courses supplemented with technology and the combination of both the courses which is called hybrid courses [8]. E-learning has indeed become a genuine platform for educators in higher education to deliver information and learning materials

online apart from the traditional form of teaching and learning in physical classes. In fact, the significance of having e-learning in higher education environment has been proven as [9] students are able to engage in forums for discussion as well as viewing and downloading learning materials posted online. It also provides an alternative for students that do not attend the physical classes but pursuing distance learning. In short, e-learning provides everything students need for learning via online.

2.4 Drawback of traditional e-learning method

Despite the important role e-learning has been playing in promoting higher education learning, challenges still arise as time passes by. It is not only the technology that is evolving, but the academic experience and the ways people learn and educate also change. Some of the key challenges that are present in [8] are; users treat e-learning as merely a content management system in which lecturers just post the relevant documents and leave it there for students to download. Besides, present e-learning is also lacking in terms of establishing communication between the students and lecturers where as communication consume quite some time.

This notion is supported by the studies made by Ehlers (2009) where he states that the former version of e-learning is being transmissive in a sense that it is just about distributing the materials and information to the students but not encouraging participation among them [1]. Thus, in planning and ensuring that the pedagogical approach in a higher education system is effective, the responsible party needs to be alert of the changing trends and societal behaviors thus making possible amendments to cope with the new demand and preferences.

2.5 Current Trends of Social Network and Its Impact towards Higher Education

Nowadays, as far as the modernization era is concerned, social network has become a phenomenon spreading across different demographics. Numbers of social networking sites has been built from time to time and some of them had captured such a huge number of audiences from all over the world. Facebook for instance is a very impressive trend in social networking world as it excels in penetrating the market remarkably and the information available on it is also impressive either in quality or even quantity [10].

Clive Shepherd, the Director Onlignment in Brighton, United Kingdom (2011) in his viewpoint stated that social network has become the public eye at the moment [11]. This is supported by recent survey done by Pearson Learning Solution that indicates that Facebook has now reached 400 million members with over 50% logging in at least once per day [2].

In short social network encourage communication, interaction and collaboration among people inside a community. It is [10] a community across the internet in which they can interact with each other through their profile pages that represent their selves to their network connections.

The wave of social networking has also reached and is giving indirect impact towards higher education system. As everyone is aware about the power of social networking technologies, higher education system is now realizing the need and importance to communicate in delivering education. In fact nowadays, there exist a pressing need of [1] remodeling the former e-learning approach from the concept of distribution to reflection and collaboration. (See Figure 2-2)

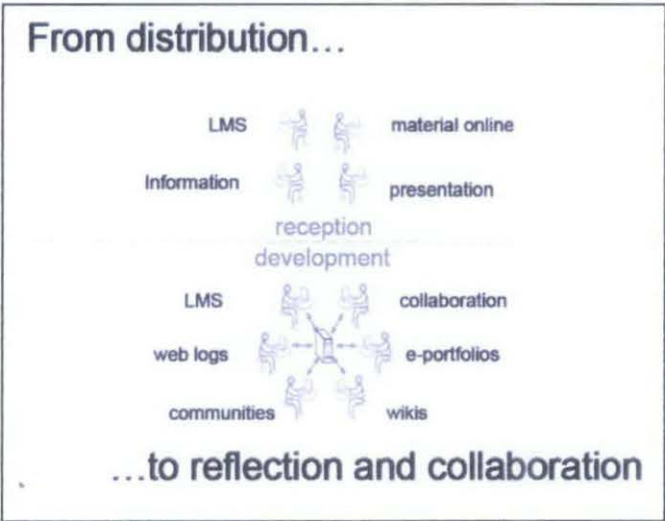


Figure 2-2: Changing in the landscape of e-learning [1]

In fact, students and lecturers themselves are very familiar of social networks and have been informally using it as a mean to communicate between each other. From about 85% of online teachers have an account for any social network, 40% of them communicate with educators and the other 38% communicate with students [2]. Though the

percentage for teachers who are not teaching online is not as high as the one teaching online, but the emergence of social network is climbing rapidly and that shows people are now aware about the good impact that social network brings about in higher education.

2.6 Social Networking Assist Learning in Higher Education

From the literature above, we know that social networking can be implemented in higher education system and obviously can benefit the system. But the question is how social network actually assist learning?

Social networks have a lot of features that can be used to support learning. Some of the features include [12] tagging, networking, co-authoring and sharing. Below are studies done by experts in proving how different social networking technologies can assist learning, particularly in higher education.

2.6.1 Facebook Enhance Learning in Higher Education

Peter Ractham and Daniel Firpo [3] in their studies have proven that Facebook can be used to assist different learning activities. In the Facebook Social Learning Project, there were many activities that have been carried out to facilitate the project. They include;

- Wall posts for shooting announcement or questions about the assignments
- Discussion about topics relevant to the particular assignments.
- Photo sharing on class attendees, students' presentation, workgroup.
- Upload and linked relevant IT-related news to in-class discussion.
- Instructor share videos on class introduction and assignment examples.
- Generate quizzes and photo/video tagging.
- Private messaging among students and the educators.

2.6.2 Wiki and Forum to Promote Experiential Learning

The paper by Xavier de Pedro Puente [13] presents about how wiki and forums can be used to assist learning. Both are considered as social networks as well since they engage people to interact, discuss as well as doing cooperative work together.

In his studies, the students were grouped and given the task of creating documents related to environmental improvement. They use Tikiwiki CMS/Groupware v1.10 as the learning environment. Since each group had a large number of members, it would be quite difficult for them to meet up face to face, thus by using they can use the forums or comments on Wiki Page to discuss as well as creating and editing the documents they had instructed to do (Figure 2-3).

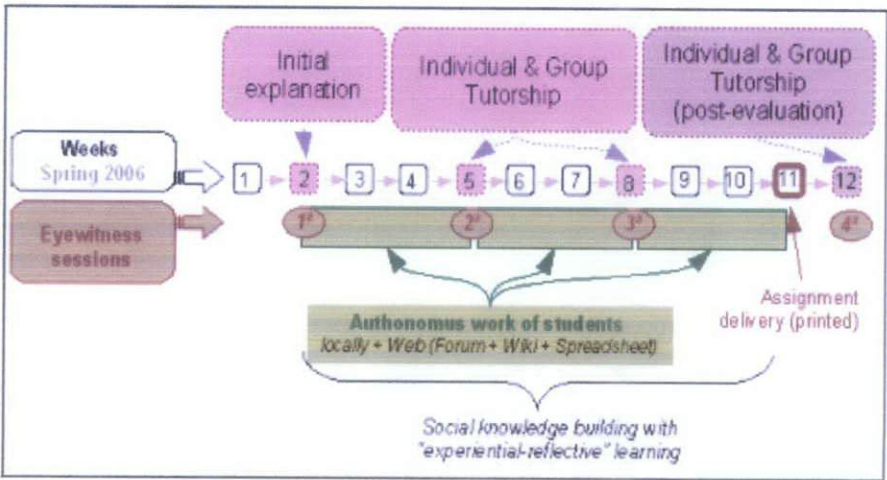


Figure 2-3: Action plan of the eyewitness sessions with students and faculty.

This definitely assists learning as not only they are able to keep in touch, but can work on the assignment together via online. This is how social networking can help in enhance students learning.

2.6.3 Twitter and Social Networks in Second Language Learning

Kristi Newgarden [14] investigated the power of Twitter in establishing a strong sense of classroom community, particularly in her field of interest that are educational technology and teaching English as a Second Language. From her

fuss to make an appointment and meeting face to face. Multimedia sharing can also be a good component for learning as videos and audios can be posted by educators to add up what students learn in physical classes. All in all, with the ability of engaging students and educators together, Web 2.0 provides various means and ways to make a learning tool more interactive and thus able to hook students' interest and participation.

2.8 Feasibility of Implementing Social Network Technologies in Higher Education

As higher education are now aware about the need to interact and learn in a more flexible manner, some has draft and execute plan for leveraging social network in their learning environment. However, there is still hesitant among students in which they think that social network in education is just a waste of effort. Like in the mtvU AP 2010 Technology and Mental Health Poll, it is reported that 4 out of ten students have at least 500 friends on social networking sites but often there is no interaction with many of them. In addition, only 11% of the students have no problem to reach their online friends in Facebook or MySpace and share personal life issues with them [17].

On top of that, social network actually has a very big influence that can shape a promising future of higher education learning. With its numerous technologies, learning process among students will be more interactive, collaborative and flexible. This is also called e-learning 2.0 in which it [18] encourages participations rather than merely publication. By actively engaging students to be responsible in their learning process, it will give them the sense of belonging and feel important at the same time. In fact, by implementing features of blog for instance, [18] participants will get individual satisfaction as their valuable written piece can be seen publicly and thus able to gain significant reputation in their community. This is what makes student feel appreciated and encourage them to contribute more.

Besides, studies had shown that dialogue is essential to eradicate boredom, demotivation or even confusion among students. Traditional learning method emphasize too much of teacher's control that will eventually lead to a poorly tailored learning

experiences [19]. Dialogue on the other hand is associated as the fundamental of social networks.

In fact, social network can also be used to engage language learning among students, particularly English. By using Twitter features for example, this can be done effectively by [14] tweeting to get to know what each other is doing outside of class. In this way, it yields active participation as students start to recognize their common purpose and preferences.

2.9 Example of Studies/Websites Related to Social Networking in Higher Education

2.9.1 Case Study Using Facebook to Enhance Learning in Higher Education [3]

Description

This study is conducted in 105 days (15 weeks) along 2009-2010 in which participants from Faculty of Commerce and Accountancy in Thammasat University were divided into 5 different user’s category. Each category of users will use Facebook to support their role/function that they play in Facebook Social Learning Project. Further descriptions are as below;

Group/Function	Task Descriptions
Learning Facilitators (LF)	2 instructors guide and facilitate students to collaborate in online discussion through Facebook
Active Participants (AP)	69 students communicate informally with each other through wall posts, comments, post videos/photos.
Observers (O)	3 faculty members who are interested in using Facebook for their future courses observed the ongoing activities on Facebook
Friends of the Community (FOC)	6 former students participate in the ongoing communication to share knowledge from their past experience in studies through replying to wall posts/comments, etc.

Table 2-1: Category of Participants

The participant’s engagement was analyzed and the results were surprising. Results showed that there were on average 34 posts per student or about 2 posts per week. Commenting features was most frequently used compared to video sharing,

tagging, online quizzes and wall announcements. Below is the table that presents the results of participation by group members:

	Summary	AP	LF	LA	FOC
Wall	163	105	45	10	3
Discussion	678	648	27	3	0
Photo	194	150	44	0	0
Video	78	75	3	0	0
Comment	1363	1173	155	20	15
Tag	104	104	0	0	0
Quiz	25	25	0	0	0
Private Message	35	25	6	2	2
All Posts	2640	2233	282	33	20

Table 2-2: Active Participations by Group Members [3]

Elements of Social Network

Obviously, this study use Facebook, a very famous social networking site to analyze the level of engagement of students and other academia people in education. This study make use of features that Facebook offers like replying to comments, wall posting, tagging, video and photo sharing as well as creating and sharing of online quizzes.

