



## THE OPEN UNIVERSITY MALAYSIA (OUM) LEARNING MANAGEMENT SYSTEM (MYLMS): EVALUATING THE EFFECTIVENESS OF ONLINE FORUM DISCUSSION FOR QUANTITATIVE SUBJECTS

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### ABSTRACT

The blended pedagogy adopted by OUM for its open and distance learning (ODL) comprises three components; self-managed learning, face-to-face interactions and online learning through myLMS. The nature of online learning requires high commitment from the learners, especially self-managed learning and collaborative online learning. Learning quantitative subjects such as financial mathematics in a conventional environment is very demanding and it is difficult to grasp by a majority of learners, what more learning such subject through online learning. Interactions between the academic staff or tutors with the learners and also amongst learners are important. Thus it is critical that quality and effective teaching and learning progression take place in online forum discussion for such subjects. A study is carried out to explore the effectiveness of OUM's online forum discussion for the subject of Mathematics for Management (BBMP 1103). The effectiveness of the online forum discussion will be measured based on the community of inquiry model (Garrison, Anderson and Archer, 2000). The effectiveness of online forum participation will be evaluated using the three essential elements in online learning process – teaching presence, social presence and cognitive presence. The outcome of this study will be useful to facilitate effective and quality teaching and learning process for quantitative subjects via e-learning.

**Keywords:** *Learning Management System, Community Of Inquiry, Self-Managed Learning, Financial Mathematics, Online Communication, Peer Interaction*

### 1. Introduction

Over the years, there has been rapid growth on the dependency of information and communication technology (ICT) for open and distance learners around the world. For Open University Malaysia (OUM), the first ODL institution in Malaysia, ICT has increasingly become an inseparable component of learning and delivering of educational materials for learners in OUM.

The advancement of internet technology has allowed for greater freedom and flexibility in terms of place, pace and time to learn via e-learning. E-learning, even though it allows for autonomy and freedom to learn, does require a lot of

self-discipline. In ODL mode or e-learning, the absence or lack of traditional classroom face-to-face interaction between the learners and the tutors is substituted with online forum. OUM delivery mode comprises three different but complimentary delivery modes: (i) self-managed learning, (ii) face-to-face interaction, and (iii) online learning; with more emphasis on self-managed learning. Hence it is critical that via online forum, learners are able to bridge the learning gap that exists due to the minimal number of face-to-face meetings.

OUM has developed its own e-learning management systems aptly called My Learning Management System (myLMS) whereby learners and instructors can interact in their online forum. The main objective of the online forum is to support and strengthen the teaching and learning process. All OUM instructors are expected not only to provide face-to-face tutorials but also to support and facilitate learning via the online forum. The online discussion and interaction are valuable in the sense that learners are able to learn outside the classroom and most importantly learn from their peers collaboratively.

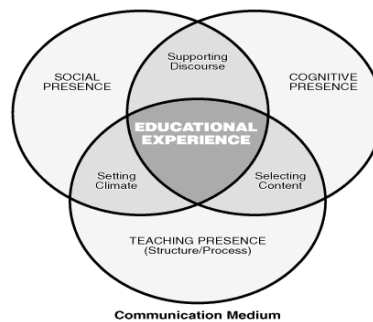
A number of researches have been conducted on the formation of learning communities in order to create better learning environments. Theoretically, the success of online forum depends heavily on the students and instructors' active participation in the forum. Active participation refers to the promptness of reply of learners and instructors as well as the quality of the posting. However, as lamented by Hung & Chen (2001), despite so many creative efforts at designing chat-rooms, discussion forums, bulletin boards and other similar applications, the online-learning tools still fail to attract and sustain dialogue amongst participants.

