# The Blended Learning Model: Nizwa College of Technology Experience

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## ABSTRACT

This paper reports the experience of Nizwa College of Technology (NCT) in the operationalisation of an e-learning mediated blended learning approach with NCT's information technology students. In this environment, students are introduced to the constructivist form of learning through the combination of ordinary face-to-face classroom discussion and online learning activities using a learning content management system (LCMS). In trying to come up and provide NCT students with an alternative and more student-centred approach to learning, said learning model and the experiences of students in its use are analysed in this study.

The use of blended learning model is currently being tested continuously in various participating diploma and advanced diploma classes in Information Technology Department. An analysis of the usability of the learning management system used for e-learning components of each course – in this case Moodle – was conducted. The use of the e-learning / online course activities vary from course to course, which allowed the researchers to evaluate more diverse learning situations.

A parallel analysis of the technical capabilities of Moodle as the learning management system of choice for the e-learning activities of NCT is also done to determine the best fitted configuration in the common learning setup of NCT as defined in the College quality assurance policies.

Current findings show that the use of the blended learning model provided an alternative learning strategy that fit the needs of various types and levels of NCT students which at the same time can also be easily implemented by NCT mentors / lecturers.


Key Words: Blended learning, Moodle, NCT

## Introduction

New paradigms of learning are continuously being tested and subsequently implemented in various levels of education today. The dynamic and fast-paced changes happening in the field of information and communication technology allow these learning paradigms to be easily adapted for implementation in different educational settings and environment, in different depths and scopes. Nowadays, various e-learning facilities can be easily deployed, the more popular of which belong to the group of learning content management systems (LCMS) which primarily support collaborative and cooperative learning among students who can participate at times and places most comfortable to them through computer networks (Hiltz, 1995).

Blended learning is defined as a learning program where more than one delivery mode is used with the objective of optimizing the learning outcome and the cost of program delivery (Singh & Reed, 2001). In this context, a "mix" of face-to-face and online learning activities that will best fit the needs of students can be designed, which is envisaged to provide an alternative way of learning for students in a given situation which gives more focus on self-paced, student-empowered learning. The Blended Learning Model implemented in Nizwa College of Technology (NCT) (Lontok & Lontok, 2007) was designed and intended for the said purpose. As Singh (2003) noted, a single mode of instructional delivery may not provide sufficient choices, engagement, social contract, relevance and context needed to facilitate successful learning and performance, thus a kind of blended learning approach – which provides the best of the offline and online approaches – is utilized. The Modified On-Off Blended (MOOB) Learning Model (Lontok & Lontok, 2006) (see also Lontok, 2005) combines and recommends the right balance between offline and online learning approaches to create an environment that will maximize learning for different kinds of learners. In this approach, the traditional classroom-based learning is reinforced by online activities to provide alternative learning tasks, thereby supplying the needed "contact" time among students themselves and between lecturers and students as required by their different needs specified in the course goals and objectives.

## Design and Methodology

The research was participated by a select group of engineering and information technology students of Nizwa College of Technology, together with their respective lecturers. More particularly, students in the diploma, and advanced diploma levels taking up Introduction to Database, Data Modelling, Data Structures and Algorithms, and Final Year Course Project respectively, participated in the study. Courses and classes that were included in the study were selected on the basis of the interest of lecturers to test the learning model in their respective classes. Class sizes vary from 10 to 35 students. The online learning component varied in implementation as upload/download and class calendar, partially online interactive with discussion forums, and fully online interactive with forums, quizzes, assignments, and reports. The installation, configuration and setup of the Moodle LCMS were done by the technical personnel of the NCT Educational Technology Centre, using a dedicated e-learning/Moodle server running on Windows, Apache, MySQL and PhP (WAMP). (This setup was then subsequently migrated to Linux, Apache, MySQL and PhP (LAMP) and the newest version of Moodle.)