Gaps and Problems

This case study is using a readily available social networking site that is Facebook. That presents a drawback in which by using Facebook, it is not specific or has its target focus. It means that, not all features in Facebook is suitable to be implemented in higher education perspective, thus this lead to a non-optimum usage of Facebook to support and enhance learning. Besides, the scope of Facebook itself is very large, it is for everyone and anything. There are games, celebrities fan pages, and other distractions that might divert student’s attention from using it for the education purposes first.

Improvement

This current study will analyzed various features of social networking from various sote, blend it together and integrate it to develop another social learning tool specifically designed for higher education learning. It will be focusing towards only education in which when students go to this site, it will always be for educational purposes.

In fact, creating a new tool from analyzing different social networking technologies will ensure that all features are suitable and effective to be applied in higher education perspective.

2.9.2 Unileaks [20]



Figure 2-5 – Unileaks information submission page [20]

Description

Unileaks provides a place to post information on public interest matters relating to higher education. It is a news organization that is still new. Therefore, some features are not yet available such as general discussion forum [20].

Elements of Social Network

It is leveraging social network in a sense that it allows the sharing of any materials that is related to higher education system. Similarly, it adopts the technology of Wiki and adapts the concept of wikileaks. User participation and engagement in its activity, content sharing, debates, and opinion sharing eventually creates different kind of groups for different needs; those are the prevailing elements of social networking [21].

Gaps and Problems

Even though this website has collaborative aspects of social networking, the features are not strong to the extent it can enable an active participations among its users. This is because, it is more focus on discussing issues via forums which is not real-time, i.e. it might take some time for a comment/post to get a reply from other users. This means that the level of engagement or communication is not that dynamic if forum is use as the main tool for a social community discussion.

Besides, it is not merely focusing on education; instead it covers everything that is related to higher education including issues/problems in university management or problems in course structure in universities.

Improvement

This current study on the other hand will focus mainly in selecting the best social networking technologies that can support as well as enhancing the education. The strength of each elements of social network is studied thoroughly to ensure it is reliable and worth it to be implemented in higher education. For this study, Facebook, Twitter and Scribd are the selected social networking sites that will be analyzed. Some of the available features include micro blogging, video/photo sharing, tagging, resource sharing and others.

2.9.3 TUT Circle

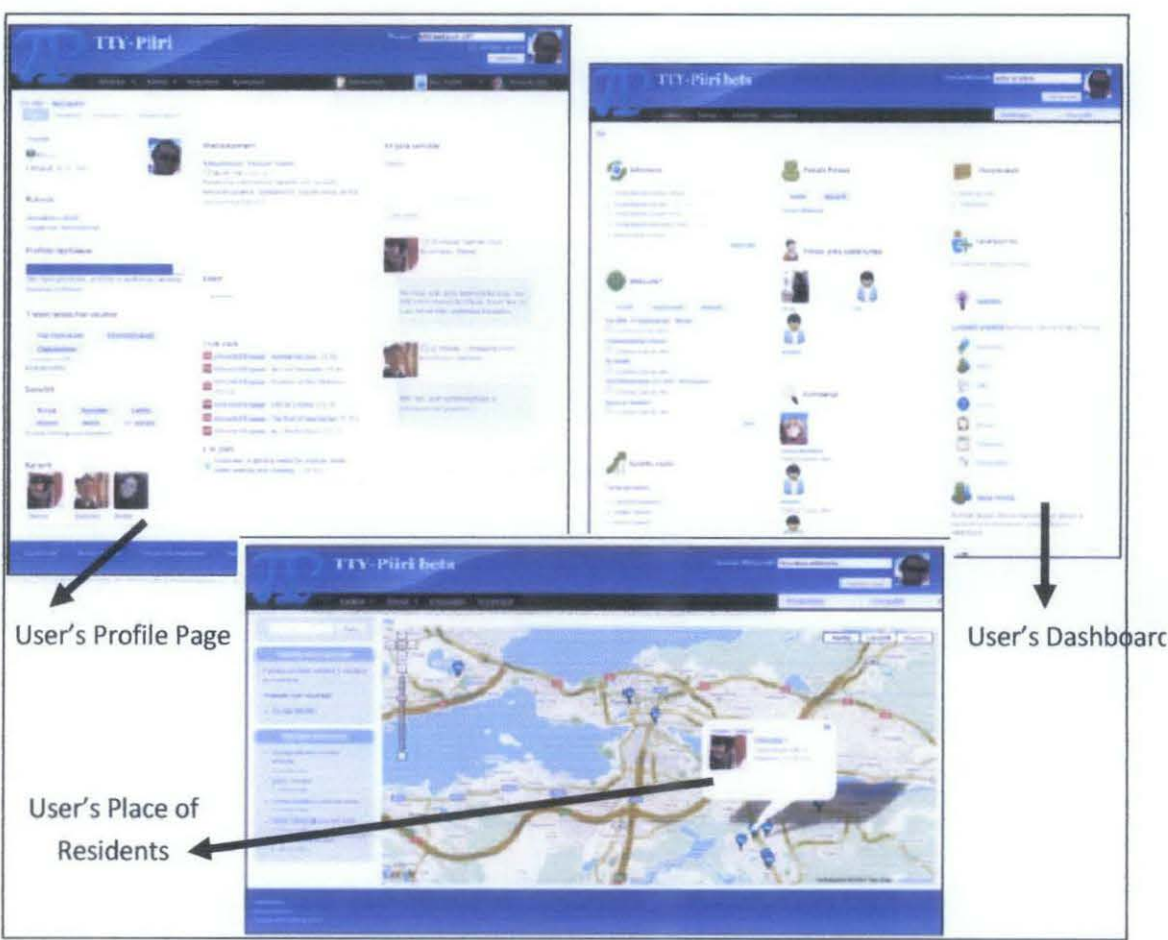


Figure 2-6 – TUT Circle Website [21][22]

Description

TUT Circle provides social networking tools mainly designed for Tampere University of Technology (TUT). It is built on the notion that students need to find peers at the beginning of their studies as most of them usually only has a few peers at such early stages [21][22].

Elements of Social Network

This site is mainly to encourage a more collaborative environment among students by allowing students to find new peers in expanding their network of connection. Besides, knowing more peers can also drive towards the discovery of common interest, expertise and motivation that will benefits students in such a way they can form a study group or learning circle [21].

Gaps and Problems

This site is designed specifically for a particular university and has strong social networking technologies that are able to create a very active communication and engagement among the students. However, the main purpose of this site is to help newly-entered students of that university to build up their network of friends so that they can make study groups and help each other as they progress through their students in that university. It thus, does not focusing towards enhancing education.

Improvement

TUT Circle can be a good reference in terms of its features and architecture, but the current study will be focusing more towards how the site can enhance education among students and not just merely to socialize and find friends. Besides, the tool that this current study is expected to develop will not only includes communication among students but with educators as well. This is because learning is a two way process, thus engaging the educators can be very beneficial as they are experts that students can seek reference to when they have difficulties regarding academic.

2.10 Relevance of the Current Research

From all the similar study and websites for higher education, these are the elements that set this current study apart from the others:

- Its focus is to cater the need for Malaysian Higher Institutions.
- It focuses mainly towards how social networking can enhance students learning process and not just about socializing or finding friends.
- It will not use the readily available social network to support education, instead this study will analyze more than one social network sites to select and integrate the best features/technologies to effectively support higher education learning.

All in all, this study is indeed relevant and should be carried out in order to ensure that our students in higher institutions will get the best and conducive medium for learning.

2.11 Suggested Tool

Based on all the above ideas on how to leverage social networking technologies in education, this project will drive the focus on improving learning experience in higher education via the use of social networking technologies. It will emphasize on two way communication between lecturers and students and how students can experience a new paradigm of learning.

Thus, a web-based learning system called eLearn will be the tool that is expected to enhance students learning experience in higher education. This tool will be implementing web 2.0 technologies that will produce a more collaborative and interactive learning environment for the students.

CHAPTER 3

METHODOLOGY AND DEVELOPMENT APPROACH

3.1 Research Framework and Data Gathering

In order to obtain the data and information to support this study, the strategy of distributing the data gathering methods is as follow:

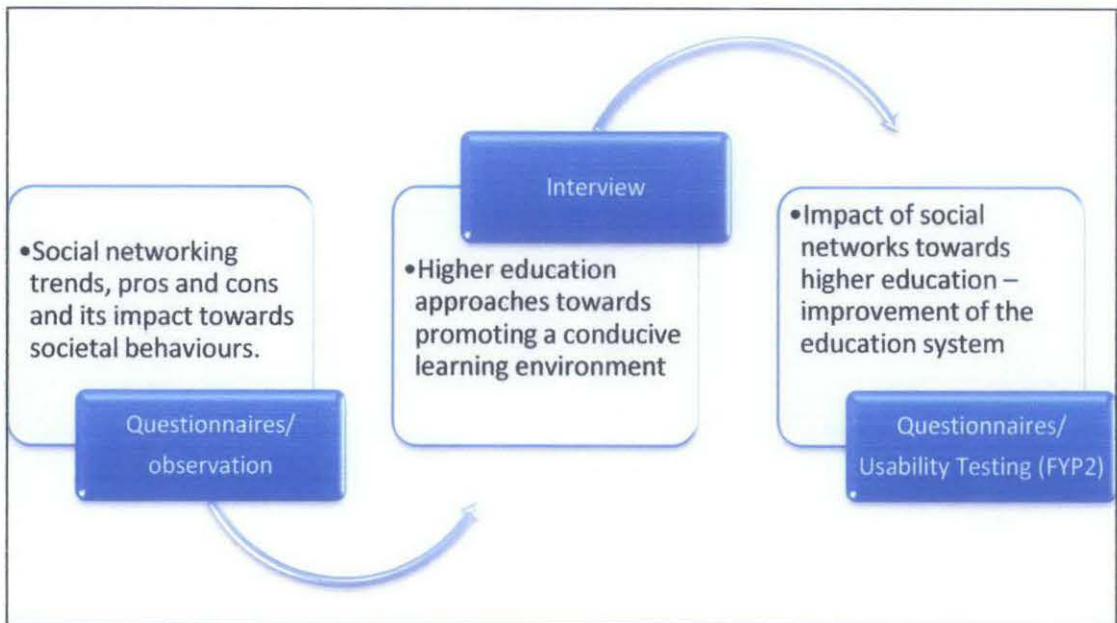


Figure 3-1: Research Components and Its Data Gathering Method

The figure above explained that this study will be divided into components to make it more systematic and easier to choose the most suitable data gathering techniques to cater for the need of each components. The study about social networking will overall be fed by inputs from questionnaires methods. The approach in higher education learning will be known by conducting interviews for lecturers. Their view regarding the implementation of social networking in the current learning process will also be asked. Last but not least, questionnaires will again be conducted in order to know the impact of the social networking towards higher education after part of the research has been done. Usability testing will be done in after the development phase.

