**Linnæus University**
School of Computer Science, Physics and Mathematics

Master Thesis in Informatics

# The Role of Learning Management Systems in Educational Environments: An Exploratory Case Study

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# Abstract

Using Learning Management Systems (LMSs) in educational environments has facilitated the communication between students and teachers, and raised new challenges as well. The aim of this research is to investigate the role of LMS in the learning and teaching processes from students and teachers perspectives. We adopted a social constructivist worldview. We used an inductive qualitative approach, a single case study design and hermeneutical approach for analyzing the interviews and observations. We used Garrison et al. (2000) community of inquiry framework as a theoretical guide for the study. The research took place at the School of Computer Science, Physics and mathematics department at Linnaeus University, Växjö campus. The participants of this research were students and teachers from two master levels within the program of Information Systems. The study results indicated that students and teachers were content with the usage of Blackboard in organizing courses materials. Although, most teachers didn't encourage interactive and discussion activities on Blackboard, students expressed the need for such activities to help them in constructing and building new meanings.



**Keywords:** Learning Managements System (LMS), Blackboard, Community of Inquiry (COI), Blended Learning, e-Learning, Learning.

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*Hala Jamal*

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*Ameera Shanaah*

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# 1 Introduction

*This chapter presents an overview of the main fields of e-Learning, Learning Management Systems, in addition to related studies to the research. Moreover, it presents the problem area and the research question, as well as, the research delimitations.*

The fast growing technologies have changed the ways of teaching and learning in educational institutions since late the 1990s (Pishva et al., 2010). This integration between technologies and educational environment has facilitated the communication between students and teachers, but at the same time raised new challenges as well (Pishva et al., 2010).

In an educational context, e-learning platforms are also known as Learning Management Systems (LMSs) which are *"internet based, software allowing instructors to manage materials distribution, assignments, communications and other aspects of instructions for their courses"* (Abu Shawar, 2009, p. 3). Today, LMSs have become an integral component of the educational systems in most universities and interest is increasing in hybrid approaches that blend in class and online activities (Pishva et al., 2010). A LMS is not intended to replace the traditional classroom setting, but its main role is to supplement the traditional lecture with course content that can be accessed from campus or the Internet (Landry et al., 2006). While the potential benefits of augmenting the traditional class with LMS have been recognized and discussed, what has remained largely unknown are student and teacher reactions to using a LMS as an addition to the traditional lecture (Landry et al., 2006).

Blackboard is one of the most common web-based LMS that is developed and maintained by Blackboard Inc. It is an entirely web-based learning platform. It is used for communication between teachers and students as well as providing a storage place for all types of information. Blackboard also contains a number of administrative tools to support the student and teacher in their work (Linnaeus University, 2011a).

In this respect the current study focuses on examining the use of Blackboard as a LMS at Linnaeus University (LNU). Since we, the researchers, are current master students at LNU, Blackboard has become a part of our daily life. It has also a dominant role in our learning process. Since both students and teachers are the main users of Blackboard, our study aims to explore the users' perceptions of the role of Blackboard in a sense of understanding how they use it for both learning and teaching activities.

## 1.1 Related Studies

Since e-learning have changed the traditional ways of teaching and learning in many fields, a lot of researches have been done in the field of e-learning. The use of e-learning has been dominated in many educational organizations. E-learning is used even with full distance learning or as a supplement with class room education. A wide set of LMSs have been developed and used to support the e-leaning process.

In the field of LMSs a lot of studies have been done that focused on LMS as a tool and technology to manage and share knowledge in educational organizations (Abu Shawar, 2009). Comber et al. (2010) examined if the choice of LMS as a tool affects the learning process. For that, a person-centered blended learning course was implemented in three different e-learning solutions, namely Moodle, Fronter and CEWebS. The investigated e-learning platforms provided sufficient functionality to accomplish many of the basic tasks in the daily course routine more or less effectively (Comber et al., 2010).The research concluded that a successful implementation of a blended learning scenario was found to be dependent on the choice of an appropriate e-learning solution (Comber et al., 2010). Likewise, Pishva et al. (2010) have recently investigated the current usage of Blackboard learning system and the way that it helps various educational institutions around the world. The study included 19 universities and it concluded that Blackboard is indeed assisting educational institutions around the world in many different ways, including in face-to-face, blended and online education. And Blackboard will continue to dominant LMS market in addition to other open source LMS like Moodle.

Using e-learning model for LMSs evaluation was another approach in the e-learning research field. For instance Landry et al. (2006) used Technology Acceptance Model (TAM) created by Fred Davis in 1989, to examine the users' perceptions of usage, usefulness, and ease of use. Their research applied the TAM to the academic setting to measure student reactions to Blackboard. By using several multivariate methods, results suggest that students (n=692) found that the Blackboard elements which are associated with course content (course documents, lectures, student tools, announcements, and quizzes) are used more often and are seen as more useful than those items that provide course support and communication (discussion Board, external Web sites, faculty information, and e-mail). Overall, the outcomes for usage, usefulness, and ease of use for this study provide support for the TAM, and closely match what has been reported in the information systems (IS) literature, that usefulness is a stronger determinant of usage than ease of use suggesting that it can potentially be a helpful tool in an instructional setting. In the same vine, Roca et al. (2006, 2008) have extended

the Technology Acceptance Model (TAM) by adding more aspects that examine the effects of motivational factors affecting TAM constructs. In the proposed model in Roca et al. (2006) research, the perceived performance component is decomposed into perceived quality and perceived usability. A sample of 172 respondents took part in this study. The results suggest that users' continuance intention is determined by satisfaction, which in turn is jointly determined by perceived usefulness, information quality, confirmation, service quality, system quality, perceived ease of use and cognitive absorption. Later on, Roca et al. (2008) proposed an extended Technology Acceptance Model (TAM) in the context of e-learning service. In the proposed model perceived usefulness, perceived playfulness and perceived ease of use are predicted to be influenced by perceived autonomy support, perceived competence and perceived relatedness. According to Roca et al. (2008) although TAM has received fairly extensive attention in prior research, their study also examines the effects of motivational factors affecting TAM constructs. The results show that applying Self-Determination Theory (SDT) to e-learning in a work setting can be useful for predicting continuance intention.

Quality Assurance (QA) of LMSs was another dominate field in e-leaning researches. For instance, Ellis & Calvo (2007) described a set of institutional indicators that suggest minimum standards for the quality assurance of learning supported by LMSs in blended contexts. The indicators were evaluated by comparing the experience of seven universities that use dotLRN as a student LMS to support student learning experiences in relation to a minimum set of indicators for its quality assurance and improvement. The comparison among the universities revealed that they tend to have a better understanding of technical rather than educational issues related to quality assurance. The study discussed the issues in terms of the indicators necessary but not sufficient for the quality assurance of student learning enabled by dotLRN when it is used to complement face-to-face experiences of learning (Ellis & Calvo, 2007). Ellis & Calvo (2007) stated that their study results could help others universities to address key areas in order to reliably assure the quality of learning supported by LMSs.

In contrast, other studies focused on e-learning and LMSs from the users' perspective. Servonsky et al. (2005) in a previous research focused on the skills and challenges of navigating a course on the Internet using Blackboard in Hampton University School of Nursing. The study addressed the challenges faced in using Blackboard, for example working with students' different technology knowledge levels and helping students to adapt to the new technology were challenges. Besides that preparing an online course for distance education requires more precise planning and more preparation time for instructional materials than the traditional face-to-face course. Similarly,

Hong et al. (2003) investigated the success of a technology and Internet-enriched teaching and learning environment in molding positive attitudes among students toward using the Internet for learning at a university in Malaysia. It was a quantitative study approach focused on the relation between students GPA, Internet using skills and other factors to measure their attitude toward using LMS in their study. Results from the study indicated that students had positive attitudes toward using the Internet as a learning tool, adequate basic knowledge of the Internet, and viewed the learning environment as supportive of using the Internet for learning (Hong et al., 2003). Students with better basic Internet skills and who viewed the learning environment as promoting the use of the Internet favored using the Internet for learning.

Machado & Tao (2007) studied the user's experience through a comparison study between Blackboard and Moodle. They used online surveys to compare the user experience of the basic functionality of each system such as communication tools, student-student interaction tools, and student-instructor interaction tools. The results of the research showed that in the aggregate, to when the systems were compared in their entireties, that the Moodle LMS was the preferred choice of the users. Also, Buzzetto-More (2008) surveyed students' perception about different components of the LMS system. The study examined the e-learning perceptions and preferences of students enrolled at University of Maryland Eastern Shore. During this study a series of courses were specially designed to be intensive hybrid (blended) learning experiences. The Blackboard CE 6 Course Management System was adopted and paper-less learning experiences created (Buzzetto-More, 2008). The results of the analysis indicated that students find course Websites to be helpful resources that enhance the understanding of course content. The examination of individual e-learning components indicated that students responded favorably to most available features. Responses to this study have shown that students perceive the use of course Websites as a course enhancement positively (Buzzetto-More, 2008).

However, other studies focused more on developing e-learning models based on the learning theories. Koohang et al. (2009) in their study presented a learner-centered model, based on constructivism learning theory, for designing e-learning assignments/activities within e-learning environments. The model includes two categories - the learning design elements (comprised of fundamental design elements and collaborative elements) and the learning assessment elements (self-assessment, team assessment, and facilitator's assessment). The study concluded that ensuring learning takes place through e-learning courses must be a priority in designing instruction for e-learning courses (Koohang et al., 2009). The model was based on the constructivism learning theory, which focuses on knowledge construction based on learner's

previous experience. The factual situation presented in the study, indicated the advantage of the use of the model in e-leaning environments. Therefore, Koohang et al. (2009) recommend that the model presented in this study be followed carefully in designing e-leaning assignments/activities.

While Koohang et al. (2009) model was based on the constructivism learning theory, other researchers like Garrison, Anderson, and Archer (2000) developed a framework based on constructivism and social collaborative aspects of learning. Garrison et al.'s (2000) Community of Inquiry (COI) framework was developed for the aim of identifying the elements that are crucial prerequisites for a successful higher educational experience and also for guiding the research and practice of online learning (Garrison & Arbaugh, 2007). Afterward COI has generated substantial intersect among online leaning researchers (Garrison et al., 2007), so many researchers used this framework as a tool for conceptualizing the online learning process (Swan & Shih, 2005; Stodel et al., 2006; Shea, 2007; Arbaugh, 2007). For instance, Stodel et al. (2006) study used the COI framework to interpret their findings from a theoretical perspective. The purpose of their study was to identify learners' perceptions of what is missing from online learning and provide recommendations for how we can continue to innovate and improve the online learning experience. The study results highlighted some aspects that the learners missed about F2F contact when they are learning online and the dangers inherent in transposing our comfortable and familiar F2F practices and expectations into the new medium.

In a different educational context, blended learning, other researchers used the COI framework as a theoretical bases in their research (Vaughan, 2004; Rovai & Jordan, 2004; Garrison & Kanuka, 2004; Vaughan & Garrison, 2005; Vaughan & Garrison, 2006). Vaughan's (2004) study was a blended professional development community where the participants had the chance to establish social presence in a face-to-face context. This study investigated how a blended learning approach could support an inquiry process within a faculty learning community (FLC) from the participants' perspectives. The findings from this study suggest that the nature of the social and teaching presences within a FLC, with a face-to-face and online component, change over time in order to support the development of a complete cognitive presence. Also learning activities should be intentionally designed to attain this phase, face-to-face and online learning environments should be structured to complement each other, and the FLC coordinator should consistently focus on providing direct instruction strategies, which enable the participants to move forward in their inquiry process. Still, according to Garrison & Arbaugh (2007), Vaughan (2004) study and others weren't enough to give a clear how much influence the blended design had on the

social, teaching and cognitive presence patterns reported in these studies and further empirical research is required in the blended learning context.

## 1.2 Problem Area

Several studies have been done on LMSs, yet many of these studies have only focused on technical aspects; such as evaluating the usefulness and ease of use of these systems (Comber et al., 2010; Pishva et al., 2010; Landry et al., 2006; Roca et al., 2006; Roca et al., 2008; Ellis & Calvo, 2007). However, fewer studies focused on users' real experiences in using LMS as a platform for their learning and teaching activities. And these studies either focused on students or teachers as the main users, but not both. Still, most of these studies have focused only on distance-based contexts (Servonsky et al., 2005; Stodel et al., 2006; Shea, 2007; Arbaugh, 2007),while fewer studies have investigated the role of LMSs as a supplement for face-to-face education contexts (Hong et al., 2003; Buzzetto-More, 2008; Vaughan, 2004).

All these facts showed the necessity to study the role of LMS, in particular Blackboard, when it is used as a supplement to traditional face-to-face education. Further, this study focuses on both teachers and students as the main users of the LMS. Therefore, an inductive based qualitative approach is used in order to have a better understanding of LMSs in its context through investigating the users' experiences.

## 1.3 Aim and Research Question

The aim of this research is to explore the role of LMS integrated with classroom education from user's perspectives. In particular we aim to identify and explain patterns of learning and teaching activities using LMS, which is in our case, refers to Blackboard in a blended learning context.

In order to achieve this aim, the research seeks to answer the following question: *How do students and teachers use the learning management system as a platform for learning and teaching activities?*

## 1.4 Delimitations

LMSs are widely used in different kinds of organizations. However, we delimit the research to educational organizations. The purpose of this study is to explore users' experiences in using Blackboard in a blended learning context (online and face-to-face). While the main focus of the study is concerned with the role of Blackboard in the learning and teaching

experiences in a blended context, the study is only focusing on online educational experience rather than face-to-face education inside the traditional class room. Also no focus on the technical aspects of Blackboard is considered.