The problems highlighted above are common issues faced by a majority of the ODL institutions worldwide. ODL learners are geographically dispersed and they can be very lonely and lack motivation in an ODL environment. Hence, it is critical that online instructors play a visible and significant role in motivating learners in terms of providing adequate and proper guide to the learners. Online instructors can play a significant role in determining the extent to which interactions are beneficial to learners. Instructors' main objective is to ensure that learners explore and learn important concepts and applications through the online discussions. Through the exchange of ideas, experiences, resources, and knowledge between learners-instructors and learners-learners shared experience rather than an experience that is shared is created (Lock 2002). This is crucial as one of the conceptual frameworks of ODL is Constructivism Theory (Huang 2002, Lock 2002). Constructivism is the theory that learners can acquire or construct new knowledge based on prior experiences and knowledge (Huang 2020).

Learning quantitative subjects such as mathematics, finance and accounting in a conventional environment is very demanding and it is difficult to grasp by a majority of learners, what more learning such subject through online learning. How does one acquire knowledge of fundamental mathematical concepts and skills to solve mathematical problems in the ODL mode? Thus, it is critical that quality and effective teaching and learning progression take place in online forum

discussion for such subjects. This paper will address this issue and will suggest the action that needs to be taken to assure quality teaching and learning experiences of ODL learners.

**Figure 1: Community of Inquiry Model**



Source: The Community of Inquiry model. R. Garrison, T. Anderson, W. Archer and L. Rourke et al., University of Calgary

The most accepted model for online learning (Figure 1) is the Community of Inquiry (CoI) model by Garrison, Anderson and Archer (2000). They have suggested that online learning occurs through the interaction of three domains: cognitive presence, teaching presence and social presence. This online community of inquiry serves as “a conceptual framework that identifies the elements that are critical pre-requisites for a successful higher education experience”.

Arbaugh et al. (2007) further defined the three elements as follows:

- Social Presence is the ability of participants to project themselves purposefully and socially within a community of inquiry;
- Cognitive Presence is the extent to which participants critically reflect, (re)construct meaning, and engage in discourse for the purpose of sharing and confirming understanding; and
- Teaching Presence is the design, facilitation, and direction of cognitive and social processes for the purpose of realising personally, meaning and educationally worthwhile learning outcomes.

## 2. Conceptual Framework

This study applies the framework for online collaborative learning based on the community of inquiry (CoI) model adapted from Garrison, Anderson and Archer. This paper focuses on one component of the online learning model: Teaching Presence. We will look at the instructors' commitment perspective to evaluate the effectiveness of online forum discussion for a quantitative subject, Mathematics for Management (BBMP1103). The subject is chosen based on the following criteria:

- i. The subject was offered in January 2008 with total number of 815 learners and 12,051 total posting made by learners;
- ii. In total, there were 30 instructors assigned to teach this subject via face-to-face and online forum with a total posting of 1,588;
- iii. It is a foundation subject and one of the core subjects for those taking the business programmes at the Faculty of Business and Management; and
- iv. The subject is considered as one of the challenging foundation subjects, combining basic calculus, algebra and financial mathematics.

We undertake the study with the following objectives:

- i. To evaluate and measure the Social, Teaching and Cognitive presence for BBMP1103 online forum; and
- ii. To recommend steps to be taken by OUM in order to improve or increase the effectiveness and quality of BBMP1103 online forum discussions based on our observation and also best practices.

For the purpose of this study, an instrument of 34 questions rated on a five (5) Likert scale developed by Swan et al (2008) was used to evaluate and measure the teaching, social and cognitive presence in the online forum. The researchers act as observers and look through each forum searching for Social, Teaching and Cognitive Presence and rated the 34 questions accordingly.

In summary, the roles of online instructors in the myLMS forum were investigated. Among others, the following were observed in the online forum:

- i. Regular postings and prompt replies;
- ii. Effective use of the myLMS forum as a communication platform;
- iii. Encourage learners to interact with the other course mates;
- iv. Contribute and stimulate new ideas among learners;
- v. Provides timely and quality feedback; and
- vi. Answers questions posted in a committed attitude.