The reasons and strategies of each data gathering method will be discussed in detail at the next section.

3.1.1 Questionnaires

Why choose this method?

The advantage of distributing questionnaires is [23] because of its flexibility in collecting quantitative as well as qualitative data, can be distributed electronically or manually, its quick, not expensive and on top of that it can cover huge number of participants despite their location.

In this study, we need to study about the participants’ behavior and preferences towards social networking as well as the impact it has towards learning in higher education. Therefore, questionnaires can gather this qualitative data and from there we can examine the pattern and percentage of the particular question. In fact, we need to select more than one university to make sure this study cater the need of higher education as a whole.

What is the strategy to conduct this method?

Item	Strategy
Participants	4 universities will be selected: <ul style="list-style-type: none">• Universiti Teknologi MARA (UiTM)• Universiti Malaysia Sabah (UMS)• Universiti Teknologi Malaysia (UTM)• Universiti Teknologi Petronas (UTP) Survey will be opened to the students of each university regardless the year they are in. This is because; different year might have different view towards social networking in higher education since they are from different age groups. Thus, we need to consider the preferences collectively.
Distribution Channel	Questionnaire will be generated using online survey generator, KwikSurvey.com. Questionnaire will be distributed online, i.e. Google Group, Facebook group page, Gtalk and other potential social networks.
Duration	Survey will be opened for one week and additional 3 days if the number of respondents is insufficient.
Objective	To obtain data about the preferences among higher institution students’ towards social networking and how social networking impact their learning.

Table 3-1: Strategy to conduct questionnaire

3.1.2 Interviews

Why choose this method?

Though interviews are considered to be costly in time and resources, but this approach is providing more valuable information as it allows the participants to voice out their opinions in their own words [23].

In this study interviews are conducted among selected lecturers/educators from a few universities to get their feedback regarding their opinion in implementing social networking in higher education system and whether the current approach/method of e-learning their university is using is efficient enough.

This method is suitable to reach the lecturers as they are knowledgeable and has different experiences that can be shared.

What is the strategy to conduct this method?

Item	Strategy
Participants	2 lecturers from any of the below universities will be chosen to make appointments with them: <ul style="list-style-type: none">• Universiti Teknologi MARA (UiTM)• Universiti Malaysia Sabah (UMS)• Universiti Teknologi Malaysia (UTM)• Universiti Teknologi Petronas (UTP)
Distribution Channel	Interview will be face to face or by phone, depending on the lecturers' free time and availability to be interviewed.
Duration	The interview will be conducted within two weeks.
Objective	To get reliable source of information from experts regarding the current e-learning method in universities to identify the gaps and how social networking technologies can fit in to fix the gaps.

Table 3-2: Strategy to conduct interview

3.2 Development and Design Framework

3.2.1 Framework from Other Study: Exploratory Learning Model. [24]

This study will be conducted based on the defined framework in order to ensure that this study is measurable and specific. Below is the analysis of similar framework with regards to facilitate learning in higher education by using social networking tools. Shumei et.al. (2007) [24] came out with a framework that make use of three social software namely Bulletin Board Services, Blog and Wiki to study their merits into learning process in higher education. The framework consists of six main phases.

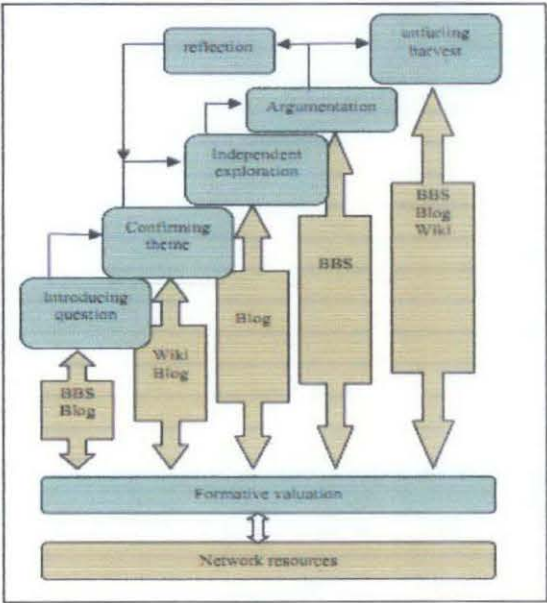


Figure 3-2: Learning Process of Exploratory Study based on Social Software [24]

The phases involve the typical learning process students undergo. In each process there will be social software that supports the process as students develop from one learning process to another [24]. Below are the explanations for each learning process:

Phase	Process	Social Media	Description
1	Introducing Theme	BBS, Blog	<ul style="list-style-type: none"> Lecturers upload information about a topic to BBS. Students think about the topic and write it in blogs.
2	Confirming Theme	Wiki, Blog	<ul style="list-style-type: none"> Gather all the opinions in BBS and group the students in teams. Each team writes plans and can correct it once uploaded to wiki.
3	Independent Exploration	Blog	<ul style="list-style-type: none"> Learners become familiar and do a more critical self-exploration about the topic, thus writing in blogs.
4	Argumentation	BBS	<ul style="list-style-type: none"> Each team uploads findings in BBS and ready for questions, suggestions or arguments from other teams.
5	Unfurling Harvest	BBS	<ul style="list-style-type: none"> Final work is uploaded to BBS. Experience and feelings from the session are written in blogs. Ready for report in Wiki.
6 Formative Assessment of all the phases			

Table 3-3: Summary of phases in exploratory learning model [24].

Overall, this framework actually explains how social networking technologies i.e. BBS, blog and wiki can support the students' learning process. Different process is suitable to implement different technology or combination of different technologies in order to make sure each process is done effectively.

Gaps of Framework

This framework provides a basic overview of learning process and based on it, this research can draw its approach of leveraging social networking tools in filling the gaps of the former model. One of the gaps identified in the former study is the selection of social software that it use to measure and facilitate the learning process. Bulletin Board Service (BBS) for instance is a weak example of social networking tool to be used as an indicator as the current study focus on learning interactively. BBS on the other hand only allow people to post messages but the reply is not always real-time. It is not 'live' since it might take a longer time for people to start reading it or replying [24].

3.2.2 Framework for Current Study

Based on the above framework and the gaps identified, the concepts that will be adopted and modified are;

- i. The learning process will be modified to tailor to more function-specific features like how to submit assignment, medium to discuss, how to share resources and other capabilities.
- ii. The social software will be changed with the best social networking sites that will be analyzed and selected based on its popularity, features and suitability to be implemented in higher education learning environment.
- iii. The framework will be the basis for guiding the development.

Thus, below is the research framework that will be based on the results of methodology.

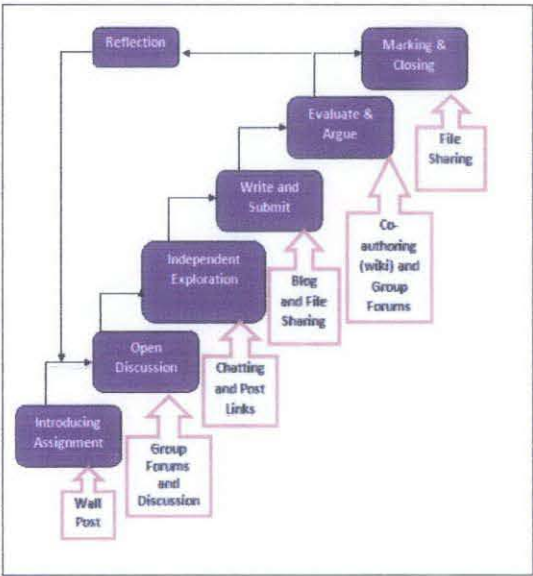


Figure 3-3: Process in a discussion and assignment submission.

The figure above represents the process that will guide the research, particularly the development phase later. The process actually involves identifying one general learning process that students will go through and identifying the social networking features that best assist the particular process.

Overview of Phases

The process involves 6 main phases in which the explanation are as follow:

Phase 1: Introducing Assignment – Lecturers will post about new assignment questions or any announcement via wall post.

Phase 2: Open Discussion – Students will then have an open discussion prior to the assignment given. This is basically to ensure students understand the concept and requirements of the assignment itself before they start researching on it. Group discussion is very suitable to assist this process as it will make it easier for the intended people to gather, communicate and thus ensuring they are not diverting from discussing about matters pertaining to the assignment.

Phase 3: Independent Exploration – Students can continue to research and gather additional information about the topic and communications can be assisted via chat room. Students can use this to ask specific questions to their friends or maybe lecturer. Posting links about any additional information about the topic can also be a useful deed of sharing information.

Phase 4: Write and Submit – This is the phase where students start to compile their research and write about it. Blogs can be used if lecturers wish to have the students to report/updates their work progress or findings they have come upon. Upon completion, the assignment can be shared or submit depending how lecturers want it to be, either public or private.

Blog is effective in this situation since students can choose to present their ideas in blogs or even video blogs in which [25] others can see the particular student, give comments, offer help and even evaluate. This is more towards dialogical approach of doing assignments. Besides, in the study conducted by Jari Laru et.al. [26], active bloggers are considered as reflectors in which they are responsive, have high self effectiveness as motivational orientation and prefer elaboration and rehearsal as their learning strategies.

Phase 5: Evaluate and Argue –Students can discuss by arguing about other’s work and defending their work at the same time. From time to time, group members can update their work as they have the authority for their work. Students can get new inputs from other students who might have pre-existing knowledge about the topic since according to the research conducted by [26], students who have the knowledge tends to participate actively in the collaborative wiki group.

Phase 6: Marking and Closing – The assignment and discussion period has come to the end. File sharing can assist this phase as the best work can be publish and shared to other students for reference.

Reflection Phase - Reflection is needed in evaluating each phases of social networking implementation. This is mainly to ensure that the features of social networks are relevant and effective to assist each phase in a typical learning process.

3.3 Project Life Cycle

This study will be conducted through agile methodology. The breakdown and project activities for each phase are explained in next section.



Figure 3-4: Project Life Cycle Model

3.3.1 Plan and Evaluate Priorities

The study will begin in planning on the requirements and priorities that need to be taken into account in order to carry out this project. This involves brainstorming writing of project proposal. Other planning will include:

- Know the project and need/relevance of conducting it.
- Identify the scope and focus of project
- Plan and schedule the time management of the overall project lifecycle. This involves coming out with a Gantt chart.
- Breakdown of the research components in order to guide the research phase by phase systematically. It will involve studying about the social network itself, the current e-learning methods and how we can integrate both in the sense of promoting a better learning experience in higher education.
- Plan how the resource needed in this project will be allocated.
- Plan the basic idea of the outcome (development product) of the project. Identifying what is the topic and activities associated with that topic.

3.3.2 Analysis

Analysis involves studying the need and demand of the research to be carried out, what other's have done pertaining to this research, outline the methodology that need to be conducted as well as identify the facts that make this research feasible.

3.3.3 Design

Based on the analysis, the design architectures and frameworks will be constructed. There are ten design principles to develop an educational social software [10].