Limitations of this research are derived from two sources. On one hand, this study is based on a single case study, which will be more difficult to generalize. Still using a single case-study will help in obtaining deeper and richer understanding of the situation. Although not all aspects of the case-study can be applied to other contexts, the results maintained are likely to apply to other campus-based courses/universities which share the same focus on integrating e-learning with traditional class room education. On the other hand, in this study Garrison et al. (2000) Community of Inquiry (COI) framework is used as a theoretical guide. The limitation of this framework could reflect on the study as well. According to Garrison & Arbaugh (2007), the COI framework limitation is derived from methodological and contextual issues. Methodological issues are caused by the lack of the empirical research to validate the framework coding protocol (Garrison & Arbaugh, 2007). The contextual issues are related to the course or subject studied, also the software used and characteristics of the learners and/or teachers. In other words different contextual settings of the study matter in the development and usage of the COI framework. So these two issues might affect the generalizability of the COI framework as well (Garrison & Arbaugh, 2007).

# 2 Background Theory

*This chapter presents an overview of blended learning, learning theories, e-learning models. In addition, it introduces Garrison et al.'s (2000) COI framework that have been used to guide the research as well as to help in interpreting the research findings. This framework includes three main elements: cognitive presence, social presence, and teaching presence.*

## 2.1 Blended Learning

According to Hadjerrouit (2008) there is no clear and unequivocal definition of the concept of blended learning. Definitions are partially exclusive and sometimes contradictory, and there are few common terms used consistently. Some researchers define the term so broadly that would be hard to find any learning system that is not blended. Thus, there is a wide variety of responses to blended learning, but most of definitions are just variations of few common terms. The most commonly definitions are, first combining instructional modalities or delivery media and technologies, second combining instructional modalities, learning theories, and pedagogical dimensions, and the third definition is combining e-learning with face-to-face learning (Hadjerrouit, 2008).

The focus of this study will be on the third definition. It also includes the first and second definition with some modifications. Blended learning is a combination of e-learning and face-to-face learning (See Figure 1). E-learning includes both network-based (online learning, Internet-based learning, and Web-based learning) and non-network-based learning (computer-based learning).

Blended learning is seen as an opportunity to fundamentally redesign how we approach teaching and learning in ways that higher education institutions may benefit from increased effectiveness, convenience and efficiency (Garrison & Vaughan, 2008).

## 2.2 Learning Theories

Learning theories are important as a solid pedagogical foundation to the design of blended leaning. Literature reviews suggest that learning theories can be related to three widespread models: cognitivist, constructivist, and socially situated model of learning (Hadjerrouit, 2008). According to Mayes & De Freitas (2004) there are distinct traditions in educational theory that derive from different perspectives about the nature of learning itself. Greeno,

Collins & Resnick (1996) identify three clusters or broad perspectives, which make fundamentally different assumptions about what is crucial for understanding learning. These perspectives are:

- The *associationist/empiricist* perspective (**learning as activity**)
- The *cognitive* perspective (**learning as achieving understanding**)
- The *situative* perspective (**learning as social practice**)

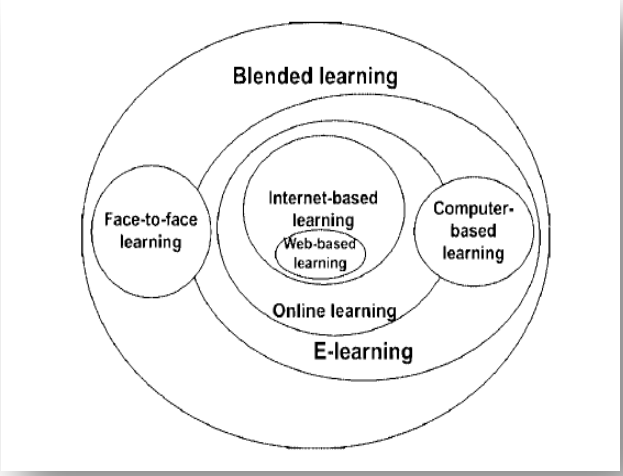


**Figure 1: Components of blended learning (Hadjerrouit, 2008, p.5)**

### 2.2.1 The Associatianist/Empiricist perspective

In this approach, knowledge is an organized accumulation of associations and skill components. Learning is the process of connecting the elementary mental or behavioral units, through sequences of activity. This view includes the research traditions of associationism, behaviorism and connectionism. In this perspective learning is the formation, strengthening and adjustment of associations, particularly through the reinforcement of particular connections through feedback. Behaviourism was centrally concerned to emphasis active learning-by-doing with immediate feedback on success, the careful analysis of learning outcomes, and above all with the alignment of learning objectives, instructional strategies and methods used to assess learning outcomes. Many of the methods with the label "constructivist" are indistinguishable from those derived from the associationist tradition (Mayes & De Freitas, 2004).

### 2.2.2 The Cognitive perspective

The underlying theme for learning is to model the processes of interpreting and constructing meaning, and a particular emphasis was placed on the instantiation of models of knowledge acquisition in the form of computer programs. Knowledge acquisition was viewed as the outcome of an interaction between new experiences and the structures for understanding that have already been created. So building a framework for understanding becomes the learner's key cognitive challenge (Mayes & De Freitas, 2004).

Increasingly, mainstream cognitive approaches to learning have emphasized the assumptions of *constructivism* that understanding is gained through an active process of creating hypotheses and building new forms of understanding through *activity*.

In other words constructivism in learning theories is defined as active construction of new knowledge based on a learner's prior experience (Koohang et al., 2009). According Koohang et al. (2009) the main characteristics of the constructivism learning theory are:

- Teachers serve in the role of guides, monitors, coaches, tutors and facilitators.
- Student plays a central role in mediating and controlling learning
- Construction of new knowledge takes place in individual contexts and through social negotiation, collaboration and experience.
- The learner's previous knowledge constructions, beliefs and attitudes are considered in the knowledge construction process.
- Collaborative and cooperative learning are favored in order to expose the learner to alternative viewpoints.

### 2.2.3 The Situative (Social) perspective

A learner will always be subjected to influences from the social and cultural setting in which the learning occurs, which will also define at least partly the learning outcomes. This view of learning focuses on the way knowledge is distributed socially. This can be seen as a necessary correction to theories of learning in which both the behavioral and cognitive levels of analysis had become disconnected from the social. Activity, motivation and learning are all related to a need for a positive sense of identity (or positive self-esteem), shaped by social forces (Mayes & De Freitas, 2004).

## 2.3 Overview of E-learning Models

According to Mayes & De Freitas (2004) there are really no models of e-learning *per se* – only e-enhancements of models of learning. That is to say: using technology to achieve better learning outcomes, or a more effective assessment of these outcomes, or a more cost-efficient way of bringing the learning environment to the learners. **Models of e-learning** describe where technology plays a specific role in supporting learning. These can be described both at the level of pedagogical principles and at the level of detailed practice in implementing those principles (Mayes & De Freitas, 2004). Cunningham et al. (1991) pointed out the importance of linking theory to practice in the design and development of any instructional system and emphasized, "*...effective design is possible only if the developer has a reflexive awareness of the theoretical basis underlying the design*" (p.90). Appropriate instructional design that includes learning theories and principles are critical to the success of e-leaning. Instructional design has always relied on instructional models, namely behaviorism, cognitivism, humanism, and constructivism. Much of the attention in the last two decades has been shifted to constructivism because it promotes active learning through knowledge construction (Koohang et al., 2009). It is a good fit for e-learning because it ensures learning among learners (Koohang et al., 2009).

The social aspect of learning is also important in building e-learning model. In educational settings, these distributed forms of interaction are manifested in learner-instructor, learner-content, and learner-learner interactions (Dabbagh, 2005). These types of interactions are perceived as necessary in enhancing social learning skills such as communication or group-process skills. In E-Learning contexts, distributed forms of interaction can take place in knowledge networks, virtual classrooms, and asynchronous learning networks where groups of learners or professionals with a common goal congregate to share information and resources, ask questions, solve problems, and achieve goals, and in doing so, collectively build new knowledge and evolve the practices of their community (Dabbagh, 2005).

Since the aim of this research is to describe and assess teaching and learning experience through the usage Blackboard from the users perceptions, we need to base our work on a model that focus on the users, the social collaborative aspect of learning and how it helps in constructing new knowledge. The Community of Inquiry (COI) model is suitable for this research since it is based on the constructivism and social collaborative aspects of learning. The underlying construct of the community of inquiry is that the optimal educational experience lies in the vortex of three educational elements. It is this defining characteristic of the community of inquiry that allows it to be

used as an evaluation tool (McKerlich & Anderson, 2007). The next section provides a description of COI model.

## 2.4 Theoretical Framework: Community of Inquiry (COI)

An educational community of inquiry is a group of individuals who collaboratively engage in purposeful critical discourse and reflection to construct personal meaning and confirm mutual understanding (Teaching and Learning Center, 2007). According to Garrison et al. (2000) a worthwhile educational experience is embedded within a Community of Inquiry that is composed of teachers and students-the key participants in the educational process.

The community of inquiry (COI) model was developed as a framework for assessing the learning process and context in online environments in the late 1990's (McKerlich & Anderson, 2007). The model and its component parts have been confirmed and replicated using a variety of research methodologies. The COI model has its roots in Dewey's (1933) practical inquiry, Lipman's community of inquiry and Garrison's (1991) model of critical thinking (McKerlich & Anderson, 2007).

The Community of Inquiry (COI) theoretical framework represents a process of creating a deep and meaningful (**collaborative-constructivist**) learning experience through the interaction of three interdependent elements, which are crucial prerequisites for a successful higher educational experience. Those three elements are social presence, cognitive presence and teaching presence. The meaning of each element as follows (Garrison et al., 2000):

**Cognitive presence** means the extent to which the participants in any particular configuration of COI are able to construct meaning through sustained communication (reflection and discourse). Cognitive presence is a vital element in critical thinking, a process and outcome that is frequently presented as the ostensible goal of all higher education.

**Social presence** is defined as the ability of participants in the COI to project their personal characteristics into the community, thereby presenting themselves to the other participants as "real people". The primary importance of this element is its function as a support for cognitive presence, indirectly facilitating the process of critical thinking carried on by the community of learners.

**Teaching presence** consists of two general functions that may be performed by any one participant in a COI; however, in an educational environment, these two functions are likely to be the primary responsibility of the teacher.

The first of these functions is the design of the educational experience. This includes the selection, organization, and primary presentation of course content, as well as the design and development of learning activities and assessment. A teacher or instructor typically performs this function. The second function, facilitation, is a responsibility that may be shared among the teacher and some or all of the other participants or students. The element of teaching presence is a means to an end-to support and enhances social and cognitive presence for the purpose of realizing educational outcomes.

The extent to which cognitive presence is created and sustained in a community of inquiry is partly dependent upon how communication is restricted or encouraged by the medium. At the heart of blended learning redesign is the goal to engage students in critical discourse and reflection. The goal is to create dynamic and vital communities of inquiry where students take responsibility to construct meaning and confirm understanding through active participation in the inquiry process (Garrison & Vaughan, 2008).

The communication context created through familiarity, skills, motivation, organizational commitment, activities, and length of time in using the media directly influence the social presence that develops. Fabro and Garrison (1998) found social presence to be crucial in establishing a critical community of learners. However, this does not reveal much about the process that will facilitate worthwhile outcomes. That process is a collaborative process where critical reflection and discourse are encouraged and practiced. Schrage (1995) states that the *"act of collaboration is an act of shared creation and/or shared discovery"* (p. 4). Collaboration is an approach to teaching and learning that goes beyond simple interaction and declarative instructions. Collaboration must draw learners into a shared experience for the purposes of constructing and confirming meaning. Realizing, understanding and creating knowledge is a collaborative process. Social presence marks a qualitative difference between a collaborative community of inquiry and a simple process of downloading information (Garrison et al., 2000).

Appropriate cognitive and social presence, and ultimately, the establishment of a critical community of inquiry, is dependent upon the presence of a teacher. Many ways by which teacher can influence the development of cognitive and social presence can be done. These include regulation of the amount of content covered, use of an effective moderation style in discussions, determining group size, understanding and capitalizing on the medium of communication, and making supplemental use of face-to-face sessions (Garrison et al., 2000).

In our research we look for evidences through our interview questions that show that these three elements of COI framework are presence and to which extent. We look for indicators for cognitive, social and teaching presence. The indicators as grouped into categories by Garrison et al. (2000) can be shown in the Table 1. Using these indicators/categories we can locate each one of them and how it's being demonstrated in the usage of Blackboard as a medium.