Courses were created and the corresponding course materials for each were uploaded for the use of the respective students of each course. Additional learning tasks to supplement the traditional "chalk and talk" and PowerPoint methods were included in the online courses developed. These tasks included online learning activities such as discussion forums, sample tests with feedbacks (tutorials), and small online reports.

The online courses were made available to students in the College intranet, as well as the Internet, which can be accessed anytime. Moreover, the respective mentors encourage the regular access of these courses from their students for the whole duration of the study. Courses such as Data Structures and Algorithms used the online facility for course calendaring and upload/download of materials, while others used the facility for a more "interactive" extension of the classroom – using forums, quizzes and assignments. Students in the latter group are required to participate in all online activities, and provide at least one post to the forums that are created each week. The research culminated with getting the feedback of students through a questionnaire as well as getting additional information from the active participants through informal interviews that were conducted throughout the duration of the study.

Data were gathered by the researchers through the survey questionnaire (Glanic, Gravinic, & Slavomir, 2004) distributed to the participants, the message posts they contributed in various learning forums of the selected courses, informal interviews of the lecturers and several students who participated, and feedback coming from the site administrator and technical personnel who maintained the server throughout the study. Following these processes, it can be said that the case study method was used to assess the students' learning processes and determine how best an e-learning mediated blended learning approach can be implemented. This mode of inquiry was designed to track the evolution of students' ideas about learning (i.e., for the more interactive online courses implementation), as well as the processes done by the support groups in the implementation of the learning model and the development of the learning environment as well. It assured reliability through established qualitative research procedures of obtaining multiple perspectives, and by carefully transcribing, reading, re-reading, and analysing data for developmental themes and patterns. In this way, insights could be gained into how ideas evolved and the diversity that is possible in such development (Schaverien, as stated by Lontok & Lontok, 2007).

**Findings**

The findings of this study are presented in two sections. Firstly, the experiences of users in the learning environment created by the implementation of the blended learning model is described and analysed. Secondly, some relevant theoretical implications are discussed.

*The Learning Environment*

As stated previously, the support for the online component of the blended learning model was implemented using the WAMP (Windows, Apache, MySQL, PhP) platform. The Moodle LCMS was used to start the set-up of learning management system that will provide the various online learning activities and resources, which was then updated regularly to accommodate the latest versions. Moodle was chosen because of its reputation as a reliable and powerful online tool (Graf, S. & List, B., 2003; Uzunboylu, H., Ozdamli, F. & Ozcinar, Z., 2006), aside from the fact that it is open source and readily downloadable over the Web. To access the created e-learning site, participants needed only to use any Web browser and visit the site using either the College intranet or the Internet.

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The Moodle platform proved sufficient to the requirements of the learning model, and the creation and population of user database, as well as the development of online courses were done quickly and without any problem. To prepare the participating mentors in the general course management using Moodle, a series of seminar-workshops on Moodle were conducted by the researchers, and these were combined with informal tutorials on the various management aspects of the LCMS. These lecturers in turn became responsible for their respective students' regular use of the LCMS.

After one semester of implementation of the study, a simple survey on the usability of the Moodle LCMS was done, which focused on the assessment of subjective satisfaction of the users with respect primarily on the LCMS application interface. The survey assessed four major parameters that included ease of use, efficiency, likeability, and user feelings.

Feedback from the survey showed that based on the perception of the users, they generally agree that the e-learning site is useful, which accounts for its overall high likeability factor. Users also agreed on other likeability components as "Interesting" and "Stimulating/Motivating", as well as "Useable" and "Original/Inventive". With respect to ease of use parameters, data from the survey showed that a large percentage of the users agreed that they feel they are in control when using the site, while they generally did not agree that it is difficult to move around the site. This goes to show that the interface is user-friendly, and users can easily find their way in the learning environment and use the tools there to enhance their learning experience.