- | | |
|-----------------------------|-----------------------------|
| • Principle of adaptability | • Principle of context |
| • Principle of evolvability | • Principle of constraint |
| • Principle of parcellation | • Principle of sociability |
| • Principle of trust | • Principle of connectivity |
| • Principle of stigmergy | • Principle of scale |

All the design principle will be the foundation of the product design from this research with emphasize on several principles that are related to this project directly.

3.3.4 Coding

The coding part involves the execution of the project plan in which all the features will be coded to develop the components for this website.

3.3.5 Testing

Testing is done to ensure that this study has achieved its main objective of promoting higher education learning. The final product of the study which is the social networking tool to facilitate learning will be measured its effectiveness over a set of measurement indicators.

Measurement Method/Indicators

Item	Scope
Basic idea and targets	Achieve its design goals and objectives of promoting a better learning experience among students
Usage needs	All the features build are significant and needed by the students to promote learning
Functionality	Have all the basic functionalities that are gathered and build based on user requirements.
Content	Ensure completeness and authenticity of the information and content presented in the tool
Usability	Ensure that the tool is easy to use with a simple yet comprehensive user interface
Layout	Attractive design theme
Technical sustainability and flexibility	Ensure the technical aspects of the tool is maintained and stable with minimum error
Moderation	Open for future improvement

Table 3-4: Aspects increasing and decreasing students’ motivation for study oriented social network site usage [22]

Testing Methods

The testing methods that will be used to test this system are:

- ***Functional Testing***

The main reason to conduct this testing is to avoid functional area before deployment. This testing can be done in parallel with the development, thus removing the problem of serialization [37].

- ***Usability Testing***

This testing procedure gathers users' feedback on this system to ensure it meets users' expectation and requirements [38].

- ***Likert Scale Analysis***

This analysis will measure the attitude, particularly students' learning experience once the system is complete to ensure this research meets its aim.

The criteria are listed below:

1. Provide Casual Learning Environment
2. Encouraged to express ideas and thoughts
3. Academic related discussion become easier
4. The features combination enhances learning.
5. Obtain support, immediate feedback and diverse answers to questions. (wider knowledge source)
6. Flexibility in learning
7. Capture attention to important matters.

3.3.6 Deliver Increment

A complete prototype will be delivered to the end user for them to experience before the complete website is released. This allows corrective action to be done before the complete tool is developed and reached to the users.

Based on the project life cycle model, all the related activities and key milestones are outlined. These are represented in the Gantt chart below:

3.4 Gantt Chart and Key Milestones

The shaded region in the box is all the project activities that drive the progress of this study forward. There are ten key milestone in this project in which they are the datelines that need to be fulfilled as the research goes on.

No	Task Name	Start	Finish
0	FINAL YEAR PROJECT TIMELINE		
1	Planning	1/2/2011	6/2/2011
2	- Milestone 1: Project Proposal	1/2/2011	6/2/2011
3	Analysis	6/2/2011	12/4/2011
4	- Milestone 2: Extended Proposal	6/2/2011	12/2/2011
5	- Literature Analysis	6/2/2011	12/2/2011
6	- Milestone 3: Viva	12/2/2011	24/3/2011
7	- Refine proposal content	12/2/2011	24/3/2011
8	- Milestone 4: Interim and Technical Report	24/3/2011	12/4/2011
9	- Conduct Data Gathering	24/3/2011	30/3/2011
10	- Analyze result and requirements	30/3/2011	12/4/2011
11	Design	12/4/2011	12/5/2011
12	- Milestone 5: System Architecture	12/4/2011	12/5/2011
13	- Identify social network elements to be used	20/4/2011	12/5/2011
14	Coding	12/5/2011	18/8/2011
15	- Milestone 6: System Prototype	12/5/2011	18/8/2011
16	- Community Page	12/5/2011	30/6/2011
17	- Micro blogging	30/6/2011	5/7/2011
18	- Article Sharing	5/7/2011	8/7/2011
19	- News Section	8/7/2011	10/7/2011
20	- Chat service	10/7/2011	20/7/2011
21	- Other additional components	20/7/2011	18/8/2011
22	Testing	24/6/2011	20/8/2011
23	- Unit/Functional Testing	24/6/2011	18/8/2011
24	- Usability Testing (Beta) and (Complete)	8/7/2011	20/8/2011
25	Deliver Prototype	30/6/2011	18/8/2011
26	- Milestone 7: Pre-EDX	3/8/2011	3/8/2011
27	- Poster Presentation and Project Demo	3/8/2011	3/8/2011
28	- Feedback Gathering and Correction	3/8/2011	18/8/2011
29	- Milestone 8: Dissertation	12/8/2011	12/8/2011
30	- Milestone 9: VIVA Presentation	19/8/2011	19/8/2011
31	Deliver Final Product		
32	- Milestone 10: Technical Report	24/8/2011	24/8/2011

Figure 3-5: Gantt chart showing project activities and key milestones

3.5 Tools and Technologies

This system will be a web- based tool that involves communication over the internet. Thus, the tools and technologies to be used in the development of this project are listed as below:

3.5.1 Web Hosting and Database

This system will be hosted in a remote web hosting at www.elearncommunity.com where the database used is mySQL.

3.5.2 Social Network Platform



Figure 3-7: Joomla and Jomsocial

The system will be built on Joomla 1.6 platform [29] for web development. It is a content management system that also allows engagement of social networking technologies as an enhancement via its component, JomSocial [29]. It provides various readily social networking features to speed up the development. MTV Networks Quizilla [30] is a social network that is powered by Joomla.

3.5.3 Social Networking Technologies



Figure 3-8: YouTube, Facebook, Google Docs, Scribd, Blogger

All the above social networks are chosen based on their popularity and features that are suitable to be embark in education which will later be filtered. YouTube is famous for video sharing capabilities while Facebook features like chatting, self-profile page, wall posts and tagging can be used in enabling interaction to happen among the students' community later. Google Docs enable co-authoring capabilities where students able to share files that is editable by anyone. Similarly, Scribd is about sharing of files while blog can provide a writing space for students to express their opinions about a topic.

CHAPTER 4

RESULTS AND ANALYSIS

4.1 Results Overview

Overall, the research took 5 months referring closely to the research breakdown defined in the earlier part of this report. The overview and description of specific results will be explained in the following section.

4.2 Survey

4.2.1 Overview and Objectives

A survey had been conducted with the aim to:

- Analyze students' preferences and common activities in social networking.
- Gather students' feedback about their current e-learning system.
- Investigate the relationship between social networking and education
- Find ways on how social networking can fill in the gaps of e-learning.

The participants were students from several universities, mainly:

- Universiti Teknologi PETRONAS - 81 respondents
- Universiti Teknologi MARA - 20 respondents
- Universiti Teknologi Malaysia - 10 respondents
- Universiti Malaysia Sabah - 10 respondents

There are also participants from other universities but they are minor in numbers (9 respondents). The survey results are attached in Appendix 1. Below is the analysis of survey results.

4.2.2 Results and Analysis

SECTION 1: STUDENTS' DEMOGRAPHIC

Generally, 99% of the students have internet connection in their campuses. 77% from them are currently within their 3rd or 4th year of studies.

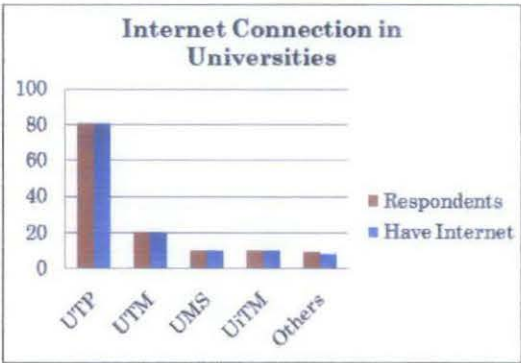


Figure 4-1 - Internet Connection in Universities

SECTION 2: BEHAVIOUR TOWARDS SOCIAL NETWORKING

While 94% of the respondents use social network on a daily basis, Facebook is proved to be the most popular social networking among students with 27% of the respondents created account with Facebook.

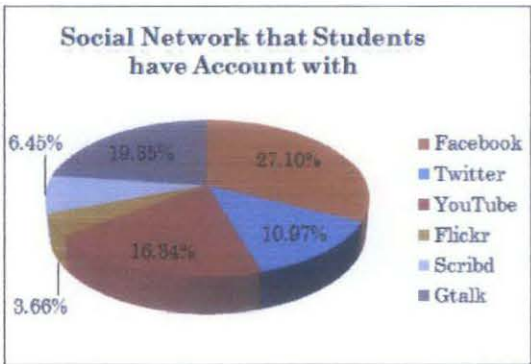


Figure 4-2- Social Network that Students Have an Account With

In fact, most respondents are very familiar with social network in which we can assure that having social networking elements in education will be an easy start

for the students. In fact, discussions on academic matters do take place via social networks when 76% students acknowledged their lecturers having social network accounts.

SECTION 3: CURRENT E-LEARNING SYSTEM IN UNIVERSITIES

90% of the students realized the importance of keeping in touch with lecturers and peers especially for academic purposes. Thus, 86% of the respondents acknowledge the importance of e-learning where UTP called it e-learning [33], UiTM called it i-learn [34] and UMS called it LMS (Learning Management System) [35]. Even though the frequency of activities happening in e-learning is high, 94% of the respondents admit that sometimes they are not aware about the activities/updates that take place in the e-learning until it has been there for a few days. In fact, 42% of them think that their current e-learning is not interactive enough. Among the features available in most of their e-learning are illustrated in the figure below.

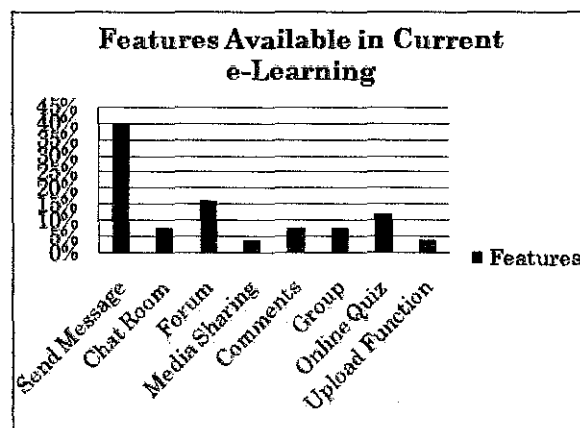


Figure 4-3 - Features Available in Current e-Learning

SECTION 4: SOCIAL NETWORKING IN HIGHER EDUCATION

79% thinks that social networking features can benefit learning by implementing them in e-learning system. Results below shows the features students believe will enhance the learning environment.