**Table 1: Community of Inquiry Coding Template adapted from (Garrison et al., 2001, p.3; Joop van Schie, 2008, cited in (Teaching and Learning Centre, 2007))**

| *Elements* | *Categories* | *Indicators* |
|---|---|---|
| **Cognitive Presence** | Triggering Event | Sense of puzzlement |
| | | Recognizing the problem |
| | Exploration | Divergence |
| | | Information exchange |
| | | Suggestions |
| | | Brainstorming |
| | Integration | Convergence |
| | | Connecting ideas |
| | | Creating solution |
| | Resolution | Apply new ideas |
| | | Testing solutions |
| | | Defending solutions |
| **Social Presence** | Emotional Expression | Self projection/ self disclosure |
| | | expressing emotions/emotions |
| | | using humor |
| | Open Communication | Learning climate/Risk-free |
| | | expression |
| | | Vocation, inclusion, salutation |
| | Group Cohesion | Group identity/Encourage |
| | | collaboration |
| | | Continuing threads |
| | | Quoting, Referring |
| | | Asking |
| | | Complimenting |
| | | Agreement |
| **Teaching Presence** | Instructional Management | Setting curriculum |
| | | Designing methods |
| | | Setting target |
| | | Standards |
| | | Scaffolding |
| | Building Understanding | Defining & initiating |
| | | discussion topics |
| | | Sharing personal meaning |
| | | Quality of process |
| | Direct Instruction | Focusing discussion |
| | | Questing |
| | | Direct feedback |
| | | Injection of new knowledge |
| | | Technical support |

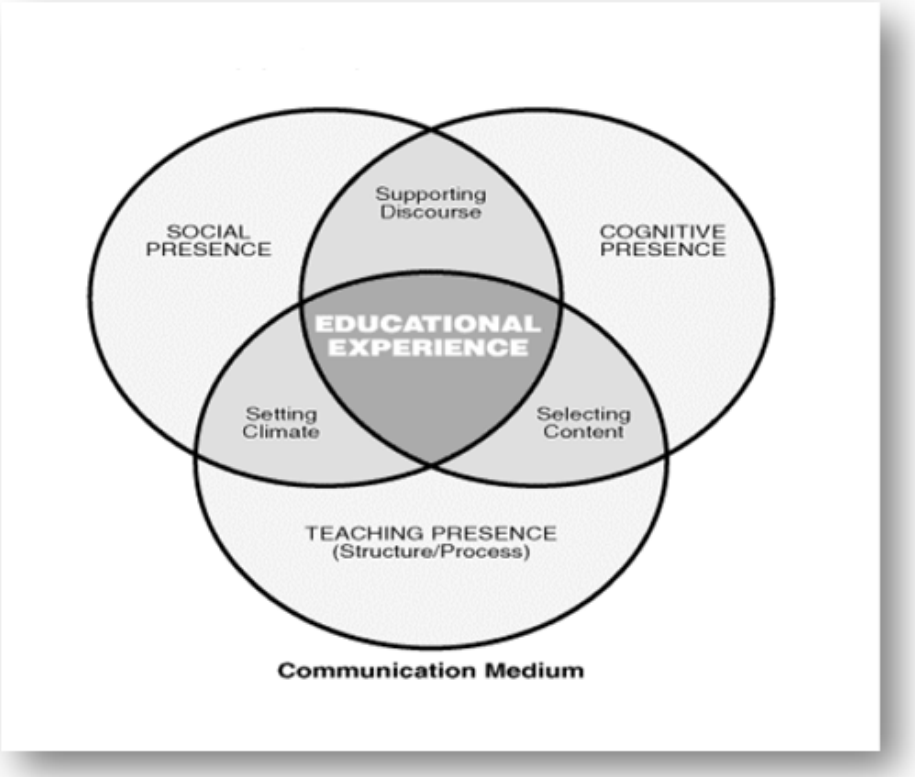


**Figure 2: Community of Inquriy (Garrison et al., 2000, p. 2)**

# 3 Methodology

*This chapter presents a description of the research settings. In addition, it presents the theoretical lens that guides the research, the research method, strategy of inquiry, data collection and analysis procedures. Further, it presents the methods that have been used to maintain the reliability and validity of the research. Finally, it ends with discussing some ethical considerations of this research.*

## 3.1 Description of the Case

The study took place at LNU one of the largest universities in Sweden, with 35,000 students and 2,000 employees distributed in two campuses Växjö and Kalmar (Linnaeus University, 2011a). Several learning platforms are used in teaching at LNU such as Moodle, Blackboard, Learngate, FirstClass, HELP, and School of business and Economics students' gateway (Linnaeus University, 2011b).

The School of Computer Science, Physics and Mathematics is one of several schools at LNU - Växjö campus. It offers master programs in Information Systems for two master levels with a specialization in Business Development. This program gives advanced and broad knowledge of the planning, design and use of information systems in organizations and businesses. It also prepares students for research studies within informatics. A broad set of themes and courses is included in the program such as knowledge management, participative design, professional ethics and information systems in supply chains. The two-year program extends for more courses like: strategic planning, information security, systems thinking and object-oriented analysis (Linnaeus University, 2011c).

Blackboard, which has been developed and maintained by Blackboard Inc., is one of the most common web-based LMS (Linnaeus University, 2011d). Blackboard, has been used in the IS master program for communication between teachers and students as well as providing a storage place for all types of information. It is also used to facilitate communication and information exchange within groups. In a simple way all participants can communicate both synchronously and asynchronously in the course. Further, it contains a number of administrative tools to support the student and teacher in their work (Linnaeus University, 2011d). There are two versions of Blackboard. The first version is Blackboard CE 8.0 that has been used in three of the courses under investigation of this study (see Appendix A). The second version of Blackboard that has been used lately is Blackboard v 9.1

(see Appendix B). It has also been used in three of the courses under investigation in this study.

There are several features available on Blackboard for teachers and students (See Appendix A, B). These features include (Linnaeus University, 2008):

- Home page, which is a "starting page" where students can get an overview of the different blocks, that students can read about latest events and announcements, as well as a list of courses that students are enrolled in.

- Course Material, is the place where teachers share course materials with students.

- Announcements, is a one-way communication channel where teachers communicate with students to announce important information about the course.

- Discussion Boards, is a text-based communications tool. Discussion boards can be used as a one-way or many-to-many communication channel between teachers-students or students-students.

- Messages, is a text based communications tool. Messages are used as a communication channel between teachers-students and students-students.

- Roster is the place that contains contacts information of all students and teachers participating in the course. Also, it has a search facility where students and teachers can easily search and find information about any contact.

- My Groups: is a place for groups where they can create and exchange files, in addition to have discussions, and create tasks.

- Chat is yet another text-based communication tools.

## 3.2 Philosophical Worldview

According to Milton (2006) the worldview is the lens through which one receives and perceives the world. In this research social constructivism is adopted as the research worldview which describes the researchers *Ontological*, *Epistemological*, *Axiological*, and *Methodological* positions.

First, *Constructivism* from an *Ontological* position is concerned with the nature of reality and being. Moreover, constructivists' researchers believe that objects are human-made entities that cannot be separated from their social context and human influences. Therefore, in order to understand and explore these objects, they should be studied in a real-life context where they exist (Lee, 2004). In this investigation of the role of LMS in the learning and teaching processes there exist multiple, constructed realities, rather than a single true reality. These realities are subjective and influenced and shaped by the participant's experiences and perceptions, the social environment, and the interaction between the individual and the researchers (Ponterotto, 2005). In this respect, our focus in this study is on exploring such subjective realities by understanding interactions among students and teachers through the use of Blackboard as a LMS in their learning and teaching processes. As such, this study is conducted in a real life context (LNU) where the researchers can have the opportunity to capture and emphasize subjective experiences, interpretations, and perspectives, which continue to be constructed through interactions among the participant. Accordingly, this will help in achieving a richer understanding of social constructed realities and subjective interpretations of using LMS as a medium for teaching and learning (Creswell, 2009).

Second, *Constructivism* from an *Epistemological* position is concerned with the relationship between the research participants and the researcher. This relationship is regarded as transactional by constructivists who advocate such a transactional, subjectivist stance that maintains reality as socially constructed. In this respect, the dynamic interaction between the researchers and participants of this research is central to capturing and describing the -lived experience- of the participants (Ponterotto, 2005).

Third, *Constructivism* from an *Axiological* position is concerned with the values of researchers during the research process. From a constructivist perspective, researchers' values and lived experiences cannot be detached from the research process. As such, researchers of this research acknowledge and describe their values by making them explicit in collecting and analyzing data. Also, keeping in mind that the epistemology underlying a constructivist position requires extended and interpersonal contact with the case participants to facilitate their expressions of lived experiences in using LMSs,

thus, it is a misleading notion to presume that one could eliminate value biases in such an interdependent researcher–participant interaction (Ponterotto, 2005).

In addition, the researchers' positions on ontology, epistemology, and axiology have a great influence on selecting a proper *Methodology* that aligns with their constructivist worldview. Ponterotto (2005) explained that research methods flow from one's position on ontology, epistemology, and axiology. In this respect, given the central focus by Constructivists on social interactions between researchers and participants and the need to spend prolonged periods of time in participants' real lives, this research thus requires a naturalistic design in which the researchers have the ability to be involved in the participants' everyday lives where they interact, learn, and work. Therefore, a qualitative research method was used in this research to satisfy these purposes by employing several qualitative data collection procedures such as participant observations and face-to-face interviews. The following section describes our qualitative research method.

## 3.3 Qualitative Research Method

This research is an attempt to understand LMSs, as it is a new phenomenon; therefore, an inductive qualitative research approach was adopted. According to (Creswell, 2007), qualitative research is a mean for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. Further, Denzin & Lincoln (2000) provided another definition for qualitative research as a situated activity that locates the observer in the world and in addition it consists of a set of interpretive, material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field notes, interviews, conversations, photographs, recordings and memos to the self. In addition, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them (Denzin & Lincoln, 2000).

According to Trauth and Glaser & Strauss (2001, 1967), there are several factors that influence the choice of qualitative methods including nature of the research problem, researcher's theoretical lens, degree of uncertainty surrounding the phenomenon, researcher's skills, and academic politics. However, the choice of a qualitative research method for this research is discussed in light with the first two factors since these can provide the researchers with a solid basis to argue for this choice.

In respect to the first factor that is the nature of the research problem, the focus here is on understanding and exploring the role and impact of LMSs in the learning and teaching processes through examining the meanings the participants ascribe to this phenomenon (Creswell, 2009). In order to achieve this goal, there is a need to be in a place where participant's actions can be observed and their interactions with the technology understood, thus, the researchers can observe actions of the participants and understand their interactions with the LMSs and also enable them to collect data directly from the field (Trauth, 2001). In this respect, a suitable method to investigate this situation should allow to carry out this study in real-life settings and help in investigating and exploring in-depth the relationship between teachers and students using a specific technology that is in this case a LMS. Therefore, the researchers chose to use a qualitative, interpretive approach that is useful to achieve these purposes.

The second factor is related to the researchers' social constructivist worldview or theoretical lens. Klein & Myers (1999) explained that this type of research assumes that our knowledge of reality is gained only through social constructions such as, language, consciousness, shared meanings, documents, tools, and other artifacts. Moreover, interpretive research can help IS researchers to understand human thought and action in social and organizational contexts; it has the potential to produce deep insights into information systems phenomena. In addition, qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry. Such researchers emphasize the value-laden nature of inquiry. They seek answers to questions that stress how social experience is created and given meaning (Denzin & Lincoln, 2000).

Given the researchers' constructivist position, LMSs are conceived as human-made entities that cannot be separated from their social context and surroundings, especially human influences. In order to investigate and explore this situation in-depth, a LMS should be studied in real-life settings where it exists and used (Lee, 2004). This means LMSs should be studied in its natural settings, attempting to make sense of, or interpret, this phenomenon in terms of the meanings that participants bring to them (Denzin & Lincoln, 2000). In other words, the aim is to provide an in-depth understanding of LMSs as seen through the eyes of the participants (Wilmot, 2005). Hence, a qualitative approach would help in gaining deeper understandings and insights into how LMSs such as Blackboard is being used in classroom education through interviewing students and teachers as well as interpreting and observing how they interact with such systems.

## 3.4 Strategy of Inquiry: Case Study

Yin (2009, pp. 18) provided a definition of case studies that consists of two parts. The first part of the definition begins with the scope of the study, as he puts it like this:*"A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomena and context are not clearly evident".*

The second part of the definition is concerned with the technical characteristics of case studies. In this sense, his definition included data collection procedures as well as data analysis strategies as he stated: *"The case study inquiry cope with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result relies on multiple data sources of evidence, with data needing to converge in a triangulation fashion, and as another result benefits from the prior development of theoretical propositions to guide data collecting and analysis"*

At this respect, this research is focusing on a single case of LMSs, which is "Blackboard at LNU" as a contemporary phenomenon, to investigate in depth and to gain a deeper insight into the impact of using such systems in the learning and teaching process and how it is being used. By focusing on the use of LMS in classroom education as a single-case study, this will allow the researchers to understand human dynamics within their single real-life settings (Eisenhardt, 1989).

Most importantly, case studies allow researchers to combine several data sources such as interviews, observations and archives (Eisenhardt, 1989). In this case study several data sources were combined including interviews with teachers and students who are using Blackboard. And direct observations of the events associated with the use of and interaction through Blackboard as well as technical documentations. This has enabled the researchers to retain meaningful characteristics of these events as real-life-events. All these sources of evidence allowed the researchers in addressing a broader range of views by the research participants. Moreover, by triangulating several data sources in this case study, the events or facts have been supported by more than a single source of evidence (Yin, 2009).

In respect to the aim of this study, this research aims to capture how humans such as students and teachers are interacting and communicating with LMS in real-life context, therefore a single-case study strategy is the most appropriate for this research to gain deeper insights of Blackboard, were these facts and

events can be expanded and investigated in further research and different cases in order to generalize the findings.

Finally, according to (Eisenhardt, 1989), case studies can be used to accomplish various aims: to provide description, test theory, or generate theory. In our case the interest here is to provide a description of this new phenomenon. At this respect, the researchers are trying to investigate the impact of the use of LMSs in the learning and teaching processes. As such, this study was conducted following a framework adapted from Eisenhardt (1989), which provides a roadmap to conduct case study research. This framework consists of several steps that guide the process of research. The researchers have divided this framework into three separate phases that have been carried out in different time frames (See Table 2).

