CHAPTER 2
THEORETICAL FOUNDATION

2.1. Theoretical Foundation

In order to effectively build a Social networking system suited for learning purposes (LMS and Social Networking combined), an analysis of existing literature about effective online learning environment needs to be conducted. This chapter will cover the models, theories, and literatures used in the development of the system to provide the reader with the theoretical foundation and frameworks that will be used to support the solution design of the problem. The terms and theories presented here will help the readers to understand the terms, theories, and frameworks used during the solution development.

2.1.1. Learning Management System (LMS)

Learning Management System (LMS) is a software application or web-based technology utilized to plan, implement, and assess learning process[10], or a system used to manage learner progress through courses[11]. Some examples of popular LMSs are Sakai, Blackboard, Moodle, Pearson Learning Studio, Desire2Learn, and Blackboard [12].

As LMS are made for student learning needs, therefore the development of LMS should be emphasized on the student needs[13]. Various LMS features exist that was thought to be helpful to aid student learning, but only a few of those features was actually used by

the students, therefore becomes ineffective. Fortunately, a study has been conducted regarding features requirement of LMS from the student's perspective in various learning institutions [10]. From the study, a number of LMS features are suggested:

1. View who is online
2. Update details
3. Create wikis
4. RSS
5. Customize interface
6. Online Journal
7. Share file
8. Check plagiarism
9. Check grades
10. Access course notes
11. Send SMS
12. DLMS map, user guide, FAQ
13. Create Blog
14. Get information
15. Bookstore
16. Help session
17. Answer quizzes and exams
18. Audio and video chat
19. SCORM (Shareable Content Object Reference Model)
20. Survey

21. TodoList
22. Search
23. Send Email

2.1.2. Social Network Sites (SNS)

Social Network Sites was defined as a web-based services which allows individuals to (1) construct a public or semipublic profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system[14].

There were various examples of SNS, with each of them has different nature and nomenclature. Some SNS sites are built to maintain existing relationship, while others are to help connect people with strangers based on shared interest, religion, activities, etc[14]. Some examples include Facebook.com and Twitter.com. Moreover, Social Network sites also differ in term of their technology used to connect people such as photo sharing (Flickr.com), location based (Koprol.com), video sharing (Youtube.com), etc.

Although SNS was primarily used for social activity, some people find the SNS also useful for learning activities. A number of studies had been conducted regarding the use of SNS for learning purposes. One example such as Twitter, is more preferred over traditional LMS as the social interactions in it occurred more immediately[15].

2.1.3. Connectivism Theory

As the purpose of the study will be to use the advantage of the students accustomed to use social networking in their daily life, Siemens' Connectivism theory[16] seemed to be the most appropriate learning theory to use. Connectivism is an integration of principles explored by chaos, network, and complexity and self organization theories[16], or in other words social networking applied to learning and knowledge context [17]. Connectivism is a new learning theory suitable to be applied in current age where technology has impacted the way today's generation learn, whereas previous three broad learning theories such as behaviorism, cognitivism, and constructivism was developed in time where technology has not yet impacted the learning process[16]. As the connectivism was seen as the most appropriate learning theory to be applied, therefore the features of the system presented here will be to support this theory.

2.1.3.1. Connectivism Enabling Condition

In order to build an online Connectivist learning environment, it is important to note the conditions which enabled the knowledge processes of the Connectivist theory. The following conditions are suggested to satisfy the requirement [17], and will be one of the foundations of the proposed system features consideration:

1. Basic skills

   Essensial basic technological and online communication skills for the subject to enter the educational experience.

2. Generation and support to motivation

   Motivation which is often *fun* and *pleasure* that individuals have in their network activity, also rooted in the *positive* **interaction** among people.

3. Meaning perception

   the **objectives** of learning activities must be perceived as meaningful to self, and acknowledge that **collaboration** is able to derive advantage. Increasing the individual's self *perception of usefulness* (a useful contributor to other's goal).

4. Group Culture

   Acknowledging that has being useful to other's goals increase *self esteem* and *self perception of usefulness* motivates wider visibility, thus increases the sense of positive group membership

5. Social Climate

   Sense of group belonging is supported by intensity of sharing **Interests**on a topic. But still, positive **interaction** is the important thing that sustains *mutual understanding* and *social grounding*.Moreover, it is considered that Agreement of respect, use of reputation feedback, and respect of a common socioquette are factors that contribute to building positive social climate.

2.1.4. Social Connectedness

Social Connectedness is defined as the relationships that people have with others[18], which includes relationship with family, friends, colleagues, neighbors, as well as connections made through work, holidays, etc.[19].

Social connectedness between student and teacher in terms of interaction is well defined as one of the seven principles for good practice in education [20]. Developed by fifty years of educational literature, one of the principles is to encourage contact between

student and teacher to enhance student learning. Therefore, Social Connectedness is an important factor to consider in the design process of the system.

2.1.4.1. Theoretical Foundations to Enhance Social Connectedness in Online Learning

To enhance Social Connectedness of teachers and students, several key guidelines to aid the system's design process are presented here[21]:

Table 2.1 - Framework to Increase Social Connectedness

No	Key guidelines
1	Supply the individuating social characteristics necessary for students to engage in the first automatic step in person perception and the formation of person schemas
2	Ensure that each participant in the course understands and can successfully function within the computer mediated communication system being utilized in order to acquire social information about others in the group
3	Supply frequent opportunities for learners to observe individuating social information
4	Supply the opportunity for students to interact with each other in a variety of contexts
5	Demonstrate how to enhance exclusively text based messages with social cues that reveal the true intent of the message
6	Supply frequent opportunities for learners to observe dynamic social interactions
7	Supply the opportunity for students to interact in a variety of contexts on specific tasks that require individuals to take on specific roles within the group
8	Make sure that learners have the information they need to differentiate both task and socio-emotional roles for their colleagues
9	Supply frequent opportunities for students to process their colleagues' salient social functions and to incorporate strategies that will assure that all students participate

2.2. Methodology

The methodology of developing the proposed system will be done through the following steps:

1. Design the features of the system based on Connectivism Theory
2. Design the features of the system based on Theoretical Framework to increase Social Connectedness
3. Hierarchical Task Analysis
4. Sketch the Design
5. Develop the system in paper prototype form
6. Test the paper prototype on 5 real users (candidate school is ST.PETER)
7. Redesign based on user testing result
8. Develop the user interface computer prototype based on the refined interface design