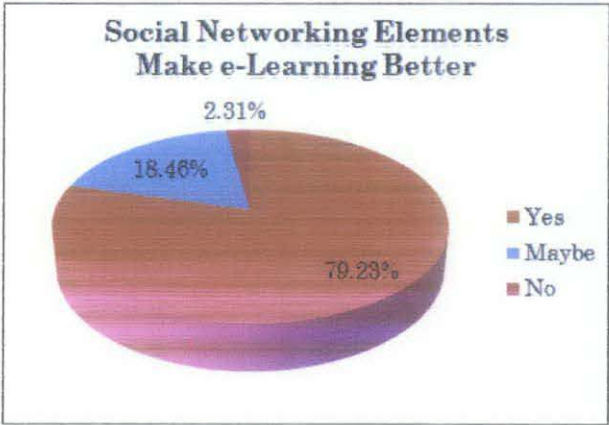


Figure 4-4 - Social Network Elements Make e-learning Better

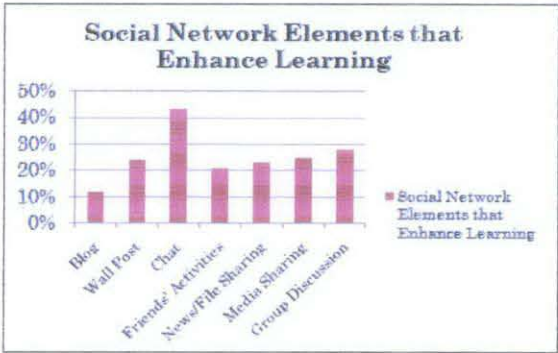


Figure 4-5 - Social Network Elements that Enhance Learning

4.3 Interview

4.3.1 Overview and Objectives

Interviews have been conducted with the aim to:

- To obtain lecturers/educators opinions regarding the current e-learning system in their respective universities.
- To investigate whether lecturer/educators also use social networking and to what extent they are familiar with it.
- To get feedback about the implementation of social network in higher education learning system.

Two lecturers and a secondary school teacher have been selected. They are:

- SMK Sultanah Bahiyah - Ms. Nabila Abdul Mukhti
- Universiti Malaysia Sabah - Ms. Zarina Amin
- Universiti Teknologi PETRONAS - Mr. Abdullah Sani Abd Rahman

4.3.2 Results and Analysis

Interview 1: Ms. Nabila Abdul Mukhti

The first interview was conducted with Ms. Nabila Abdul Mukhti who is an English teacher in SMK Sultan Bahiyah, Alor Star Kedah. She is still new with only one and a half years of experience of becoming a teacher. Despite being a teacher, the reason for this interview is because she is also an educator and since she is still young, she is exposed to social networking. Thus, we would like to know her approach in using social networking as a mean of educating her students.

Ms Nabila herself knows about social network and agrees that her students always use social network. She also mentioned that she even use social networking, that is Facebook to educate the students and communicate with them [34]. When asked how she implements that, this was her answer.

"I made a fan page called Teacher Nabila to connect with my students online. My initial plans were to do a video for school works (essays, comprehension, etc.) with the students like for every 2 weeks or so. The video will then be uploaded on my page."

However, she agrees that she is quite busy most of the time and thus she do not really have the time to keep the site updated since video shooting and editing takes quite some time.

She gave a lengthy opinion when asked about the implementation of social networking in a learning system. Overall, she said it is beneficial and a good move as students now frequently goes online and once they are online, all

information are just at the tip of their fingers. Any questions or confusion about academic matters can be asked even outside the school time. Besides, she added that via social networking, it can provide a new learning environment for students and educators in which it may attract students' interest and making them responsible for their own learning.

Ms Nabila also thinks that it is more relevant to use social networking for tertiary education like universities and colleges as the students are more matured and realize the importance of studying compared to their secondary/primary counterparts.

Below is the screenshot how she uses Facebook to educate.



Figure 4-6: Teacher Nabila Page [36]

Interview 2: Ms. Zarina Amin

Ms. Zarina Amin has been working as a lecturer in Universiti Malaysia Sabah for four years. Her field of expertise is in the subjects related to Microbiology. She too knows about social networks and agrees that her students always use social networking.

In terms of using social networks as educational medium, Ms. Zarina is also taking advantage of the social networking technology to update her students about any new information, especially to let them know about impending tests/exams.

She is positive about the implementation of social networking in the e-learning. It is a very good idea because she realizes how social networking can help her connect with students. However, she stated that there is a need for proper management if such social learning system wants to be implemented to avoid/reduce abuse.

Interview 3: Mr. Abdullah Sani Abd Rahman

Due to time constrain, this interview was conducted online (survey) and Mr. Abdullah Sani gave his opinions by answering the questionnaires given to him. Mr. Abdullah Sani is a lecturer in Universiti Teknologi PETRONAS and has been working there as a lecturer for about 15 years. Along the years, he has been teaching subject related to programming, networking, security, industrial automation and microprocessor.

Mr. Abdullah Sani has a Facebook account and is an active user of it. In fact, he agreed that majority of his students use social networks. However, he had no experience using the social network for educational purposes and the communication that happen between students are just minimal and unimportant.

Despite that, he still believed that using social networking in education is useful in certain ways like for disseminating information/alerts. In fact, social network can also be a good tool to gather quick feedbacks and to share some instructional images or videos.

4.4 Identified Social Networking Features Suitable to Learning

The following presents the benefits of each social networking element especially in enhancing education.

i. Facebook page (homepage)

Facebook itself comprise of many features. Thus, in general, Facebook has the following benefits towards education [37]:

- a. Reaching out to a student in need
- b. Know about students/classmates preference and activities
- c. Ideas and knowledge sharing
- d. Instant learning and homework/assignment support
- e. Support collaborative and flexible group discussion
- f. Platform for distance learners

ii. Micro blogging (wall post in the homepage)

Benefits to have this kind of features in education system are [38]:

- a. Delivers news and announcements faster.
- b. Direct student's attention to important things with its short and precise message.
- c. Good in organizing instant meet ups and may act as an opinion poll.
- d. Following the right people will bring great minds together for learning opportunities.

iii. Blog (blog and article sharing section)

Blog is beneficial in education perspective because [39]:

- a. Complete assignments online
- b. Students can express their opinions about topic of discussion [40].
- c. Compare others' writing and improve own writing (showcase best writing piece).
- d. Medium for extra discussion about topics learned in class

- iv. *Chat (available at every page once user log in)*
 - a. Instant question and answer session as well as real time communication
 - b. Keep in touch with friends.
- v. *News Mashup (general news section)*
 - a. Obtain general news from a few sources, apart from the news related to education. Share the news with friends.
- vi. *Foursquare [41]*
 - a. Identify hot spot to do academic meetings and discussion.
 - b. Students can learn more about campus venues and events.

Share news about campus like events, meetings that happen around the campus building [42].

Thus, based from the results, below are the social networking features that are identified to be included in the system.

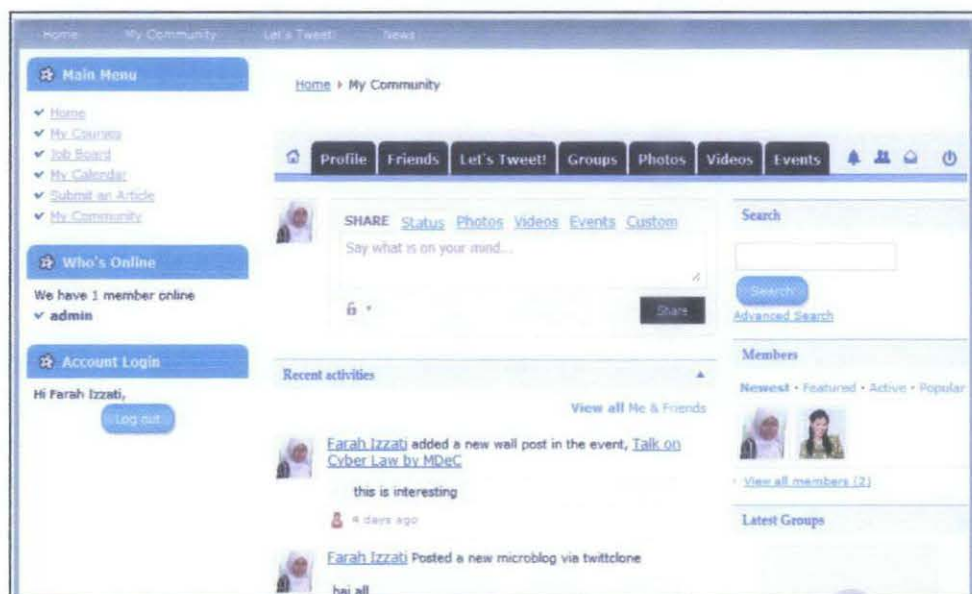
Social Network	Features
Facebook	Wall Post/Groups/Events/Media sharing/Tagging
Twitter	Micro blogging
Blog/Wiki	Expression of Ideas/Writing Space
GTalk	Chat Room
Scribd	File Sharing
News Mashup	News Feeds
Foursquare	Friends' Location and Activity

Table 4-1- Identified Social Networking Features for Learning

4.5 System Prototype (Screenshots) and its Benefits to Learning

i. My Community page

This is the page where Facebook-like interface is implemented. Users can post their status, view friends' latest activities, create groups, share videos and create events. Students will keep updated of what is happening around them including what their friends are doing like for instance attending a seminar.



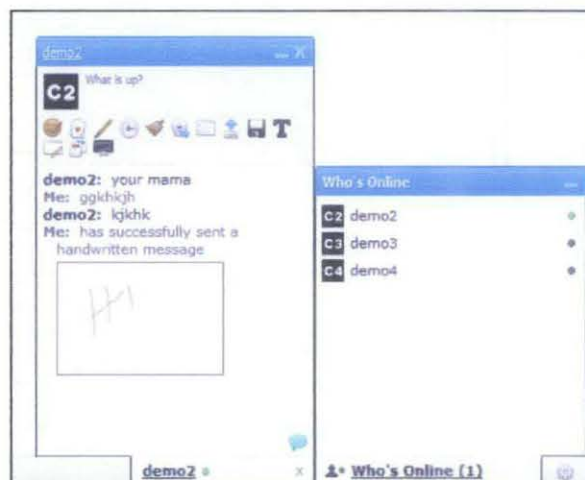
ii. Group Page

Students can do group activities as well creating new groups at this section. The lists of activities they can do are listed at the right panel menus. This feature is really beneficial in education because students can do discussion anywhere without physical meetings. In fact, they can get immediate feedback from people outside the group in case they have problems in their discussion by simply posting their questions at their profile page so that others who know might response/comment on the wall post. From here, the sources of information are wider.