1. The 1st phase started with defining the research purpose and developing the research question: *How do students and teachers use LMS, in particular Blackboard, as a platform for the learning and teaching process in LNU?*

   Further, the 1st phase extended by selecting Blackboard at LNU as a single representative case of LMSs in classroom education, which have been investigated and studied.

2. The 2nd phase started with crafting the data collection procedures and interviewing protocol. Data collection procedures in this research were mainly in-depth interviews, observations and technical documentations. Afterwards, the next step was entering the field, collecting the data from the field site.

3. Finally, the 3rdphase started with transcribing data from interviews. Followed by analyzing, interpreting, and discussing this data in order to draw out final conclusions and insights.

**Table 2: Road map to conduct a case research adapted from (Eisenhardt, 1989, p.3)**

| ***Phases*** | ***Steps & Activities*** |
|---|---|
| Phase 1 | 1. Defining the research purpose.<br>2. Developing Research questions.<br>3. Selecting the case. |
| Phase 2 | 1. Crafting data collection procedures and interviews protocol.<br>2. Entering the field and collecting data |
| Phase 3 | 1. Analyzing Data<br>2. Discussion of findings<br>3. Drawing final conclusions |

## 3.5 Data Collection

### 3.5.1 Participants

The participants of this research were students and teachers from two master levels within the program of Information Systems. This particular program was chosen because there were almost 80 students enrolled within this program in both levels. These students come from different parts of the world with different cultures, different experiences and backgrounds, and genders. The diversity of participants in these programs can help in enriching the case and maintaining different perceptions and experiences of the usage of Blackboard as a LMS.

A list of students and teachers' emails was obtained from the departmental secretary of the School of Computer Science, Physics and Mathematics in LNU. Afterward, an invitation email had been sent to all enrolled students as well as 15 registered teachers to request their participation in the research. Each email contained information about the purpose of the research and other related information such as voluntary participation, confidentiality and privacy issues, time, etc. Later, 17 students and 7 teachers accepted the invitation and showed their willingness to participate. Consequently, 9 students and 7 teachers have been chosen to be the participants of this study. These participants were purposefully selected by following the maximum variation strategy of sampling provided by (Patton, 1990). At this respect, the following characteristics represent major factors of the criteria for selecting the participants keeping in mind capturing and highlighting all variations existed within the program: role (teacher/student), level of study (for students), gender, and nationality. In addition, we stopped adding participants to our study when no new information was forthcoming from the new participant (Lincoln & Guba, 1985). See the two tables (Table3 & Table4) which include the characteristics of all selected students and teachers.

### 3.5.2 Data Collection Methods

Several data collection methods have been used to collect data in our case including semi-structured interviews with the participants, direct observations of the system, and electronic documentations. The use of multiple sources of data, which is often described as triangulation, through interviews and observations helps in producing an in-depth understanding of LMSs (Flick, 2002; Yin, 2009; Denzin & Lincoln, 2000). It can also add rigor, breadth, complexity, richness, and depth into our investigation. What is more is that the use of multiple sources of evidence allows for addressing a broader range of historical and behavioral issues (Yin, 2009). Furthermore, using several

sources of evidence helps in addressing the problems of establishing the construct validity and reliability in case study research (Yin, 2009). Moreover, direct observations were conducted of different courses held on Blackboard based on three indicators provided by Garrison et al. (2000) framework. A predefined observation form containing the three main elements of Garrison et al. (2000) COI framework and their categories was used by both researches to guide the observation process (See, Appendix C). Each course has been observed by both researchers and several screenshots have been taken of different courses' activities. Also, several observation notes were taken. The total number of observed courses was six. In addition, further data was collected from technical documentation of Blackboard, which has been accessed from the university website where Blackboard is hosted.

**Table 3 Students Characteristics**

| ***Students Characteristics*** | | |
|---|---|---|
| ***Criteria*** | ***Characteristic*** | ***Number*** |
| ***Level of study*** | 1st year Master | 6 |
| | 2nd year Master | 3 |
| ***Gender*** | Female | 3 |
| | Male | 6 |
| ***Nationality*** | China | 1 |
| | Iraq | 1 |
| | Kosovo | 1 |
| | Macedonia | 1 |
| | Nepal | 1 |
| | Pakistan | 1 |
| | Sweden | 1 |
| | Turkey | 2 |

**Table 4 Teachers Characteristics**

| ***Teachers Characteristics*** | | |
|---|---|---|
| ***Criteria*** | ***Characteristic*** | ***Number*** |
| ***Role*** | Teachers | 3 |
| | PhD students (teacher assistant) | 4 |
| ***Gender*** | Female | 5 |
| | Male | 2 |
| ***Nationality*** | Iran | 2 |
| | Kosovo | 1 |
| | Palestine | 1 |
| | Sweden | 3 |

## 3.6 Data Analysis Process

This study seeks to understand the experiences of teachers and students of using Blackboard as a LMS. Therefore, hermeneutical method for analysis was used to analyze the transcripts of interviews and observations data. The hermeneutical analysis focuses on the meaning of text collected from interviews and observations. At this respect, the aim of this study is to emphasize the participant's experiences by telling their stories though using their words not the researchers' (Ratcliff, 2008).

The data analysis process was held in several phases. In the **first** phase, the transcripts of all interviews and observations data have been read and re-read. During this process notes, comments and interpretations have been made while keeping in mind the purpose of the study of capturing interesting data and findings that can help in developing a deeper and richer understanding of learning patterns and teaching activities using a LMS. This process has been held individually by each researcher, and by the end of the first phase comments and notes have been exchanged between the researchers. The **second** phase involved creating a list of main themes and patterns that have emerged from the first phase (interviews transcripts and observations data). Subsequently, a master list of all themes and subthemes relevant to the focus of the study was created and irrelevant themes were discarded. **Finally**, themes and subthemes of the master list were categorized. Then we used the COI framework to interpret the findings. Throughout this report pseudonyms were assigned to participants to maintain their anonymity. And direct quotations were used in order to preserve the voice of the participant (Stodel, 2006).

## 3.7 Researchers' Role

The authors of this thesis are Master students at the School of Computer Science, physics, and Mathematics where this research takes place. In this respect, the researchers are playing dual role as inside observers and interviewers. This dual role is beneficial to our research because it provides us with the accessibility to interview participants as well as observe them in the field where they use Blackboard for their daily learning and teaching activities. In addition, Eisenhardt (1989) explained that the involvement of multiple investigators can enhance the confidence of research findings and increase the likelihood of surprising results and conclusions. As such, being two investigators in this research has helped us to be more creative due to our various perspectives and understandings, which may increase the richness of our data. Equally important, these perspectives and understandings can help

us in uncovering individual biases and hidden conflicts in the data and thus increasing confident and reliability.

## 3.8 Validity and Reliability

The quality of the qualitative research was described by Seale (2004) as the transparence of the whole research process and credibility to the validation of findings and results. For a long time these issues have also been associated with discussions of the reliability of methods and validity of data. Hammersley (1990) discussed validity and reliability issues. In this respect, he described validity as the truth "*interpreted as the extent to which an account accurately represents the social phenomena to which it refers*". In addition, he refers the reliability to "*the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions*". Moreover, Creswell (2009) explained that the validity of the qualitative research means that the researcher checks for the accuracy of the findings by employing certain procedures, while the reliability of the qualitative research indicates that the researcher's approach is consistent across different researchers and different projects.

The quality and credibility of qualitative research has been a critical and a controversial subject in social science and has often been questioned. For this reason in order to maintain the credibility and reliability in our research we employed multiple strategies of validity as discussed in Creswell (2009) to ensure our internal validity, as follows:

- Triangulation of data: multiple data sources is used to collect and verify data mainly interviews and observations, all these sources of evidence in our case study allowed us to address a broader range of views by our participants. By triangulating our data, the events or facts of the case study have been supported by more than a single source of evidence (Yin, 2009)
- Checking the accuracy of the interviews transcripts by the interviewees.
- Member checking is conducted between researchers to maintain the reliability of the collected data.

## 3.9 Ethical Issues

According to Parse (2001) the ethical dimension of the research process includes three areas: scientific merit, protection of participants (human subjects), and integrity. These three dimensions provided us with the basis for ensuring our ethical conduct.

- Scientific merits: Correspondents, coherence and pragmatics make up scientific merit of the research process. Scientific merit is evident in the logical coherence of the entire research process, in the pragmatics of exploring, mapping, and conducting the study, and finally, in synthesizing the findings. At this respect, we ensured that all the steps of conducting this research and analyzing its results were well documented and demonstrated throughout this report.

- Protection of participants: in order to protect participants the following components should be considered (Callahan & Hobbs, 1998):

    - Disclosure: All participants in our research were fully informed about the nature and purpose of the research, the procedures to be used. Also, pseudonyms were assigned to maintain the participants' anonymity and confidentiality.
    - Understanding: We made sure that the participants had a good understanding of what has been explained, and have contacts of researchers in case more information needed.
    - Voluntariness: The participant's consent to participate in the research was voluntary, free of any coercion or promises of benefits to result from participation.
- Integrity: It includes clarity, accuracy and trustfulness of the research activities and reporting. Clarity is essential in reporting the research question, the study design, or the methodological nuances of the data gathering and analysis-synthesis processes. Accuracy refers to scrupulous exactness in adhering to facts in presentation. Any deviation from the facts violates standards and places the integrity of the report in question. Truthfulness refers to unreserved veracity in reporting—it is the presentation of unaltered details (Parse, 2001).

# 4 Findings

*This Chapter presents the results of the research analysis. Direct quotations have been used in addition pseudonyms names were assigned to the participants to preserve their anonymity.*

Throughout our research we have been able to identify several learning and communication patterns using LMSs as well as the influence of LMSs on the teaching and learning experiences. We have also identified some barriers for creating a learning environment through using LMSs. Pseudonyms were assigned to maintain the participants' anonymity.

## 4.1 Patterns of Learning using LMSs

From the data we have collected through the interviews and observations, we have been able to obtain more insights into how students are using LMSs and in particular Blackboard in their learning activities. As a result we have divided the patterns of learning into several categories, which describe how students learn and develop their knowledge through using LMSs.

### 4.1.1 Learning from other students' assignments

Many students in our study have explained that the visibility of other students' assignments on Blackboard gave them the opportunity to check what these students have done. Filip explained how this has helped him as follows "*seeing similar tasks to what I did, done by others who done better than me, I think that was a good experience to learn how to do something*". He further explained " *... no matter how easy one task to be done always you can see different students doing it differently and you can almost learn from everybody ...When I read these assignments I think they have influenced me much. In a sense, that I have learned new techniques of how to do something or seeing others perspectives on something*". Further, he explained his current experience in using Blackboard by reflecting upon his previous studies and the way they had to manage their assignments. He said "*usually everybody would send their tasks in email so it was like lost in the email of the teacher and students couldn't learn from each others' tasks ... I think thanks to Blackboard it works very well because it's like open to all students at the same class, so in that sense it's pretty positive…".*

Furthermore, Ediz explained that through Blackboard he can *"get some information on what other guys have done about their assignments… they upload some brief PPTs and I can get a little bit idea about others works"*. He further exemplified it like this "*let's think about Cybernetics, it is a topic in a [course] ... if you want to get very brief or quick information you can go*

*to Blackboard and you can check some presentations of other students… to get more information about Cybernetics …*". Similarly, David found that when students submit their assignments they are open to everyone then "*you can read it and if you read it then you get new knowledge about some topics that they have submitted into the course … and from this I can learn more about what they have written in a different way…*". Likewise, Tanya found that the visibility of others assignments let students check these assignments "*not all of the assignments… but they have like 'OK let's see this [student] always has good assignments, so I will read her assignment"*. However, Tanya thinks it is *"a very subjective way"* but still, she thinks that this in a way provides her with knowledge.

In addition, Asil explained that she was developing her knowledge and learning skills from downloading others students' assignments. She explained "*… I can compare how people are making research on particular subjects, and then I am thinking if I were them I would make research on this subject or on this direction … or I would write the title in this way not this way …. So I can compare my knowledge in this way*". In the same vein, Mai used these assignments to help her if she has failed any assignment to learn from them how to do a specific assignment, as she puts it like this: "*… if you failed in one of the assignments and you want to resubmit your assignment where you have misused the guidelines… you can check other students work to see how they used the guidelines for this task …*".

However, it is worthy to mention that through our observations we have noticed that not all courses have this visibility of assignments, which in some cases the assignments were only visible only to the group members. Given the above discussion, many students might miss the opportunity to learn from each other's when assignments are inaccessible.