### 3. Findings and Discussion

A total of 30 tutor forums were observed and rated on CoI's three elements: namely, teaching presence, social presence and cognitive presence. The overall results are as follows (Table 1):

**Table 1: Mean score for each CoI elements**

| Characteristics of Teaching Presence | Mean Score |
|--------------------------------------|------------|
| Teaching presence                    | 2.94       |
| Social presence                      | 3.60       |
| Cognitive presence                   | 3.16       |
| Overall means                        | 3.19       |

It is observed that Social Presence is the highest (mean score of 3.60) indicating learners are comfortable interacting with their peers via online forum, hence collaborative learning does take place. We did observe many circumstances where learners help other learners to understand certain concepts or topics. This result concurred with Rourke & Anderson (2002) where their study revealed that students preferred peer interactions to the instructor. It is also worth noted that there is an improvement in the level of peer interaction compared to study done by Othman et al. (2005) on OUM learners. The increase in peer interaction is due to many factors such as improved and stable myLMS platform, affordable computer peripherals, increase in computer skills and literacy, fast internet access (wireless and broadband), increase accessibility to information, and online communication has become second nature to almost everyone.

Cognitive Presence scored a 3.16, close to the neutral score of 3, indicating a balanced agreement and disagreement of the existence of triggering events, exploration, integration and resolution characteristics in the online forum. Even though Cognitive Presence is an important component, however in this study a neutral score is expected. The subject chosen is a foundation subject that only introduces fundamental concepts and does not require higher level application of mathematical concepts, and hence the exploration, integration and resolution characteristics cannot be observed in the majority of learners.

As Teaching Presence is the core role of the online instructors, hence from our observation, the score of 2.94 is a distress signal for effective learning to take place. In an ODL environment, teaching presence is vital as it can make a significant difference in the engagement and attention of learners. Learners need clear guidance, feedback, and motivation from their instructors in order to manage their self-learning effectively. Therefore, this study will focus on the three characteristics of Teaching Presence in order to make learning experience via online forum more meaningful, enjoyable and satisfying.

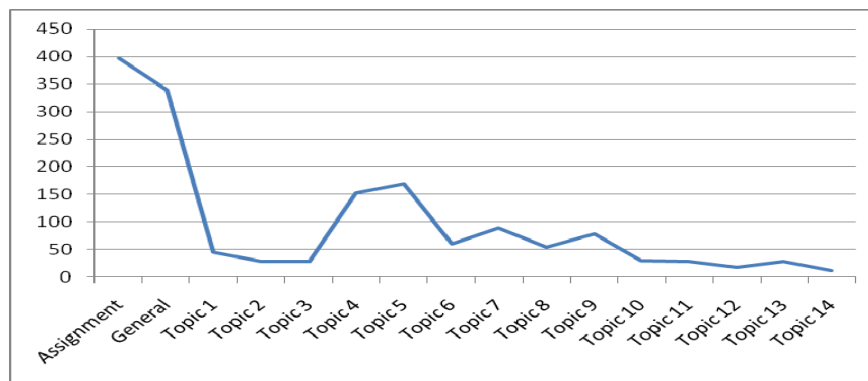
**Table 2: Mean Score of Teaching Presence Characteristics**

| Characteristics of Teaching Presence | Mean Score |
|--------------------------------------|------------|
| Design and Organisation              | 2.78       |
| Facilitation                         | 2.97       |
| Direct Instruction                   | 3.08       |

From the result (Table 2) it is observed that Design and Organisation characteristics in Teaching Presence scored 2.78 indicating the online instructors are weak in planning and designing their courses. We observed that the majority of the online instructors have inadequately disseminated the information such as course goals, important topics and also clear instructions on how to participate in online learning activities. It is found that approximately more than 50 percent of the online instructors did not emphasize the important course goals and topics in their communication to the learners.