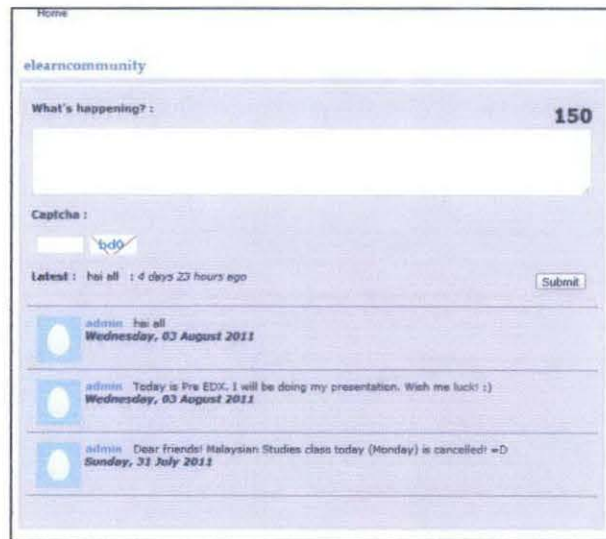
iii. Chat

Students can also engage in real time communication via the chat service provided. List of online friends will be shown and during chatting, students are entitled to many features like sharing collaborative files, share computer screen and many more. However, the extended features available are still yet to be tested.



iv. Micro blogging

This is a concept like Twitter where students can post short and instant message to be broadcast to other students. Micro blogging is known for its ability to attract attention, thus announcement and important news can be updated via students' wall post.



iv. Article Sharing

Students are able to submit their articles to be shared within their community. This is beneficial in terms of students with good writing skills able to showcase their written piece as an example for other students.



iv. News Feed

Students able to grasp the general news from the news section where this is feed from the 3rd party. Course-related news, as well as global news is available. A banner like advertisement is at the upper left corner of the page. The banner will link users to 3rd party website. This encourages students to donate and be aware about charity events.



4.6 Software Testing

Below are the results summary on beta testing followed by the detailed official testing.

4.6.1 Summary on Beta Testing

Item	Description/Comment	Improvement
Clear path to site information	<ul style="list-style-type: none">There is no path that link to the site information.Users need the site information page to give them basic overview about the site.	Create a site information page and provide a clear link to it.
Reasonable number of button and links	<ul style="list-style-type: none">There are too many links that direct to different function.The links appearing in different section do not have consistent name which made user confuse.	Reduce the number of links/button and ensure all the link's name are consistent.

Table 4-2-Feedback from Usability Testing (Beta Version)

Elements	Rating		
	1 (Satisfactory)	2 (Sufficient)	3 (Need Improvement)
Accessibility <ul style="list-style-type: none"> - Reasonable site load time - Font size/spacing readable - Error recovery is present - Site has custom not found/404 page 	<input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/>	
Identity <ul style="list-style-type: none"> - Purpose of website is clear - Website is digestible and easily understood - Information path and links are clear 	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Navigation <ul style="list-style-type: none"> - Links and menu are easily identifiable - Navigation label are clear and concise - Reasonable number of button and links - Links are consistent and easy to find. 	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Content <ul style="list-style-type: none"> - Clear headings (major/subtitle) - Consistent style and color - URL is meaningful and reflects the website purpose - Content is sufficient and meet requirements 	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

Figure 4-7-Results on Usability Testing [45]

From the result, we can conclude that this system should be improved in terms of error handling and security aspect. This is because the user need to be informed and known when they made mistakes and it is easy for them to revert/undo their actions. The website also already has a custom 'not found/404 page'.

4.7 Likert Scale Analysis

Based on the measurement indicators below, the summary on the likert scale results are analyzed.

1. Provide Casual Learning Environment
2. Encouraged to express ideas and thoughts
3. Academic related discussion become easier
4. The features combination enhances learning.
5. Obtain support, immediate feedback and diverse answers to questions. (wider knowledge source)
6. Flexibility in learning
7. Capture attention to important matters.

The summary of the testing are indicated in percentage like in the figure below.

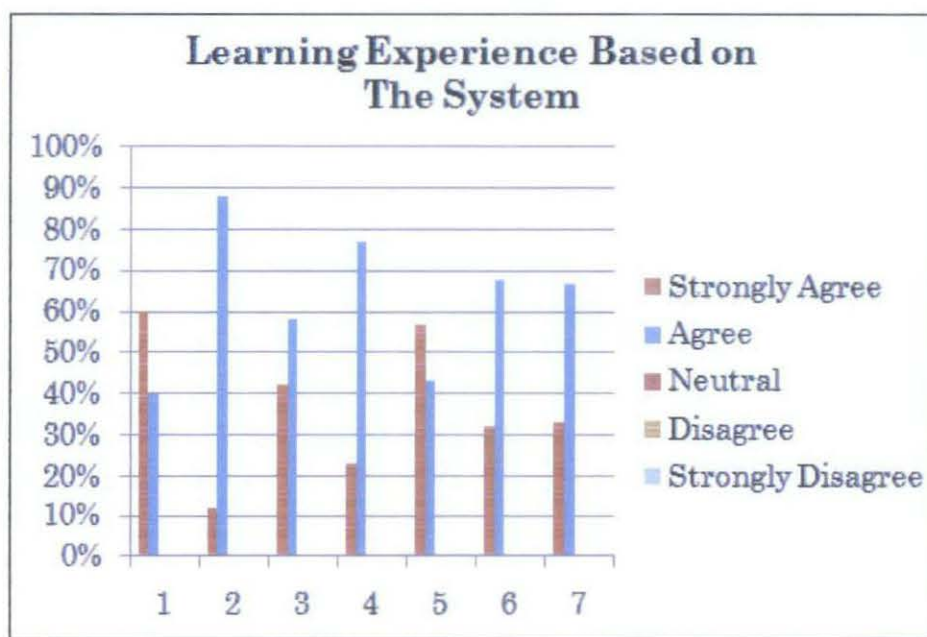


Figure 4-8 - Learning Experience Based on the System

CHAPTER 5

DISCUSSION

5.1 Critical Analysis on Data Gathering Results

Interpretation of the results from each data gathering techniques has been described in Chapter 5. Based on those interpretations, critical analysis and summary will be discussed in this section.

5.1.1 Social Networking is a Trend and Lifestyle among Students and Lecturers.

It is indeed clear that from the results, the lecturers/educators are very familiar about social networks and the famous site among them is obviously Facebook. From here we can conclude that in this current era, not only students, but their educators as well has been actively using social networking and to implement it in education will not make them startled or hesitate as they are familiar in using social networking. It is a trend that will benefit the learning system and kick away the monotonous and common e-learning system. In fact, most of them have internet connection, thus making this project feasible being as an online platform.

5.1.2 Significance of Having a Good E-Learning System to Assist Education.

To implement social networking capabilities in the traditional e-learning system will not change the overall structure or content in it. Instead it provides a new learning environment that suits the trend and students preferences. This will obviously makes learning fun, interactive and informative at the same time.

Students obviously want a learning environment that able to hook their interest since education should be delivered in a way that able to make students eager to receive more. From the results, we can see that students frequently go online and lecturers should take advantage of this habit to make students go online for something that if beneficial for them.

5.2 Identified Social Networking Elements and how it Enhance Education.

Below are the indicators on how each identified social networking elements has contribute and relevant in the learning context.

Features	Benefits to Learning
Wall Post/ Comments	Reply to a post indicates support by reaching out to students in needs or sharing knowledge and information.
Micro Blogging	Delivers news and announcements faster. Direct student's attention to important things with its short and precise message. Good in organizing instant meet ups and may act as an opinion poll.
Chat Service	Instant question and answer session as well as real time communication Keep in touch with friends
Friends' Activity	Encourage behavior modeling. Friends' activity might shape or determine what students' will do next.
File and Media Sharing	Information sharing and knowledge exchanged.
News Feed	Obtain general news from a few sources, apart from the news related to education. Share the news with friends
Blog	Complete assignments online Students can express their opinions about topic of discussion [15]. Compare others' writing and improve own writing (showcase best writing piece).

Table 5-1 - Social Networking Elements in Learning

5.3 Social Networking Features Enhance Learning Experience

The post-development results show that this system has met the social learning indicators. Conformance to these indicators, signals that this system is able to meet the fundamental objective of social learning, thus prove that social networking elements do enhance students' learning experience in certain ways. By comparing the traditional e-learning with this system based on the indicators proves that this research has reached its objectives. The figure below shows the comparison.

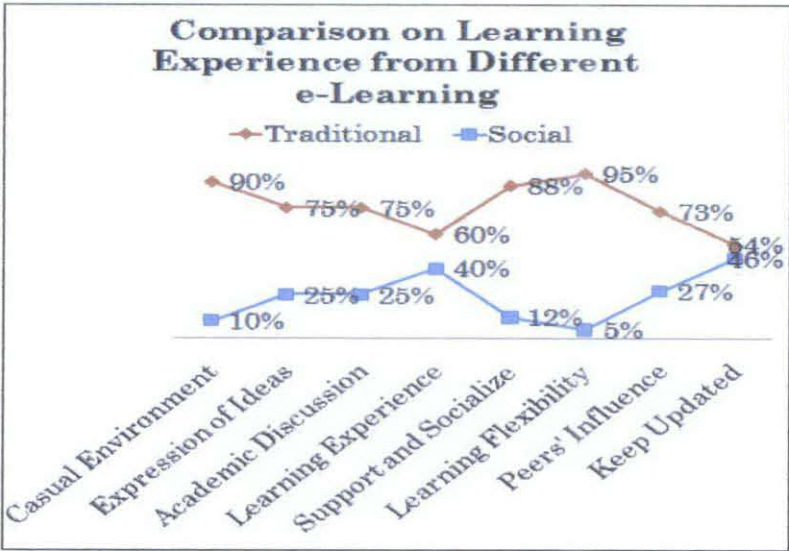


Figure 5-1 - Comparison between Traditional e-Learning and Current System

Thus, it is proven that by embedding the social networking elements to the current learning environment enhance learning in terms of providing casual and diverse knowledge environment as well as offer support encourage them in discussions.

5.4 Drawbacks and Solutions

From the analysis, possible drawbacks need to be addressed so that it can be corrected earlier before development takes place. Some of the possible problems and its respective solution are summarized in the table below:

Drawbacks	Solution
Students might use the social learning tool for reason other than academic matter.	<ul style="list-style-type: none"> Students' activities are made visible to their respective lecturers to allow monitoring.
Students and educators are concerned about their privacy on the social learning platform. [46]	<ul style="list-style-type: none"> This social e-learning tool allow the users to set the privacy setting without [46] but not to the extent of the socio-technical system of Facebook/MySpace. Universities can host this system in within its Local Area Network or its main server for future use.

Table 5-2: Possible Drawbacks of a Social Learning System

CHAPTER 6

SYSTEM DESIGN AND DEVELOPMENT

6.1 Design Consideration

Design considerations will be the main reference as the development progressed later. By referring to the research framework in Chapter 3, users' preferences towards certain social networking features will be mapped to assist each learning process (see Chapter 3). The following figure shows how social networking is fit into each learning process.

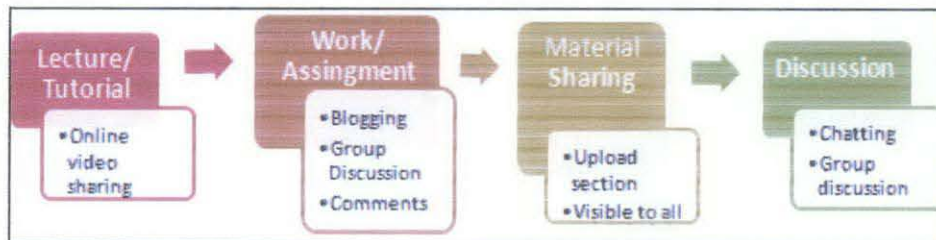


Figure 6-1: Social Networking Features to Assist Learning Process

6.2 Design Architecture

Below are the design architectures for social networking site in higher education perspective.