### 4.1.2 Learning through discussion topics

*a. Students discussions and feedback*

Discussion topics were another source for gaining knowledge and developing critical thinking and reflection. However, it's worthy to mention that there was a lack of discussion topics on Blackboard in some of the courses, and sometimes there were no discussion topics at all in some of the other courses. According to the students, having discussion topics on Blackboard depended on the nature of the course and on the teacher how he/she structured the course. Tanya gave an example of one of her courses. According to her, this course was structured in a different way than other courses she had before in which she didn't have any discussions. In this course there were distant students involved in the course, therefore, it had a structure which was built

to focus on more interaction between students and the teacher, and there were a lot of discussion topics. She further explained the procedure of doing one of these discussions. Each group was supposed to pose three questions on the discussion forum and answer at least three questions posed from other groups, and other groups should do the same as well*" ... and this provide you with knowledge; because in order to answer those questions you have to read something, or you read the answers of other students, that doesn't mean that they were 100% true but I got their opinions and that makes you reflect upon things or something... that's makes you think whether you agree or not! ..."*.Even though that she wasn't an active contributor on discussions herself as she mentioned; but she was reading these discussions on a regular basis, and this helped her in gaining knowledge and reflecting upon other students' questions and comments. She further explained how that helped her to reflect upon others' answers, and to think more critically. As she stated " *…I would read the questions and I in a way would have some answers in my mind ... and then I would like to see how the others have answered these questions and to see that if my way of thinking is the same as them ... or maybe I missed something ... and there were cases which from the others answers they changed a bit my perspective or at least made me read about that..and there were even cases where my answers were not right ... they like made me at least go and read and say that 'OK' maybe I didn't get it quite right, maybe he or she was right, and this happened personally to me".*

Asil gave another example of one of her courses where she could learn from the comments made by others. She said *"everyone was submitting their work and the teacher was asking students to do some discussions and feedback ....everyone is seeing your feedback ... So you can download each others' work and then you can compare their work with others work and feedback ... so you can see other people ideas about different works ... you can really look and obtain lots of different ideas and improve yourself in that course."*.

Mai added another perspective as she found that the discussion forum was the place where she could learn from other students more about something that she doesn't understand. She clarified it in this way "… *if I feel like there is something fuzzy or I don't understand it in the right way, I can write my question or I can write that I don't understand this part in the discussion forum and I get answers from other students ...".* In a similar sense, Ediz explained that through discussion forums he asks some questions then teachers and students reply to these questions by their comments and feedback. He further elaborated that the discussion forum was the place where he could learn *"other students' ideas about a particular topic ..."*.

In contrast, David and other students felt that the lack of discussion topics didn't support students to learn from each other's and he suggested that if *"...*

*they could [teachers] put up some topics for discussion, specific topics regarding some issues in the course that the teachers submit … and tell the students to discuss it"*. Filip further reported that in one of his courses there were heated discussions in the classroom regarding some topics but they didn't have much time to discuss. He argued: *"why didn't [the teacher] open such discussions on Blackboard, it could be very good if students could be given the opportunity to discuss it there and share ideas to learn from each other"*. In fact, some of the students mentioned that they would like to have these discussions as "mandatory" in order to push students for discussions with each other.

Another important aspect of having discussions is to get a feedback from others. For the importance of getting feedback/comments from others_ teachers in particular_ on Blackboard, Tanya explained that "*... when you as a student comment on something and you get a reply or also comment from the teacher, that stimulates you more … because when you see that you are doing something and one really cares, like the teacher in this case doesn't care what you are asking or what is your comment … and then you might think what is the point of putting things there!"*.

On the other hand, according to the students they didn't get much feedback on Blackboard, and most of them were not satisfied by the quality of the feedback given to them whether by teachers or students. For most of them the feedback that they mostly get was disappointed because it wasn't the kind of feedback that they have expected. And sometimes they got abstract feedback where they couldn't understand or tell what was meant by it. Thus, students think that the quality of the feedback given by teachers or students is very important for them, to help them enhancing their work or to learn from these feedbacks. For instance, Asil thinks that the quality of the comments and feedback "*is important if they are really constructive ideas …"*. She further clarified *"… like if someone comments that 'this part of the work the English is really bad, you should work on this part' … or 'in my opinion research problem is not so clear'… then I can change it … you should be open for different ideas to improve … but if someone comes and says 'you didn't write the aim of the research' but the aim is there, then it is not good"*. Filip also elaborated more about the quality of the feedback he gets "*... in some courses we have these teachers who would give you some feedback on Blackboard so you would see what you are really missing … and we had teachers who would just say 'OK' or 'Wrong' … and sometimes students are miss leaded and don't know what to do next and the others don't know what he meant by it …"*. David indicated that they get some feedback on Blackboard or sometimes they don't get any feedback at all. However, he added "*the only thing that you get is that you submit your report and they say 'we will look at this report and you will get an answer in two or three weeks' … and after*

*three weeks you will be graded without getting any feedback … I think that there should be more feedback, because I would learn from getting more feedback*". David elaborated more about the quality of the feedback that he gets through Blackboard: " *… sometimes we get an email on Blackboard, and say that this assignment is 'good'. That's the feedback [laugh]*".

*b. Teachers perceptions*

In respect to teachers, many of them thought that having discussion topics on Blackboard depend on the structure of the course as well as teachers' preferences. As such, some of the teachers opened and encouraged students to participate and initiate discussion topics, whereas other teachers thought that opening discussions topics on Blackboard is the students' responsibility. Nevertheless, teachers who opened discussion topics on Blackboard weren't really satisfied about these discussions, for because not all students were so active in these discussions. In fact some of them felt frustrated to open discussions where no one is participating or they just do the part that is required from them and then they don't participate anymore in these discussions. For instance, Sami wanted students enrolled in one of his courses to be more active, by opening and initiating different discussion topics *"… we had a course where students should be opponents to each other, so we asked opponent groups to create a thread and give feedback on the other groups' work … then students can come and read the feedback … and then they can start the discussion by replying to this thread"*. Still, Sami wasn't satisfied because he" *wanted to see more interaction, I wanted to see more collaboration … I wanted them to use it more … I don't know what was the problem I am not sure!"*. Further, Lisa explained that student's had seldom participated in such discussions and sometimes only if they have been asked and obliged to do so *"… not all students are encouraged to participate, many simply don't post ever … if you make them a little bit obliged then it's different because they will have to, or otherwise they will have a lower grade or fail … but if you just leave it open for them without making them to do it they will barely do it."*.

Other teachers like Hadi tried to open discussions topics on Blackboard *"in couple of the courses, and then nobody participated that much… so that wasn't like the best experience … it didn't came to my mind to use it more often"*. He further explained why he thinks students don't participate that much on discussions *"… based on some reasons like people don't feel comfortable to raise issues and answer issues because of the idea of openness … and the most important thing that students don't have the courage to participate or patience to read all the things from top to bottom to understand what is going on in order to track the conversation … so unless the topic is too interesting for your reading to be involved."*.

On the other hand, other teachers didn't initiate or encourage students to open discussion topics on Blackboard for various reasons. For example Zoy thinks that having discussion topics on Blackboard depends on the content and type of the course "… *I haven't triggered any problem on Blackboard, because the courses I had, have no specific problems they were more practical"*. Similarly, Ella thinks that it depends on the structure of the course because "*these are campus based courses they meet at lectures and they are doing work together, so I don't think that Blackboard will add any good feature for them in their process … if they were in distance, I would have encouraged them to discuss with each other through Blackboard but not now."*.

Also, Erica thinks that opening discussion topics on Blackboard depends on the structure of the course and this will increase the administrative work. What is more, she thinks that it is the students' responsibility to open such discussions. She clarified it like this *"… if you have organized the course with interaction then it is possible to have discussions be done on Blackboard"*. She elaborated more *"… I tell them that they can do that [having discussions on Blackboard], but it's nothing that I take responsibility for. They can do it! It's voluntary.. I also think that the students have the responsibility for their learning, and if they want to discuss topics and communicate I think it's good .."*.

According to some teachers giving students feedback depends on different factors like content, time, urgency, and type of the assignment. For instance, Ella was giving personal feedback to each student as she clarified: *"… I read the reports and I make a template for comments… and I comment and then I send these comments through Blackboard with a message 'here is your grade and look at attached comments'"*. Lisa gives her feedback and comments when " *I saw that there was something going on … then of course I will reply and try to explain what was unclear …"*. Sami said *"sometimes commenting on their work … I was sending them replies … and sometimes I look at some replies [students] and if I find something interesting I can comment on that"*. Moreover, Sami thinks that these comments and feedbacks are "*useful*". He further explained the importance of having comments and feedback on Blackboard where it is open for everyone in the class*"…when you create a thread and others might come and reply, other students might have the opportunity to read it, and might learn from it"*. Nevertheless, he wasn't sure if these feedbacks added any value or helped students as he clarified it like this "*because students most often go to the thread where they –this is an assumption- but I think students might be more interested finishing their tasks on Blackboard and just leave … they are not interested for example to know what other students are doing …"*. Another teacher Zoy was giving students feedback only when they have assignments, as she explained: "*… when I*

*have courses I checked Blackboard everyday and gave them feedback when the students posted their assignments … and since there were no use of discussion forum, there were no extra feedback to give"*. Further, Hadi explained that he provided students with feedback but that depends on the *"content, if there is time or if there is an urge for you to do that in order to keep track of the conversation, there is something in particular that is kind of urgent to answer then I will be engaged … but many times there are questions answered many times … so if the issue has been answered before I don't engage in that"*. While on the other hand Erica stated that she didn't give any feedback through Blackboard, she often sends her feedback through email for assignments *"the feedback on Blackboard depends on the kind of the assignment but mostly I send feedback by email …"*.

From the observations of Blackboard we have noticed that most of the courses don't have discussion topics initiated by teachers or students. However, on two courses there were some initiatives from teachers to open discussion topics. In only one of these two, there were a high response rate from students and a lot of interaction and discussions between students. In addition, the teacher was so active in these discussions in answering, explaining and directing these discussions. While in the other course we have observed that there were several initiatives by teachers to open discussion topics but sometimes they got no response at all and other times receiving a low response rate. On the other hand, in all courses we haven't observed any initiatives by students to start any discussion topic. (See figure 3 and 4).

### 4.1.3 Learning from materials and additional resources available on Blackboard

Course materials and additional materials provided through Blackboard were another source for students to gain and develop their knowledge. For example Ediz considered Blackboard as another source to gather information about some topics of the course. He was used to watch some video recordings of lectures and presentations that the teacher has uploaded on Blackboard which in that case helped him to study and to prepare for his exam, as he puts it: " *….when I was studying for the exam, I checked these videos many times to learn some things about some topics, some Cybernetics, some systems thinking methods, and some other stuff which are much related to the exam*". Similarly, Mai and other students used the materials uploaded on Blackboard to understand some topics that they have missed or didn't understand during a lecture. She explained: *"… sometimes when I am in the lecture and I didn't concentrate on some parts … I can go through Blackboard later, and I can go through the teachers PPT slides or whatever he/she was presenting … I can read it to know exactly what he/she was explaining during the lecture …*

*so if I missed something in the lecture I can use Blackboard so I don't miss anything …".*

Likewise, Asil reported that if she doesn't understand something and if she wants to know more about a specific topic she can *"understand it on Blackboard … there are some kinds of articles that make me understand that subject … just one article and I will understand my problem …".* Also, Filip reported the same thing about articles *"… when not all teachers but some teachers would upload some articles which we couldn't find elsewhere … we can download these articles and read them …".*

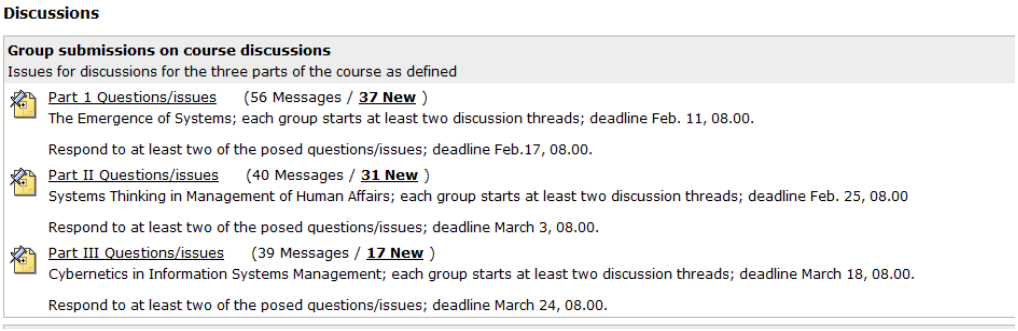


**Figure 3: Structure of discussion topics on Blackboard**

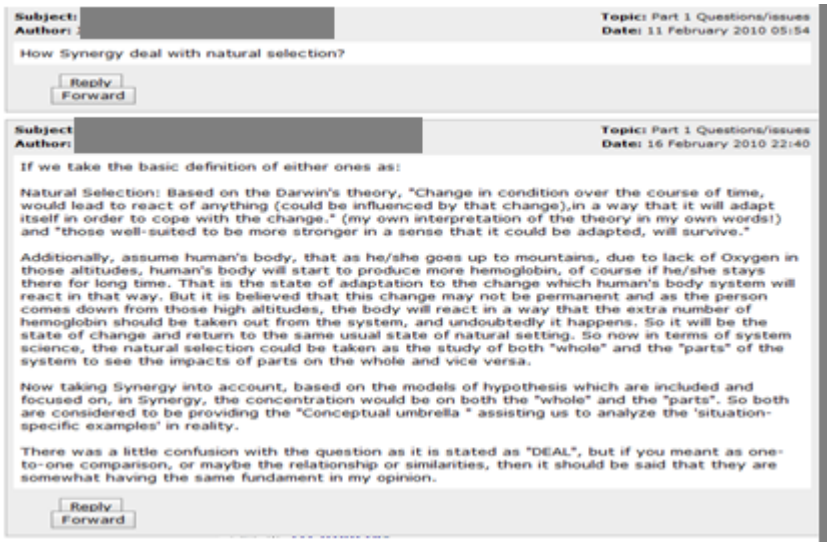


**Figure 4: Example of a discussion thread among students on Blackboard**

## 4.2 Patterns of Communication using Blackboard

According to students there was not much of interaction and communication among students through Blackboard. It was only for teacher communications with students. As Cheng explained that Blackboard is only a place for teachers to release materials to students as he puts it*"... Actually I can't see any collaboration or communication between students using Blackboard. It's like a platform between students and teachers, the teacher release the material and the students get the material from the Blackboard ..."*. Similarly Tanya thinks that Blackboard was rarely used to communicate with her collogues as she stated *"Actually with other students I don't think that we really used Blackboard to communicate with each other. Because my class mates we have like Google Gmail group that we use like for our own purposes .... So for general discussions for the whole courses or even for private things we don't use Blackboard"*.