In terms of efficiency, the participants' feedback showed that the site is quite fast, which say about the adequacy of the bandwidth and the capability of the network through which the e-learning site is being accessed. Moreover, the participants agreed that they get what they expected when they click on objects or links on the site, which tells about the efficiency and organization of the tools and resources of the learning environment itself. Overall, the general perception of the participants in terms of their satisfaction on the use of the site is satisfied. Not everything went well however, in the use of the e-learning site. Occasionally, errors happened in terms of accessing the site and in uploading and/or downloading materials to the different online courses. Based on the information obtained from the site administrator and other technical personnel that site operation, errors in the size of files, in the database management, and a few lesser-known bugs from Moodle LCMS itself were the common factors that contribute to the errors.

**Student Learning**

In this section, the authors describe and analyse the participation and learning that happened to students that participated in this study. After three semesters of making this learning environment operational in the participating courses and classes, two general groups of learners, with respect particularly to the online learning components, emerged:

*Learners Group No. 1*

This group participated actively in various learning activities, regularly giving posts in all forum topics created and even creating weaves for other students to participate upon. Some students from this group even served as "source" of information (knowledge) by posting worthwhile issues that served as additional forum topics from which additional learning related to the subject matter occurred. Most of the learners in this group posted ideas generated from their own readings from time to time to add to the collection of information that student participants are starting to pile up in various posts throughout the duration of the study. More so, this learner group sometimes posted queries or issues that provided the foundation for the lecturer to spawn other important topics for forum that created more interaction, and consequently, more learning in the subject matter. In essence, the researchers believe that this group tried to gain learning not only from the information supplied by the lecturer through the answers to their forum queries, but more importantly, by collecting and subsequently comparing the ideas of their classmates regarding the different topics that they discover in the forum sessions of the online learning activities.

In assessing the participation of this group, they had been very consistent and active in all the learning activities that were required of them. This group had been very active participants in all online learning activities, and had always made it a point to accomplish and submit the online requirements on time. This group's commitment to embrace the new learning approach was really valuable.

**Learners Group No. 2**

This group is, at the start, typical peripheral learners. Although they participated in a few forum sessions, they normally just contended on browsing through their classmates' posts and assimilating them for their own learning purposes. During an informal interview with one student that belong to this group, he said:

*"With reference to my subject expectations that I posted during the first few day in class, I was expecting a little more complicated learning environment; perhaps because it was my first time to attend an e-learning class. At first I found it quite difficult checking and clicking all those links, making sure that I would be able to get all the updates of what to do…I want to be honest that I was not able to comply with some of the requirements, even the postings to the forum sessions. However, I found it very engaging and interesting reading their conversations and messages, though I am not participating in their discussions maybe because I am still expecting things will happen like the normal classroom used to – getting the answers immediately after you asked questions rather than waiting for anyone to read your queries and from there do the response…"*

This, the authors believe, is typical of a student undergoing a paradigm shift – in this case from a classroom-based, lecturer-led learning to the one that is a combination of the old "chalk and talk" approach combined with the online, student-centred, independent learning. These learners were the type of students that are having a hard time migrating from the traditional classroom to an online once, hence their decision to just take the wait-and-see, watch-and-learn attitude. During the conduct of the course, this group, which happened to comprise a bigger percentage of students who participated in the study, just contended watching from the periphery. They seldom participated in the lively discussions in the forums, and provided discussion forum posts normally just to comply with the requirements. They also usually asked their mentors to give them more time to complete the learning activities such as assignments. This does not imply that they do not want to participate. Based on most of these students' feedbacks, they were just overwhelmed with the new scheme – and hence were having a hard time adjusting to the strict implementation of the schedules of the various learning activities. Others are just being normal students who do not want to be burden with too much course works – much more online ones which are very new to them.