6.2.1 General Architecture of Social Learning [47]

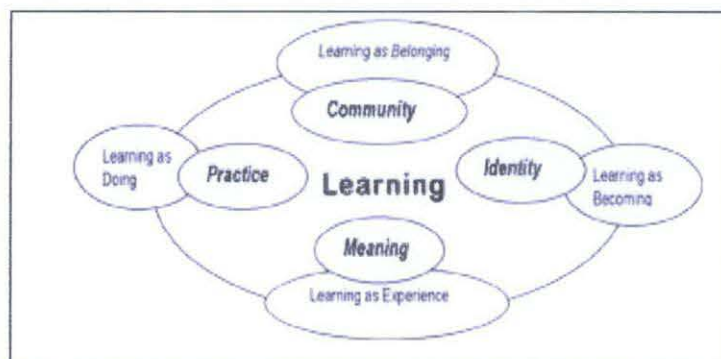


Figure 6-2: Learning Framework in a Social Learning Environment [47]

To design a social learning environment, the above framework [47] is followed closely so that the learning concept in a social learning environment is met. Each category represents how learning should be designed in order to give students a well-rounded kind of education. The system should be able to involve *practice* by making *learning as a dialogue*. In terms of *community*, people should *learn as belonging* and both dialogue and sense of belonging are present in this learning system as students can interact with their peers as well as lecturers and they have their own groups in which they shared the same goal and works in a common way. To emphasize on the *identity*, people should *learn as becoming* and to make it *meaningful*, they should be able to *learn as experience*. This system promotes flexibility which allows students to do self-exploration and presents their idea through writing their progress and findings in blogs.

6.2.2 System Architecture

Below is the representation of the overall system where Elearn Community which resembles the structure and how the system works.

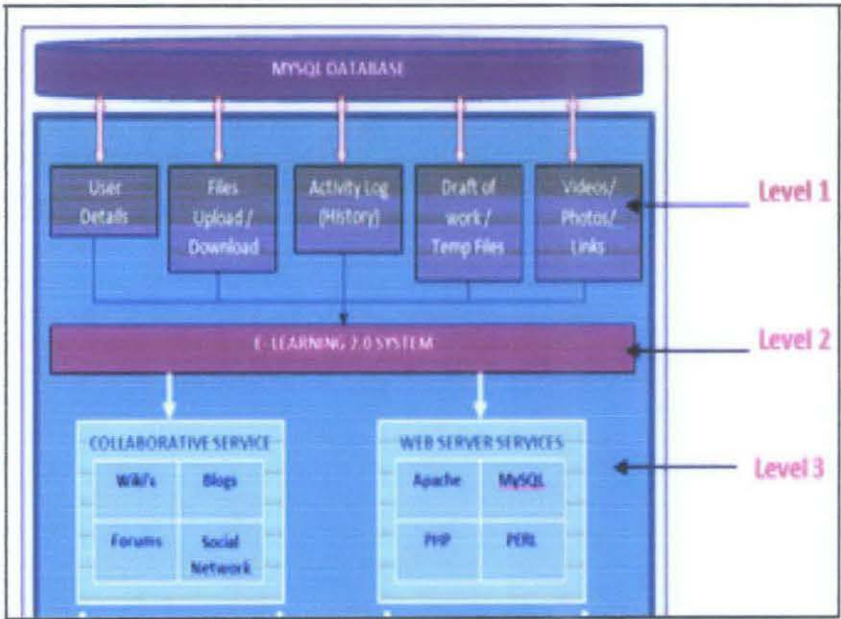


Figure 6-3: System Architecture

a) **Level 1 & Level 2**

Deals with system's data (input and output) which made up the system itself. These data *i.e. user details, files, log, drafts, media files and links* will be stored, retrieved and updated from time to time.

b) **Level 3**

Level 3 comprise of two main services that is used in the system which are:

- *Collaborative Service* to add interactivity and social elements to the system and *Web Server Service* to host and make system available and accessible online.

6.2.3 System Flow Architecture

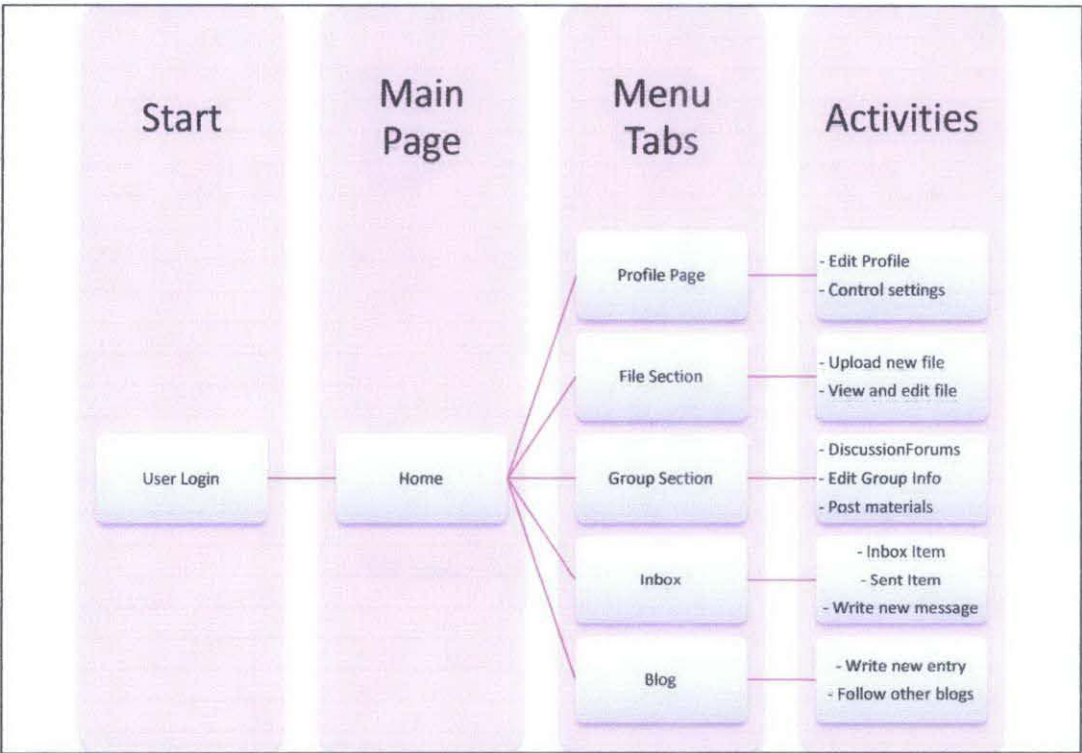


Figure 6-4: System Flow Architecture

The above figure represents how the system flow once user login to the system. The homepage (*Home*) have all the notifications displayed and links to the other pages

like *Profile Page*(edit profile), *File Section*(share files) *Group Section* (discussion), *Inbox* (messages) and *Blog* (provide writing space).

6.3 Development Overview

Using the tools and technologies in Chapter 3, the system will adopt all the listed features below which are based on the results in Chapter 4.

- Wall Post/Groups/Events/Media sharing/Tagging
- Micro blogging
- Expression of Ideas/Writing Space
- Chat Room
- File Sharing
- News Feeds
- Friends' Location and Activity

6.4 Development Process

The development process will follow the main stages below:

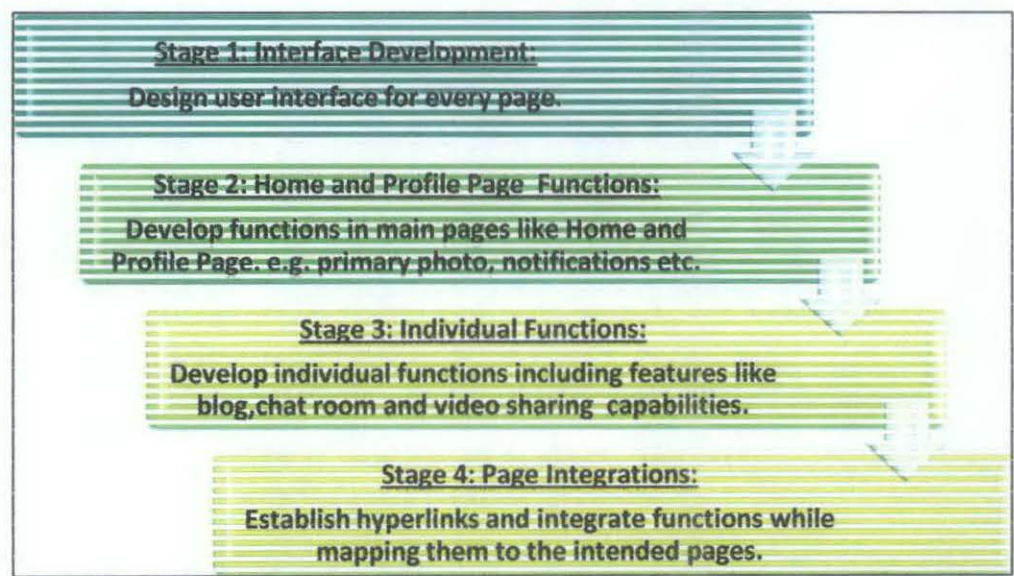


Figure 6-5- Development Process

CHAPTER 7

CONCLUSION AND RECOMMENDATION

7.1 Conclusion

Overall, based on the research done, social networking in higher education is indeed feasible as the components in social networks are proven suitable to be implemented in learning environment and thus can improve learning experience. Since social networking is now a trend with the number of people involved in it is growing larger, the educational system especially higher education needs to keep in track with this trend in order to ensure that the learning system in their respective institutions are able to hook up students participation and interest, engage communication between students and lecturers, thus eventually creates a dynamic and collaborative learning environment.

The research question that is how social networking can promote learning has been answered with all the measurement indicators being tested as well as the test results. The comparison between social e-learning and normal e-learning further strengthen this research as the result shows that social networking has additional values and provides a better learning experience among students in higher education.

Therefore, this research is absolutely crucial in contributing towards the betterment of the learning environment in higher education, particularly e-learning system. By researching on the correct and best methods of social networking as an approach in learning, this research is able to shape out a new paradigm of a custom social learning tool. The prototype develop through the development phase can be a good model for higher institution to use as a benchmark to evaluate the effectiveness of their current e-learning system.

7.2 Recommendation of Future Work

Series of testing procedures will be carried out from time to time until this project reach its completion in order to further improve the system based on users' feedback and

requirements. In terms of future enhancements, the recommendations to improve this system are as follow:

7.2.1 Platform to Support Distance Learner

As this tool is an online social learning tool, further research can be conducted on how this tool can be used to support distance learners. Distance learners in this case are students who are not able to come to class due to specific reasons. To cater for this need, this system should be designed in a more comprehensive manner in order for it to be sufficient to replace the physical classroom.