However, few students used Blackboard to communicate with each other only at the beginning of the Master program when the academic year started. As Filip explained*"... in the beginning it was my experience that I have to come to Växjö for two weeks and then go back home for two weeks. In that meantime we had some tasks and in one course we had to form a group... I have checked those days Blackboard to find some group mates for the tasks and to email them if they are available to be in a group..."*. He elaborated more that after knowing other collogues in the same courses they used other ways to communicate *" but afterwards .. most of students are the same in different courses.. I got to know people ... usually we would exchange email addresses and MSN messenger and Skype names. So I think that afterwards I didn't much used Blackboard ..to directly communicate."*

Mai had a different experience where she has been able to develop a relationship with one of her colleagues through Blackboard "*I had a course that I made a relationship with one of my colleagues through Blackboard.. he was writing about his previous experience and his education, and I wrote also about my previous experience and education .. he was interested in my education and previous experience, so when we met in one of the lectures he asked me to work with him on a group task, so we worked together and it was good"*. However, she further added that this only happened once with her*"... but for the other students actually we were attending each course together so we don't have a much relation on Blackboard except it's on the emails actually ..."*

### 4.2.1 Asynchronous Communication channels

In all courses, the main ways of communication used were asynchronous (messaging, discussions forums, assignments submission, announcements). Moreover, one way of communication was dominant; students were mainly the receivers of information, as Filip described it *"I see it more as one way communication. Usually teachers use it to communicate what they want students to hear. But I can't recall a case when I used Blackboard to communicate with a teacher"*. Other students didn't see those ways of communication efficient as Cheng descried his experience *"actually I cannot get any reply from the teacher I remember I sent an email in Blackboard and ..... I don't know!"*. Cheng thinks that these ways of communications could be better if they are more organized as he elaborated in his example *"I think ... if there is a way that a teacher can give us an exact specific time... and every student can ask questions at that time and get reply from the teacher as soon as possible. I think it is a good way because if you send emails to the teacher I think they will answer us"*.

Further, teachers didn't see Blackboard as an active communication channel. It was found that the time needed to wait for a response is an important factor in choosing the communication channel. Sami thinks that it's one of the reasons why students prefer to use direct email rather than Blackboard *"students prefer to send emails rather than using Blackboard.. it might be they don't feel that they are well attended when they do it on Blackboard ... it's related to the type of communication channel we are talking about, which is in the case of email it's a quick type of synchronous communication... On Blackboard it's like a communication channel where you raise the question, when you ask a question in the discussion forum you don't expect your teacher or other students to reply at once. So this is something that needs to be taken into consideration ... "*. Similarly Zoy supported what Sami's said *"I think that if you write something on Blackboard, you need to wait till you get a reply, which is another reason for not using it compared with other instant replay ways of discussing (messenger, face to face, etc..)"*. Lisa opinion was also similar as she stated *"because you put your thoughts then you have to wait for someone else to join the discussion",* and she elaborated that this might cause forgetting to answer these question *"In Blackboard if you ask a question through time someone will forget it, I even may forget it and no one will respond"*.

Even though Blackboard has a chartroom as a synchronous way of communication in one of Blackboard versions, students didn't use it and some of them never mentioned it in the interviews. Salim mentioned that this feature was not working for some reasons *".. I never use Blackboard for communication and interaction with other students. I tried to; there is a chat room where I see people online..... but for me this feature it's not working*".

None of the teachers mentioned this feature also, except Zoy who said, "*I never used the chat rooms I was always disconnected. Actually I didn't think how I can start using chat rooms".*

### 4.2.2 Formal and informal ways of communication

Students had mixed feelings about their relation with their teachers. Some of them saw that using Blackboard didn't help in having a better relation with their teachers. Salim sees that there are no relations with teachers through Blackboard only related to assignments as he stated *"I don't think it's a good way to interact with teachers…. I don't think there is much relation between teachers and students…they ask to deliver assignment on deadline and we submit it. There is no much discussion or communication that I can see. The communication is related to the assignment*".

Similarly Cheng thinks that there is no interaction with teachers through Blackboard, it is only restricted to assignments and materials, as he described it "*It's like a website where teachers release their learning materials and we get those materials like push function there is no interact".* Ediz sees Blackboard as a good way for teachers to easily share information with all students as he explained *"..the Blackboard system really facilitates the interaction between teachers and students. For example, by asking as question by emails you can get some information but other students in that case might not be aware of this information.. By asking question via Blackboard all students can get some information about your problem plus the solution of the problem."*

In contrast, teachers didn't see it as a problem. Ella mentioned that with using Blackboard now it is less contact with students *"it's less contact with students because I can arrange things through Blackboard",* and she thinks it made her work more efficient as she explained in an example *"if for instance I have a day for supervision then they can sign in to Blackboard .. That is good because earlier you had to come with the paper and ask them to select time. So that's good. And it's changed it's more efficient for me and for the students as well".*

Teachers also see the formality of Blackboard could make students more reluctant to use Blackboard. On one hand, Hadi explained that privacy and feeling perceived by teachers could be reasons for avoiding Blackboard for students communications, he said *".. students prefer to have their own form of messages in other platforms .... if people might feel that it's covered and controlled by the school there is not much privacy, so many times they don't want the supervisors to get involved in your communications".* On the other hand, Sami thinks that using other less formal applications like Facebook could help students to feel more informal, so he tried this for a small group of

students. He thinks using informal ways would encourage students to be more open as he explained *" ..people use social media might be more willing to use it. For example I have some students groups ..... I created a Facebook group for them. I asked them not to send me emails I asked them whenever you have question just write me a comment on Facebook, and I can give you some replies… I think also it helps to be informal with students when you use such technologies instead of using formal emailing communication… when you ask them to use Facebook they might be more comfortable about it… our teacher is informal, they might be more motivated to share and ask."*

In the same vein, some students like Filip explained that logging into Blackboard feels similar to entering a face-to-face classroom as he said *"when students enter Blackboard they have this feeling that they have entered the classroom",* which make it more formal and suitable for serious discussion as he elaborated *".. It's not like .. when people make discussions in social media because social media usually is a good place to communicate but ... there is no much seriousness in discussions".* This one reason that makes him see Blackboard as a formal way of communication and only use it in the beginning *"So expect the beginning that I used it, when I didn't know students and teachers and I have this feeling that you need to formally communicate with everybody, then I didn't use it much .. I see Blackboard more as too official ...".* Also Ediz mentioned that he and his classmate prefer to use other platform to their communication since some discussion they don't want the teacher to see it as he explained *".. to collaborate with students we have set a group, Gmail group… We mainly used it to ask some questions… discussions which are not suitable or are not good to be seen by teachers... some comments that you don't want teachers to hear it …. It is more free .. Maybe that's why we don't use Blackboard and communicate so much."*

## 4.3 The influence of LMSs in Teaching and Learning

Many teachers discussed the influence of Blackboard on their teaching process. Some teachers think that it facilitated their work in a sense that made it more organized, structured and easier. While other teachers felt that it doesn't add anything to the learning process and it only made the whole process complicated and gave them more load of working hours and more administrative work. For instance, Hadi thinks that Blackboard is becoming a very important part in the teaching process, he explained "*the whole course is based on this tool ... in forming the course everything is organized and you have order for everything ..... And the most important thing is the whole idea of control, control in terms of controlling over students, materials, and over the flow of the course ...".* But still, he doesn't think that this affects the teaching process its only " *… facilitates in some way to distribute or hand out before and after the lecture ... it doesn't affect the course that much*

*rather than communication use … but like the whole teaching process I don't think that makes much difference".*

For Sami Blackboard serves as a supplementary and supporting tool for the teaching process *"because you can easily share documents with students … also there is an opportunity to discuss with them and if you want to find some students you can check it on Blackboard… and most importantly that I use it to manage assignments.. where students can upload their documents … and that is also an important thing..".* Also, Ella thinks that Blackboard has somehow changed her teaching process, as she explained *"… its less contact with students because I can arrange things through Blackboard, I can arrange seminars, schedules, I can publish if I want reports and so on … also I can ask students to create groups through Blackboard for instance if I have a day for supervision they can sign in this self regulation though Blackboard … and that's* is good because earlier you had to come with a paper and ask them to select a time … so *that's is good, its more efficient for me and for the students as well".* While Lisa assumed that Blackboard can be best used for distance courses as she clarified *"… if in the future I have to teach for students abroad and not in the same location, it is quite useful … I would use it all the time then I will trigger more discussions on Blackboard rather than face-to-face, because that wouldn't be an option …".*

Time was a barrier for many teachers for using Blackboard. For Erica, when we asked her about encouraging students to be interactive and discuss online on Blackboard, she said *"Yes, I tell them it's possible to do that. But it is also a question of time to be there and discuss it with the students, and then it takes from my research time …".* She further explained about the administrative work she need to do by saying *"I think it's always the question of time, these days you do so much administration and take from the research time and it increase all the time. I think all these systems used, increase the administrative work time…. the benefits from such system are not balanced with the increased work time".* Also Zoy thinks that "*Blackboard didn't give anything and didn't take anything from the teaching process. It just takes time to do something supposed to be very easy".* Ella was positive to use Blackboard, as she mentioned, but also the time to do the administrative work was an issue for her, as she explained *"...we are all [teachers] supposed to do more and more administrative work. We have to hand Blackboard; we are writing course syllabuses in another program, we have to use different kind of systems …".* Having someone to help in administrative work could be good as she explained*" I wish I could say that I want to have that and that facility in my class room and without being forced to create it by myself….I think it will be better to tell someone, some kind of course assistant that would be nice … It takes a lot of time".*

Technical issues were another reason that made students and teachers feel that Blackboard is unreliable, and they preferred to use other applications like Skype, messenger, LNU Webmail, etc. Filip described why he prefer other platform for communication *".. how the applications of Blackboard works here is not quit impressive. That's why you want always to use something which is more reliable and convenient than something which is less reliable and less convenient*". Also in order to login by the student account into the Blackboard you need a relatively long time, so Malik said "*..too much time to log in.. bad feeling for the users"*.

The same technical problems faced some teachers as many of them described the system unfriendly and uneasy to use. Sami said *"I think when you have such technical difficulties students might be quite reluctant to use it … even me myself, I had problems sometimes.. I don't like Blackboard; because of technical problems… it's too difficult to work with. I don't think it's flexible enough"*. Zoy didn't use it for communication at all as she explained *"..for me it's not a good medium for communication, because it's difficult to work with and not logical"*.

Teachers and students in general mentioned that adding some features to Blackboard is a one way to improve the usage of Blackboard. Hadi thinks that one way of communication is over and adding features like social networks could be good. Sami also thinks it should be like a Wiki style. Ella mentioned that she learned in one workshop that she can *"link it with twitter or video"* and she might try that to use it more creatively.

# 5 Discussion

*This Chapter presents the discussion of the research findings. To interpret the findings we use Garrison et al.'s (2000) Community of Inquiry framework in order to understand the users learning and teaching experiences by using LMS (Blackboard). The findings will be discussed within the three areas of presence identified within the framework: social, cognitive, and teaching.*

## 5.1 Cognitive Presence

According to Garrison et al. (2000), cognitive presence is *"the extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication*". Moreover, Garrison et al. (2000) explained that "*the cognitive presence can be best understood in the context of a general model of critical thinking*".

Throughout the interviews and observations there have been some evidences of the main categories or phases of the cognitive presence that have been proposed by Garrison et al. (2000) COI framework, which includes: triggering events, exploration, integration, and resolution.

The first phase of the cognitive presence is **triggering events** for which we observed several evidences during our investigations of Blackboard. In this respect, we found that some teachers have triggered several initiatives to open discussions and interact with students through Blackboard. Other teachers tasked student groups to start discussion topics on Blackboard through which they raise some questions and also engage with others through answering questions raised by other groups. For instance, in one course students have been tasked to open discussion topics where they make oppositions for other groups work and provide them with their feedback through Blackboard. As such, teachers were involved in shaping and directing these discussions which reflects the teaching presence that eventually informs the cognitive presence in the learning environment (Garrison et al., 2001). This supports Garrison et al. (2005) that teachers play a critical and crucial role in triggering events through initiating and shaping tasks or learning challenges that become triggering events. It also helps in avoiding any distractions to these events, thus, the focus remains on the educational outcomes.

Nevertheless, this was evident only in some courses depending on the nature and structure of each course. For instance, some teachers explained that triggering events (e.g., initiating discussions on Blackboard) might not be needed when they had campus-based lectures where they interact directly

with students. Further, other teachers believe that it is the students' responsibility to open such discussions depending on their needs. In contrast, students believe that they missed the opportunity to have discussions on Blackboard because the teachers were not triggering or encouraging discussions by students on Blackboard. In this respect, Garrison et al. (2005) indicated that all people belonging to a learning environment may trigger events without referring to specific roles and responsibilities by students or teachers. In other words, anyone may have the responsibility to indirectly or purposefully trigger events.