The mean score for facilitation is 2.97; indicating that online instructors have not played their role adequately in setting the right atmosphere for online learning to take place. It is observed that a majority of the online instructors are only active in discussing assignments and earlier topics. Participation rate for later topics became minimal and infrequent (Figure 2).

**Figure 2: Instructors Posting Trend (BBMP1103) for Jan 2008 Semester**



Other factors that may contribute to the lack of Teaching Presence among these groups of online instructors are:

- i. Instructors possess different teaching styles and teaching preferences;
- ii. Instructors are newly appointed, thus lacking experience in online teaching;
- iii. Senior instructors are complacent and hence do not utilise online teaching effectively; and

- iv. Instructors lack ICT skills and literacy, thus unable to make the most of myLMS forum.

The different number of students for each forum is the limitation for this study. This is due to the number of tutorial classes assigned to tutors as certain tutors are given more than one tutorial. Besides, there were inconsistency in the posting frequency by both learners and instructors. 40.9 percent of the learners made between 0 – 5 postings during the period of observation, this includes 19.1 percent of learners who did not participate at all (Table 3). While out of 30 instructors, 43.3 percent made less than 30 postings (Table 4).

**Table 3: Frequency of Learner Posting for BBMP1103 online forum for Jan 2008 Semester**

| Frequency of Posting | Number of Learners | Percentage (%) |
|----------------------|--------------------|----------------|
| 0                    | 156                | 19.1           |
| 1 – 5                | 178                | 21.8           |
| 6 – 10               | 135                | 16.6           |
| 11 – 15              | 108                | 13.3           |
| 16 – 20              | 84                 | 10.3           |
| > 21                 | 154                | 18.9           |
|                      | <b>815</b>         | <b>100.0</b>   |

**Table 4: Frequency of Online Instructor Posting for BBMP1103 online forum for Jan 2008 Semester**

| Frequency of Posting | Number of Instructors | Percentage (%) |
|----------------------|-----------------------|----------------|
| 1 – 10               | 6                     | 20.0           |
| 11 – 30              | 7                     | 23.3           |
| 31 – 50              | 5                     | 16.7           |
| 51 – 99              | 7                     | 23.3           |
| > 100                | 5                     | 16.7           |
|                      | <b>30</b>             | <b>100.0</b>   |

#### 4. Suggestions and Recommendations

As the result of the above findings, we have made several suggestions and recommendations based on current practices of online learning. We hope the incorporation of these measures in OUM teaching of BBMP11003 via online mode will enhance the effectiveness of its forum.

Firstly, it is necessary to add Equation Editor command in the forum. We observed that online instructors and learners faced difficulties to express

mathematical functions in the normal forum interface. The Equation Editor must not be a hindrance by slowing down the system. Online instructors must be trained to use them, and they in turn should be able to train their learners.

Secondly, tools that enable online instructor to reply via audio or video (web cam) feedback should be added to myLMS forum. Ice et al. 2007 study indicate that audio feedback can enhanced learning; and from the instructors perspective, audio feedback can reduce the time required for instructors to provide feedback compared to texts reply.

Thirdly, SME are advised to prepare and provide additional exercises/ worksheet with answer keys to be uploaded in the forum. This is to enhance the learners' skills in solving mathematical problems and to increase the level of communication among peers and between tutors-learners as well. In addition, tutors are encouraged to provide constructive comments on students' answers on the exercises uploaded.

Finally, frequent reminder through short messaging system (SMS) can be sent to all instructors by the Centre for Tutor Management and Development (CTMD) e.g. fortnightly basis. This is to ensure online instructors are active, responsive and consistent in their postings or participation level throughout the semesters.

## 5. Further Research

This study is a pilot research on the effectiveness of myLMS forum for BBMP1103. We propose to further this research by investigating the correlation of the effectiveness of myLMS forum and learners' performance for that semester. This future study can further explain the importance of the online forum to learners' performance in order to enhance the teaching and learning process.

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