**Analysing the Findings of this Study**

This study suggests that an e-learning mediated blended learning approach can be implemented and utilised by the students of the Nizwa College of Technology, although the shift from the traditional face-to-face approach to the blended learning approach should be done slowly and incrementally. The coordination and cooperation showed by the lecturers, and the interest shown by the students, imply that online learning activities can be utilized to support the traditional face-to-face discussion to make learning a different experience for everybody. The support and cooperation of technical people – site administrators and technicians – is also deemed important for the successful

implementation of this kind of learning. As such, this study showed that to introduce a successful blended learning approach, full cooperation and collaboration, as well as strict commitment, from all the stakeholders in this kind of initiative, is needed.

The implementation of the blended learning model showed a new perspective on the way learning happens for various types of learners. The authors came to realize through this research that an effective course is the one that is comprised of both face-to-face and online components, and as such, it is an intricate and complex matter, starting from the robust and flexible design of the learning model down to the development of the blended courseware, the learning materials, and eventually the complete learning environment. Effectively, it showed that blended learning is not giving focus only on offline learning activities or vice-versa, but instead, it is the best mix of both approaches, which effectively shows that it is about focusing your resources as a learner (and mentor) for more productive learning (and teaching), and pacing yourself in such a way that teaching and learning will be maximized. Just as Laurillard (1993) describes teaching as mediating learning and that the use of media-supported learning provides for discursive, adaptive, interactive and reflective forms of academic dialogues, teachers should try and facilitate a more natural form of collaborative learning environment for the learners through a balanced mix of offline and online teaching-learning components.

This study also showed that coming up with an effective course design for a blended learning approach is a very difficult task. During the development, it was learned that in order to come up with an effective learning environment for students, teachers have to build a collaborative and cooperative environment for themselves first. As it is, the blended learning model adapted in the implementation of the blended learning approach in NCT followed this path, and thus, the model became beneficial for both the mentors and the learners. For mentors, the design pointed to the fact that collaboration yielded an effective learning environment. For learners, collaboration yielded a more productive learning. Indeed, a very important lesson of this study for the authors is that, collaboration in learning can and may result in successful learning for various groups participating in the process.

### Generalizations and Conclusion

The findings of this study document the procedures on how to operationalise a blended learning paradigm for various learners in higher education setting. The various steps done by the researchers as well as the other people involved in this research, particularly the mentors/lecturers and the technical support personnel, in the development of course delivery plans that will best fit the learning model and the implementation of the learning environment that will support these plans provide important insights in coming up with standard policies on how blended learning can be effectively implemented. Although few areas can still be made clearer and more-detailed, particularly the roles of specific technologies that will enhance the support of infrastructure for the blended learning paradigm, the researchers feel that the findings of the study provide evidences that the said model can be made operational in the NCT educational setting and can provide contribution to the learning of students.

This study also illustrates the various ways by which learners and mentors utilise the model for their comfort, eventually for the improvement of their teaching and learning respectively. As shown by the different approaches by which lecturers and students utilise the model, the researchers believe that a vast array of teaching and learning strategies can be adopted in different situations. Even though the study showed that a large percentage of students are not completely ready to embrace this new learning paradigm as exemplified by their lack of commitment to actively participate and contribute in the learning process, the study showed unequivocally nevertheless that for the disciplined and committed students (re: the more "mature" learners), the implementation of the blended learning model provided an alternative learning strategy that proved more relevant to their learning needs and styles, and eventually, helped in improving their learning process.

On this light, this study showed the realities of implementing a blended learning paradigm. The enthusiastic participation of mentors and the technical people in this project provided the needed component in making this project successful. Moreover, the varied acceptance and participation of the students opens up possibilities for related studies in this learning approach. Currently, related studies are being undertaken regarding the further operationalisation of the blended learning style, as well as its embedded teaching-learning culture. Ultimately, this study provided the researchers with the belief that an e-learning mediated collaborative and cooperative learning approach insights participants to the teaching-learning process how the shift in paradigm and the new technologies

evolve to improve learning, which will eventually result in embracing new strategies and approaches to learning, and the subsequent creation of new learning communities.

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