The second phase of the cognitive presence includes the **exploration** category which was also evident during interviews and observations. This phase had many forms. The first form of exploration is represented by students seeking information that could help them to be aware of their tasks and eventually engage in discussions and interactions with other students when a teacher has triggered an event to do so. A second form of exploration was reading and exploring others assignments for various reasons as illustrated by our interviewees. For instance, some of the students were looking at these assignments to help them in doing better in their upcoming tasks. Other students were using these assignments to know more about some topics or issues from different perspectives. The third form of exploration was searching for more information in the additional reading and materials provided to students by teachers through Blackboard.

The cognitive presence occurred only in the first two phases: triggering events and exploration. Both **integration** and **resolution** categories were not supported or found in our investigation. Through our interviews and observation, we found that discussions triggered by teachers were limited in the sense that students discuss and interact on Blackboard only when they are required by their teachers to do so. Also, these discussions were limited and unsustainable in the sense that discussions were limited among very few people who would not continue to engage with others when they complete their parts of the task. However, we have observed that students tended to be passive learners since their contributions were only limited to submitting assignments or occasionally answering questions by other groups. Most importantly, while their contributions were limited, they have been active in following other students' submissions and observing their contributions in order to develop new understandings and meanings. This is described by Garrison & Cleveland (2005) in the sense that students can be *"cognitively present while not interacting or engaging overtly"* (p. 144). In addition, this corresponds to Stodel et al. (2006) findings that learners can be engaged in critical thinking offline and individually. In addition, learners likely engaged in critical thinking in their own reflections, in dialogue with colleagues using other communication channels, and in their assignments. As a result, it is

very important not to judge the presence of critical thinking on the postings of the discussion forums only, because critical thinking is not necessarily reflected entirely in the posting (Stodel et al., 2006).

Further, the lack of teachers' presence, due to rare involvement in these discussions, has hindered the integration and resolution of ideas. The role of teachers was only limited to triggering events without sustaining frequent interactions with students that would provide opportunities for the creation and development of ideas among students. This satisfies the findings of Stodel et al. (2006) in an online learning context through which they explained that discussion forums were only used for reporting purposes rather than an interactive medium for discussions. Furthermore, Garrison et al. (2000) stated that the "*extent to which the cognitive presence is created and sustained is partly dependent upon how the communication is restricted or encouraged by the medium*" (p. 93). In this respect, most of our interviewees explained that technical difficulties in using Blackboard as a learning medium has affected their willingness to continue to interact and discuss with each other. It has also led them to use other communication channels rather than Blackboard (Stodel et al., 2006). Therefore, the technical problems in Blackboard have created additional hindrances for integration and resolution. Eventually, both integration and resolution processes were not manifested in the processes of teaching and learning through Blackboard.

## 5.2 Social Presence

There was some evidence for Garrison et al. (2000) categories of social presence: emotional expression, open communication and group cohesion.

In respect to **emotional expression** there was no evidence of expressing emotions and using humor. All the discussions and communications were formal in nature as most students felt that Blackboard is used by teachers for formal communications only. Indicator for self disclosure was restricted in students profile sections, where in one course it was mandatory for each student to write about his/her previous experiences and interests. And since these courses were campus based, students know more about other collogues face-to-face and by using other communication platforms rather than Blackboard.

Further, there was a little evidence for **open communication** both among students as well as among students and teachers on Blackboard. Students only tried to communicate with other students at the beginning of the courses when they didn't know other students personally. However, when students started to know each other, they had less communication through Blackboard. In respect to teachers' communication, they often used Blackboard for formal communication and to deliver course instructions. Such interactions and

communication cannot be regarded as social interactions since they represent a one-way communication channel from teachers to students. However, some teachers tried to encourage students to comment and give feedback on others' work and use discussion forums as an open way for sharing. Still, rare continuous or sustainable threads and conversations were observed. As Anderson (2004) noted that an "*absence of social presence leads to an inability to express disagreements, share viewpoints, explore differences, and accept support and confirmation from peers and teacher*" (p. 274). This link between the social and cognitive presence here could raise the question if teachers should encourage social presence more through Blackboard in order to develop more cognitive presence and make students more involved in meaningful discussion and conversations. According to Tu and & McIsaac (2002) "*Social learning requires cognitive and environmental determinants. Social presence is necessary to enhance and foster online social interaction"*. However, Garrison & Cleveland (2005) found that "*interaction is not a guarantee that students are cognitively engaged in an educationally meaningful manner. High levels of interaction may be reflective of group cohesion, but it does not directly create cognitive development or facilitate meaningful learning and understanding"*. And interaction directed to cognitive outcomes is what matter and less the quantitative measures of interactions (Garrison & Cleveland, 2005). Social interaction is necessary to establish relationships and to create a secure climate that will provide the foundation for a deep and meaningful educational experience. That is, social presence may be a necessary but insufficient precondition for creating a community of inquiry and encouraging deep approaches to learning, (Garrison & Cleveland, 2005).

Some indicators of **group cohesion** were apparent. Encouraging collaboration among students by teachers varied according to their teaching methods. For instance, one teacher tried to encourage students' collaboration through giving and sharing feedback on each others' assignments. Another teacher asked students to pose questions in the discussion forum and answer others questions and it was mandatory. While other teachers didn't include that as part of their course activities, as they believed that campus-based lectures are enough for this kind of interaction and no need to use Blackboard. Moreover, most discussions on Blackboard were focused on specific topic and often students had to do the parts they are supposed to do. Also these discussions were characterized with formality and similar to academic writing, and usually students didn't go further in these discussions. This is supported by Tu & Maclsaac (2002) findings that *"social contexts, such as task orientation and topics, contribute to the degree of social presence, and when the conversation is task oriented and more public, the degree of social presence will degrade. And when postings are more formal, immediacy is sacrificed and perceptions of social presence decreased"*. And

it's very important to keep a balance between the need for informality required to enhance social presence and the need for the professionalism required in a university setting (Tu & McIsaac, 2002).

In addition, even though there were a number of indicators of social presence in the courses on Blackboard; most students thought it wasn't a good way for interaction and communication neither with other students nor with teachers. The fact that students had the chance to meet face-to-face during their campus-based lectures as well as the perception of Blackboard as a formal tool required by teachers has made them less interested to use it in their social interactions. Also, most teachers didn't try to encourage these ways of interactions since they believed that students can already meet at campus. Furthermore, students to teachers' interaction were minimal and usually related to assignments and feedback as it was described by students during our investigation. At this point it is important to distinguish between interaction and presence. Interaction carries with it few conditions with regard to the nature of the communication and influence. Social and academic interaction in learning environments whether online or face-to-face has a clear impact on learning approaches and outcomes (Garrison & Cleveland, 2005). According to Stodel (2006) efforts to strengthen social presence could be achieved through different strategies like discussions forums, responding to emails and postings, collaborative activities, sharing personal experiences. These were observed in one course which contained both campus and distance based students. The teacher asked the students to provide information about their interests and Backgrounds so that other students can view it and comment on it. It was also mandatory to raise questions and answer other questions. In another course there was an attempt to encourage students to comment on others' works but students didn't respond as was expected by the teacher. While in all other courses no clear efforts were made.

Hence, looking for richer ways of communication was also a reason for the scant presence of social interactions on Blackboard. In text-based communication available on Blackboard students were limited in the sense of presenting their thoughts using written text in addition to being a time-consuming task. Also, waiting time to reply for a question could be frustrating if students needed to get quick answers. So usually students used other synchronous communication platforms for their interaction (e.g. Skype). In this respect, many teachers and students suggested that there is a need for richer communication channels which could be achieved by integrating other technologies like videos and audios in order to enhance social presence and the usage of Blackboard. For instance, it was suggested that it could also be enhanced by applying new social media technologies of communication such as implementing a Wiki style collaboration to support

Blackboard-based group interactions. Although, the students had the opportunity to meet their teachers face-to-face during lectures, which is the richest way of communicating, many of them thought that the lecture time was not enough to have discussions with the teacher or other students. As such, they explained that enhancing communication on Blackboard could be more beneficial for them.

## 5.3 Teaching Presence

According to Anderson et al. (2001, p. 5) definition "*teaching presence is defined as the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes"*. In other words, appropriate cognitive and social presence, and ultimately, the establishment of a critical community of inquiry, is dependent upon the presence of a teacher (Garrison et al., 2000). Teaching presence involves three categories: instructional management, building understanding and direct instruction.

In the first category of teaching presence **instructional management** (design and organization) many indicators have been observed. Through the interviews and observations we noticed a strong evidence of setting curriculum indicator. Blackboard was mainly used to deliver courses materials and instructions. Most students were satisfied with the organization of course activities and clarity of instructions through Blackboard. Further, many teachers explained that Blackboard is a good way to deliver course contents and distribute instructions either by uploading documents or by using the announcements feature. This category also includes designing and administering an appropriate mix of group and individuals activities that take place during the course. Course activities varied in each course, and most course activities took place in face-to-face lectures and through assignments. Only in two courses the teachers organized discussions on Blackboard. So Blackboard was mainly used as a repository space for all courses and few observations of other learning activities were observed.

**Building understanding** and facilitating discourse can be achieved by stimulating, focusing, and encouraging discussion topics on Blackboard. We haven't observed a strong evidence for this category since most teachers didn't encourage students to be involved in online discussions and interactions. There was only one course where the teacher identified clear topics to be discussed by students and few times she tried to summarize what have been discussed. Mainly all teachers agreed that in order to encourage students to participate in online discussions it should be mandatory and part of the examination. However, they explained that students may participate in online discussions but that doesn't necessarily imply that they could learn from such discussions. They further explained that discussions should inform

critical thinking in order to learn which supports Garrison et al.'s (2001) claim that cognitive presence requires guidance, support, and nurturing from teacher; it does not just happen.

According to Anderson et al. (2001, p. 8) "*The role of the teacher, in any context, involves direct instruction that makes use of the subject matter and pedagogical expertise of the teacher"*. **Direct instruction** includes indicators like focusing discussion, feedback, injection of new knowledge and technical support. As discussed earlier discussions activities on Blackboard were rare in the courses we examined. Therefore, the main teacher's role was only observed in the feedback to students. Teachers' feedbacks were given through Blackboard to provide students with insights and evaluation into their assignments as well as answer some questions. Most assignments' feedbacks were short and sometimes very abstract. Moreover, scant evidence existed for injecting new knowledge; mostly it was more as information sharing. For technical support indicator, the teacher didn't have to do this role since students can get technical help from the IT support department and it was fair as the interviewees mentioned, but few technical tips from teachers were observed in some courses.

The differences observed between courses activities and in specific using Blackboard in such activities are determined by many reasons which include teaching style, discipline related conceptions of the education process, size of the class, and the teachers' and students' familiarity and expertise with the medium (Anderson et al., 2001). As some of the teachers mentioned, in order to organize collaborative activities on Blackboard and reflect upon students' discussions, they need a lot of time. Assessing student comments and discussions is time consuming and requires higher levels of knowledge than that commonly held by student participants (Anderson et al., 2001).

Also, teachers had to ensure that students have the requisite skills and/ or support and guidance to lead online discussions (Shea et al., 2005). Moreover, in order to use Blackboard more effectively teachers need time to learn how to use this tool. Therefore, teachers are forced to be learners themselves and like all who experience learning (Anderson et al., 2001). All of these things need time which some teachers think that their time is already consumed in doing administrative work on Blackboard.

Teaching presence is important for the creation and sustainability of a community of inquiry focused on the exploration, integration, and testing of concepts and solutions (Garrison et al., 2005). The tight relation of teaching presence with social and cognitive presence, give the teacher the leading role in the educational experience. Many ways by which teacher can influence the development of cognitive and social presence can be done. These include

regulation of the amount of content covered, use of an effective moderation style in discussions, determining group size, understanding and capitalizing on the medium of communication, and making supplemental use of face-to-face sessions. Also, they need to spend more time teaching students how to communicate, collaborate, and build community effectively online if they want to enhance social presence (Shea et al., 2005).

Finally, we noticed that Blackboard became a basic part of some courses since it facilitates the distribution of materials, instructions, assignments and feedback. While most teachers focused their teaching activities to take place in the lectures and through assignments, many of these activities were not much dependent on Blackboard. In the only course that students were involved in online discussions and activities, they were satisfied with the teaching presence but not so sure that the discussions helped in gaining high level of knowledge.

# 6 Conclusions and Future Research

*This chapter concludes with the main results and messages of the research in addition it answers the research question raised at the beginning of this study. Then, the remarks and reflections of this study are presented. Finally, the research ends with prospective future research that can be done.*

## 6.1 Conclusions

The research purpose was to explore the role of LMSs in classroom education, from user's perspectives through answering the following question: *How do students and teachers use LMS as a platform for learning and teaching activities?* Through the research investigation we could answer this question and develop a better picture of learning and teaching activities using LMS. On the one hand, it was evident that students were content with the usage of LMS in their learning activities since it had a role in helping them to learn from each others, through reflecting upon others work. Also, having a single place for all course materials helped in organizing their learning process. Further online interaction and discussions activities helped them in constructing and building new meanings. Although online discussion and interaction activities were rare, students appreciated them and expressed the need of being more encouraged to participate in such activities.

On the other hand, some teachers were content with the usage of LMS in their teaching activities. The use of LMS facilitates the communication with students through managing course materials, assignments, and announcements. However, others weren't satisfied since the usage of LMS added more workload for them. And the majority of them believed that there is no need to include interactive and discussion activities on Blackboard as long as they have face-to-face lectures.