7.2.2 Involvement from Ministry of Higher Education

Ministry of Higher Education can also participate in this social network by jointly organizing and promotes events for students. Currently, this system only has the news feed section where only the general news will be displayed which some of it might not be relevant for higher education. Thus, with the involvement of the Ministry of Higher Education as well as other NGOs, this system will better serve the need and encourage participations of students in higher education.

7.2.3 Enable connection between the system and smart phone.

To enable wider option for the accessibility of this system, it is recommended that this system support the connection with smart phone. Brief announcement and latest update on the learning matters will be sent to students' mobile phone so that the message will reach them even though they are not logged in to the system. In this case, they will know about the announcement and put effort to know further by logging in to the system.

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APPENDIX I

Results for survey: Social Networking in Higher Education

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Social Networking Technologies in Higher Education

This survey is conducted to study on how social networking technologies can enhance learning experience in higher education. It aims to identify the gaps in the current e-learning method and how social network can improve the current approach towards learning.

Question 1*

Which higher institution are you from?

Universiti Teknologi PETRONAS	108	63.89%
Universiti Teknologi Mara	23	14.85%
Universiti Malaysia Sarawak	11	7.01%
Universiti Teknologi Malaysia	10	6.37%
Others, Please specify:	12	6.30%

ID	Others, Please specify:	View Survey
5134328	UMUTIN	View
5134296	Universiti Putra Malaysia	View
5124726	Uthmaniyah	View
5128850	Universiti Putra Malaysia	View
5135810	UNIVERSITI MALAYSIA PAHANG	View
5142848	al-khater university	View
5150724	Universiti Malaysia Sarawak	View
5118829	UAA	View
5115841	united	View
5118850	utp pahang	View

Question 2*

Which year are you studying in currently?

Foundation	0	0.00%
Year 1-2	34	15.29%
Year 3-4	115	75.18%
Year 5 and above	15	9.83%

Question 3*

Do you have internet connection in your university?

Yes	155	98.79%
No	2	1.27%

Question 4*

Tick the social network that you have an account with.

Facebook	152	97.85%
Twitter	63	11.21%
Youtube	90	15.81%
Flickr	24	4.27%
Reddit	22	3.88%
Skype	81	15.19%
Qik	110	19.57%

ID	Other sites? Please specify:	View Survey
5142560	Tumblr	View
5115047	patron	View
5145863	gsm blog	View
5147609	Friendster	View
5148566	yahoo	View
5149478	yahoo messenger blogger	View
5150723	blog	View
5155812	Tumblr	View
5162527	naver	View
5178325	friendster	View

Question 5*

How frequent do you use social networks?

Daily	148	94.27%
2-3 times a week	5	3.18%
Once a week	2	1.31%
Once a month	1	0.64%

Question 6*

Do you think social network is important nowadays?

Yes	143	91.89%
Maybe	12	7.64%
No	2	1.27%

Question 7*

Why do you use social network? Rate the importance of each reason.

	Very Likely	Likely	Neutral	Unlikely	Very Unlikely	Responses	Total
use	68%	21%	10%	0%	1%	157	144
ids	48%	25%	19%	0%	1%	157	144
essaging about any topic	48%	26%	15%	2%	2%	157	144
ates on what happen around you	61%	22%	8%	0%	1%	157	144
a event	34%	39%	21%	4%	2%	157	144
on sharing (share links, photos, news, videos)	54%	36%	8%	1%	1%	157	144
about certain topic in a private group (ex-school group, course group)	52%	33%	13%	1%	1%	157	144

ID	Other reason, Please specify:	View Survey
5133442	relaxation	View
5134777	media aware firms	View
5142560	to share information that can give benefits to others and to spread news	View
5147271	Research and blogging	View
5178325	keep track of friends	View

Question 8*

For each task, rate the social networking activities you mostly do.

	Very Frequent	Frequent	Neutral	Not frequent	Never	Responses	Total
Post messages/comments	42%	32%	17%	8%	0%	157	115
Chat	34%	28%	28%	15%	1%	157	115
Find new friends	14%	21%	28%	32%	5%	157	115
Download music/videos	25%	31%	27%	11%	4%	157	115
Share photos	22%	31%	30%	15%	2%	157	115
Blogging	13%	19%	17%	25%	24%	157	115
Create polls/surveys	8%	15%	17%	30%	30%	157	115
Share links/information/articles about a topic	26%	36%	28%	14%	2%	157	115
Play online games	10%	10%	18%	38%	19%	157	115

ID	Other activities? Please specify:	View Survey
5133442	get journal from article	View
5134777	stating people	View
5150860	Data	View

Question 9*

Do you use social network to discuss matters related to academic or university?

Yes	134	79.04%
Maybe	25	15.92%
No	8	5.10%

Question 10*

Do your lecturers have social network accounts?

Yes	115	75.18%
Maybe	34	21.68%
No	5	3.18%

Question 11*

Please rate the level of familiarity you have about social network.

	1	2	3	4	5	Responses	Total
	50%	34%	16%	33%	43%	157	641

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E-Learning Approach in Higher Education

Question 12*

Rate the importance of communicating with your lecturers and peers to discuss about academic matters.

Very Important	81	45.21%
Important	68	43.94%
Neutral	10	7.58%
Unimportant	8	5.03%
Very Unimportant	3	2.27%

Question 13*

Does your university has a medium like e-learning for students and lecturers to communicate, post announcement, update on important events, or upload lecture materials?

Yes	131	83.44%
No	1	0.78%

Question 14*

Is the current e-learning system in your university interactive enough?

Yes	24	18.18%
Maybe	52	20.20%
No	58	48.62%

Question 15*

Which of the features below are available in your current e-learning system?

Send message	114	22.49%
Chat room	41	8.08%
Forums	86	16.88%
Online video tutorial	13	2.50%
Share photos/videos	19	3.75%
Writing comments	55	10.85%
Group creation	28	5.52%
Online quizzes	83	16.33%
Upload function	52	10.28%
Other features? Please specify.	6	1.18%

ID	Other features? Please specify.	View Survey
5132419	basically lecturers just upload and student download. Not much of interaction is happening.	View
5132550	even got forums, lecturers not likely to participate	View
5132732	none	View
5138819	downloading notes, assignment, exam schedule	View
5149265	download lecture notes	View
5226710	do online classes	View

Question 16*

Please rate the importance of e-learning to you.

Very Important	47	33.61%
Important	66	50.88%
Neutral	79	12.12%
Unimportant	2	1.52%
Very Unimportant	1	0.76%

Question 17*

How frequent are the activities on the e-learning happening?

Almost daily	42	31.82%
2-3 days a week	44	33.32%
Once a week	25	19.54%
Once a month	15	11.36%
Rarely	6	4.55%

Question 18*

Sometimes, I was not aware about the information posted in the e-learning until it has been there for few days.

Yes	154	63.84%
No	8	3.28%

Question 16*

Do you think by having social networking features in your e-learning system will make the system better?

Yes	154	78.78%
Maybe	25	12.94%
No	3	1.22%

Question 20*

If social networking features are to be implemented in your e-learning system, what features would you prefer to have?

Text Answers (16)	View
share assignments	View
chat room	View
classes do online	View
online tutorial	View
chatting	View
start with forum first then	View
upload video	View
online lecture	View
do test & quizzes online	View
file sharing	View
online video	View
test online	View
online learning	View
share notes	View
lecturers teach online	View

APPENDIX II

Interview Questions

This set of question is intended towards getting feedbacks and views from educators/lecturers in Higher Education about the topic of social networking implementation in their learning environment, particularly e-learning system.

1. What is your name and the institution you are working at.
2. Please tell your working experience as an educator.
3. Do you know about social networking?
4. Do your students frequently use social networks?
5. Have you ever used social network for educational purposes or to communicate with your students?
6. If your answer for question 5 is yes, how do you use social network for educational purposes?
7. How if social network is implemented in the education system? (Example: in university's e-learning/i-learn/Learning Management System). Will it be beneficial? Please provide your opinion.

End of Questions

Results for survey: Usability Testing on Elearn Community

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Usability Testing - Elearn Community

This is a usability testing conducted based on the website: www.elearncommunity.com. Please ensure that you are a registered user before answering this survey.

Question 1

Please provide your name and university

Name	University
Norizzati	UTP
Husnani	Universiti Teknologi PETRONAS
Nadiah Anwar	MPN Bangi
Noora Nazwa Othman	Universiti Teknologi Malaysia
Azmad Fuly Jazril	UTM
Siti Aminah Yusoff	universiti teknologi Malaysia
Ang Choo Hui	Universiti Teknologi Malaysia
Nur Farah Wahidah Shamsuddin	utp
Isah Saad Hui Ping	UTM
Muna Shamsira	Universiti Teknologi Malaysia
Yong Kim Wang	Universiti Teknologi Malaysia
Azwan Fauzanidin	UTM
ABDUL HAFIZ	UNE TEKNOLOGI MALAYSIA
Nurid Farahin Mai Tahir	utp
Nasira Muhammad Hani	Universiti teknologi malaysia

Question 2*

Does the URL of this website (www.elearncommunity.com) reflects the website itself?

Yes

10

100.00%

Maybe

0

0.00%

No

0

0.00%

Question 3*

How do you rate the technical performance of this website in terms of:

	Excellent	Good	Neutral	Fair	Poor	Responses	Total
Interface Design (text size and font, colour used, appropriate layout)	10%	50%	10%	0%	0%	20	11%
Easy to use and understand	40%	60%	0%	0%	0%	20	11%
Comprehensive Content	25%	60%	15%	0%	0%	20	11%
Number of errors	20%	60%	15%	0%	0%	20	11%
Easy to revert after making mistake	15%	30%	35%	5%	0%	20	77%
Clear headings/title	30%	65%	0%	0%	0%	20	11%
Functions are working	20%	60%	0%	0%	0%	20	11%
Loading time	15%	70%	15%	0%	0%	20	11%
Meaningful links	30%	70%	0%	0%	0%	20	11%

Question 4*

Please give the overall experience in using this website compared to your current e-learning system.

	Yes	Neutral	No	Responses	Total
The learning environment is more casual	100%	0%	0%	20	25%
More encouraged to express ideas and thoughts	80%	10%	0%	20	22%
Academic-related discussion become easier	100%	0%	0%	20	25%
The combination of social networking elements enhance education(e.g. Chat, wall post, comments, video (media), article sharing etc.)	100%	0%	0%	20	25%

Question 5*

Overall, do you think this system has achieved its objective to enhance your learning experience?

Yes

18

90.00%

Maybe

2

10.00%

No

0

0.00%

Question 6*

If Elearn Community is to be implemented in your campus, would you use it?

You why not

20

100.00%

Depends maybe if suit it.

0

0.00%

No never.

0

0.00%

Question 7

Please provide suggestions on how this system can be improved in the future.

Text Answers (15)

	View
Games to release tension	View
Make interface	View
can promote recent problem	View
-	View
games	View
things from facebook can be shared here	View
do quizzes live online	View
contact us	View
put games online more fun.	View
put all here, no need to go to class	View
share journals for our reference	View
games	View
LECTURERS TEACH ONLINE. DO NOT NEED TO GO TO CLASS.	View
teach online	View
to be already	View