There are apparently differences between students' expectations and needs, and teachers' believes and their teaching plans. The use of LMS facilitated some tasks, but it reduced face-to-face contacts between teachers and students, and some activities which are an important part of the learning process. Therefore, we think there is a need to adapt the teaching processes with the usage of LMS by teachers. However, it is not only the teachers' responsibilities, also students need to learn how to use the LMS more efficiently and realize its importance. Finally, the adoption of LMSs in educational environments carries with it more than just learning how to use some features. It also needs a real restructure of course activities to achieve the maximum benefit from both online and face-to-face activities.

## 6.2 Concluding Reflections and Remarks

The usage of LMSs has become a main part of many courses. In fact, it has been noticed that although these courses were held in a blended learning context most teachers were relying on Blackboard to the extent that they reduced face-to-face lectures. However, Blackboard was not used in an effective way to achieve higher educational outcomes. At this respect, several questions arise of whether LMSs are used in educational contexts in order to foster a higher level of education? Or whether it has been used just as a tool or storage place? Whether teachers need to modify the teaching plan to fit the blended learning context? And whether students and teachers should be more aware of the importance of LMSs in their learning and teaching processes and if they need guidance or proper training in using such tools?

Eventually, we believe that to have a better and more successful educational experience using LMSs, learning and teaching activities should be managed and aligned with blended learning contexts. In a sense, that the benefits of online and face-to-face interactions can be better utilized.

## 6.3 Future Research

Due the fact that the aspects of learning and teaching in higher education is varied widely, in this research several patterns emerged related to type of learners and technical aspects. Future research can be helpful to investigate why students act as passive learners rather than active learners. Also, it could be beneficial to investigate how technical issues can affect the learning and the teaching experience. Finally since the research was based on a single case study it could be interesting to research more case studies to compare the study results.

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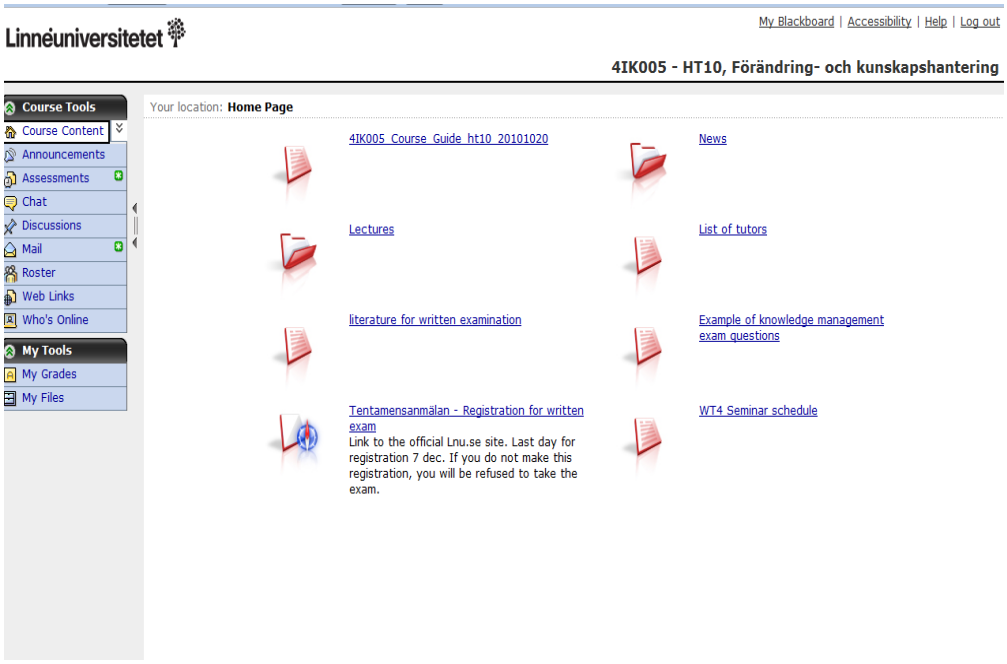
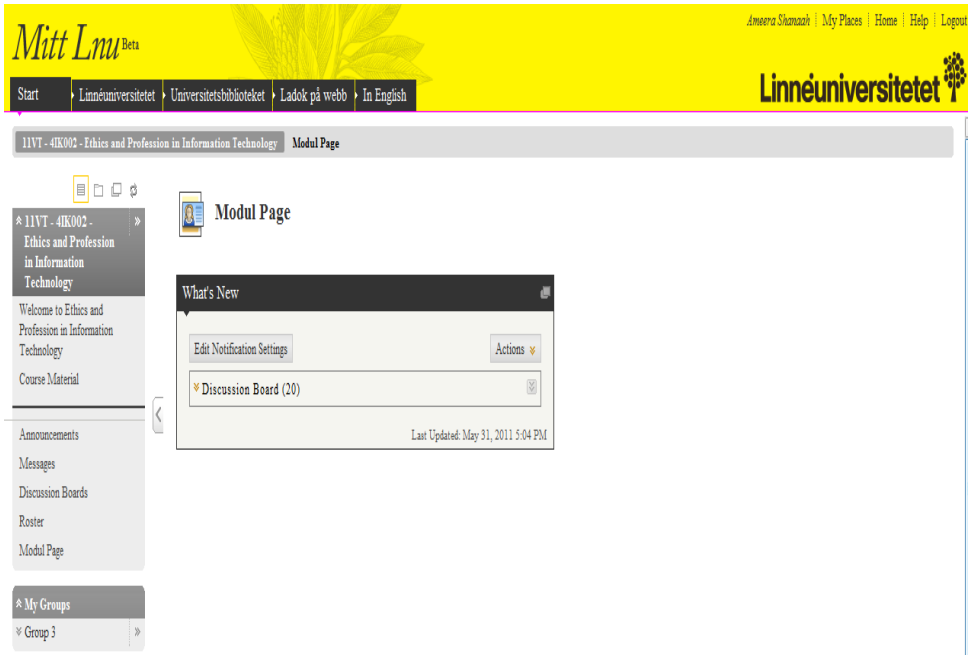
# Appendix A: Blackboard Version 8.0 (snapshot)




# Appendix B: Blackboard Version 9.1 (snapshot)



# Appendix C: Observations form

| | |
|---|---|
| ***Observation No.*** | |
| ***Date*** | |
| ***Time*** | |
| ***Course name*** | |
| ***Course number*** | |
| ***Observer name*** | |

| ***Cognitive presence*** | | |
|---|---|---|
| ***Categories*** | ***Observed (Yes/No)*** | ***Example*** |
| **Triggering Event** | | |
| **Exploration** | | |
| **Integration** | | |
| **Resolution** | | |

| ***Teaching presence*** | | |
|---|---|---|
| ***Categories*** | ***Observed (Yes/No)*** | ***Example*** |
| **Design & Organization** | | |
| **Facilitating Discourse** | | |
| **Direct Instruction** | | |

| ***Social presence*** | | |
|---|---|---|
| ***Categories*** | ***Observed(Yes/No)*** | ***Example*** |
| **Effective Expression** | | |
| **Open Communication** | | |
| **Group Cohesion** | | |

# Appendix D: Students Interview Guide

| ***Interview Information*** | |
|---|---|
| ***Interview No. :*** | ***Interview Type:*** |
| ***Date:*** | ***Time:*** |
| ***Duration:*** | |
| ***Interviewer Name:*** | |

| ***Interviewee Information*** | |
|---|---|
| Interviewee Name: | |
| Gender : | Country: |
| Role (Master Student): | Level of study ($1^{st}/2^{nd}$ year master): |
| Computer experience / Web activity: | |
| Background (Educational): | |

| ***Introduction (beginning the interview)*** |
|---|
| 1. Introduce ourselves to the interviewee |
| 2. Ask the interview for permission to record the interview. Start recording. |
| 3. Explain to the interviewee the purpose of the research. |
| *4. Ask the interviewee about her/his anonymity / confidentiality.* |
| 5. Explain the form of the interview. |
| 6. Ask the interviewee if she/he has any questions or if she/he needs any explanations before starting the interview. |
| 7. Start the interview. |

| ***Questions & Themes*** | | |
|---|---|---|
| ***Themes*** | ***Question/ and answer*** | ***Interviewer notes*** |
| ***Opening Questions*** | ***Q1***: How often do you use Blackboard? | |
| | ***Q2***: How many courses do you manage through Blackboard? | |
| | ***Q3***: What are the main features you use on blackboard? | |
| | ***Q4***: What are the main activities you do on blackboard? Give concrete examples. | |
| ***Social presence*** | ***Q5:*** How do you interact and communicate with other students through Blackboard? Give concrete examples | |
| | ***Q6:*** What kind of features or tools do you often use to communicate with your teachers and other colleagues through Blackboard? | |

| | | |
|---|---|---|
| | ***Q7:*** How do you see the role of Blackboard as a medium for collaboration/group work among students? Give examples. | |
| | ***Q8:*** How can you describe your relation with other students/teachers in class through using blackboard? Do you have any relationships emerged/strengthened through using BB? Give examples | |
| ***Teaching Presence*** | ***Q9:*** How do you see the role of teachers in setting course content, instructions, and activities on Blackboard? | |
| | ***Q10:*** How do you see the role of teachers in opening and encouraging discussion topics on Blackboard? | |
| | ***Q11:*** How do you think of the role of Blackboard in facilitating teacher's interactions with students? Give examples. | |
| | ***Q12:*** Do teachers provide you with their feedback on your questions and discussions? (explain, give examples) | |
| ***Cognitive presence*** | ***Q13:*** What kind of information you do get from Blackboard? Do you gain new knowledge that differs from the knowledge in lectures through Blackboard? Give examples. | |
| | ***Q14:*** How do you evaluate the role of Blackboard in supporting you to learn from others and develop new knowledge within courses? Give examples of one of your learning experiences? | |
| ***General/ ending Questions*** | ***Q15***: What do you think about the influence of Blackboard on your learning process? | |
| | ***Q16***: Are you satisfied of using Blackboard in teaching? | |
| | ***Q17***: Do you have any suggestions for enhancing the use of Blackboard? | |

| ***Finishing the interview*** |
|---|
| 8. Ask the interviewee if she/he has any questions |
| 9. Ask the interviewee if she/he has any information she/he prefers to add. |
| 10. Ask the interviewee about her/his impression of the interview |
| 11. Inform the interviewee that the transcripts will be sent to her/him at a later time for verification. |
| 12. Ask the interviewee if it is possible to have a follow-up interview if more clarifications are needed. |
| 13. Thank the interviewee. |
| 14. Stop recording. |

# Appendix E: Teachers Interview Guide

| ***Interview Information*** | |
|---|---|
| ***Interview No. :*** | ***Interview Type:*** |
| ***Date:*** | ***Time:*** |
| ***Duration:*** | |
| ***Interviewer Name:*** | |

| ***Interviewee Information*** | |
|---|---|
| Interviewee Name: | |
| Gender : | Country: |
| Role (Teacher/ PhD student/ Tutor): | |
| Computer experience / Web activity: | |
| Background (Educational, Teaching): | |

| ***Introduction (beginning the interview)*** |
|---|
| 1. Introduce ourselves to the interviewee |
| 2. Ask the interview for permission to record the interview. Start recording. |
| 3. Explain to the interviewee the purpose of the research. |
| *4. Ask the interviewee about her/his anonymity / confidentiality.* |
| 5. Explain the form of the interview. |
| 6. Ask the interviewee if she/he has any questions or if she/he needs any explanations before starting the interview. |
| 7. Start the interview. |

| ***Questions & Themes*** | | |
|---|---|---|
| ***Themes*** | ***Question/ and answer*** | ***Interviewer notes*** |
| ***Opening Questions*** | ***Q1***: How often do you use Blackboard? | |
| | ***Q2***: How many courses do you manage through Blackboard? | |
| | ***Q3***: What are the main Blackboard features that you often use in your courses? | |
| | ***Q4***: What are the main activities you do on blackboard? Give concrete examples. | |
| ***Teaching Presence*** | ***Q5:*** How do you use Blackboard to manage course activities and share course material with students? | |

| | | |
|---|---|---|
| | ***Q6:*** How do you encourage students to discuss new topics/problems using Blackboard? (If no why not? )Give examples | |
| | ***Q7:*** How often do you give feedback to students through Blackboard? (if no why not?)Give examples. | |
| ***Social presence*** | ***Q8:*** What kind of features or tools do you use to communicate with students through Blackboard? Give examples. | |
| | ***Q9:*** What do you think of Blackboard as a medium for communication and interaction with students? Give examples about students and teachers interacting with each other through Blackboard. | |
| | ***Q10:*** How do you see Blackboard as a medium for collaboration and teamwork among students? | |
| ***Cognitive presence*** | ***Q11:*** How do you evaluate the role of Blackboard in exchanging information and raise new problems? | |
| | ***Q12:*** How do you see of Blackboard as a tool that helps students to develop and learn new knowledge? | |
| ***General/ ending Questions*** | ***Q13***: What do you think about the influence of Blackboard on your teaching process? | |
| | ***Q14***: Are you satisfied of using Blackboard in teaching? | |
| | ***Q15***: Do you have any suggestions for enhancing the use of Blackboard? | |

| ***Finishing the interview*** |
|---|
| 8. Ask the interviewee if she/he has any questions |
| 9. Ask the interviewee if she/he has any information she/he prefers to add. |
| 10. Ask the interviewee about her/his impression of the interview |
| 11. Inform the interviewee that the transcripts will be sent to her/him at a later time for verification. |
| 12. Ask the interviewee if it is possible to have a follow-up interview if more clarifications are needed. |
| 13. Thank the interviewee. |
| 14. Stop recording. |

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