A Journey in Moodle: Lessons Learned in Institutionalizing an Open-Source Constructionist Blended Learning Tool

Dr. Rolando M. Lontok Jr., Nizwa College of Technology, Oman
Alice M. Lontok, Nizwa College of Technology, Oman

Abstract
Utilizing technologies to enhance traditional forms of learning is an important task for institutions particularly in a maturing higher education system. The educational use of ICT is beset with literature that institutions can consult when embarking in such endeavour. Moreover, educational technology practitioners, closely coordinating and consulting with members of faculty and getting the required support from management, regularly discuss among themselves features of the system chosen, adoption and deployment strategies, support services that need to be rendered, and evaluation of different aspects of the system. These issues are of paramount importance for Nizwa College of Technology, as it implements institution-wide blended learning strategy in the delivery of courses. This paper reports the experience of NCT in implementing the said approach. It outlines issues the college encountered during the operationalization of the aforementioned pedagogy. The paper focuses on the continuous analyses of experiences of users on the use of the blended approach, as well as the technical capabilities of Moodle as the learning management system of choice for NCT e-learning activities. It aims to provide readers with lessons learned, NCT's on-going work, and its plan for the future regarding this matter. Institutions embarking on similar initiatives can take advantage of NCT's experience to ease their way in the implementation and get better understanding of deployment and related issues.

Keywords: Moodle, open-source, blended learning, LCMS, educational technology

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Introduction

Nizwa College of Technology (NCT) operates under the auspices of the Ministry of Manpower. It is one of seven colleges of technology in the Sultanate, governed by a Board of Trustees through the Director General of Technological Education. NCT is locally managed by the College Dean. NCT grew from offering technical-vocational courses to today's array of Diploma and Advanced Diploma qualifications in Engineering, Information Technology and Business Studies. The teaching faculty is a mix of locals and expatriates, which bring a wealth of expertise and experience to various academic programs.

Riding the higher education boom in the Sultanate during mid 2000s and to further reinforce it at NCT, the college management decided to implement a new method of delivering lessons: one which will make good use of ICT infrastructure, which the college continues to improve. The management decided to form a core group that will study how blended learning can best be implemented in the college (Lontok & Lontok, 2007) and what platform can be utilized to provide technical support and ease of use to students. A working group then started gathering data with the following objectives in mind:

1. Design a blended learning framework that can be best utilized institutionally;
2. Adopt an LMS that could be easily and effectively deployed without too much cost.

After consulting relevant literature (Brandon, 2006; Halloran, 2002; Zeilberg, 2001) and gathering relevant information by observing practices from other colleges and universities and simulating possibilities through short workshops, recommendations were made and the management gave the project a go for full implementation.

Planning for Change

As the management did not want a full paradigm shift in delivering lessons across all courses, the e-Learning Working Group (eLWG) decided to initially implement the project using the pilot approach. Through this, the group effected change through blended learning only in select classes in Engineering and IT, and decided to review the experiences of these classes afterwards, in preparation for the institution-wide implementation that is planned in the next phase. The eLWG, which spearhead the implementation, is comprised of one representative each from the three academic departments of Engineering, IT and Business Studies. The group is headed by the Assistant Dean of Academic Affairs.

To ensure that the work of the eLWG will be given adequate technical support in terms of network infrastructure and development of online activities and materials to supplement face-to-face interactions in various courses, its members worked closely with the Center for Educational Technology (CET). This further strengthened the implementation of the project and the active utilization of Moodle in the college.

Table 1 shows the initial responsibilities of the two groups:

Table 1
Roles and Responsibilities of eLWG and CET

	eLWG	CET
Roles and Responsibilities	1. Conduct research on best practices regarding blended learning 2. Conduct research on LCMS and its implementation	1. Setup the Moodle LCMS and manage/maintain the system 2. Train users (staff and students) to use Moodle 3. Assist teachers to develop courses for Moodle

Aside from the roles and responsibilities identified in Table 1, the two groups also had shared responsibilities: effective planning and successful implementation of the shift to blended learning, as well as efficient use of Moodle LMS.

Once the implementation of Moodle was officially approved, a series of planning sessions and consultation with CET and academic departments followed. Ultimately, it was decided that in the pilot implementation, four classes will participate: 2 in Engineering and 2 in IT. Initially, no class will participate in Business Studies as there was nobody who could immediately lead the blended learning implementation in that department. Summarily, three teachers participated in the initial piloting of the project. They were supported by several staff from CET to provide technical support.

Through joint efforts of the eLWG and the CET, workshops in Moodle and blended learning were conducted to bring the idea to the mainstream and to promote the project as well. This allowed for better understanding of the project which set the tone for wider implementation in the next phase (Lontok & Lontok, 2008).

Success in implementing the blended learning approach hinged largely on the effort of the eLWG. Thus, aside from workshops conducted by the group, they also presented papers and studies in various symposia and conferences to bring stakeholders on board (Lontok & Lontok, 2007; Lontok & Lontok, 2008; Lontok 2008). Equally, success in implementing a new LMS is largely anchored on the effort of CET. Thus, CET staff provided direct support to both staff and students to get everyone involved and to make the transition as easy as possible. In this regard and taking the work of Chao (2008) as model and building from it, the group continued their work by tackling the following issues:

1. How to choose the right LMS and when is the best time to adopt and start the institutionalization of blended learning philosophy?
2. How to develop online materials and activities to supplement the existing courses?
3. How to provide adequate support for prospective end-users?

Choosing the LMS and adopting Blended Learning

Following initial discussions between the eLWG and the CET, it was decided that a series of brainstorming sessions should first be done with the staff involved in piloting the project. Likewise, a series of discussions should be done with the technical support team, as they also need time to setup the Moodle environment and make sure that online courses area ready to be uploaded and can be used by learners.

Once these discussions were done and issues discussed and deliberated upon, it was decided that a semester will be set aside for the preparation, testing and setup, and development of online courses, and the initial pilot implementation will start in the succeeding semester. With that, the project started to roll.

Once everything is planned and agreed upon, consultations and further discussions ensued between the eLWG and the concerned teachers. An initial survey was also conducted for students to get their feelings and ideas about having an e-learning facility through Moodle. Based on the results of this survey, students, though little skeptical, were also interested in the new approach, and they were willing to participate and try. Although there were few resistances, the general view was that this is the change that is required particularly of a technological institution like NCT.

Following are the key lessons learned by the college in this area of implementation:

1. Conduct brainstorming and discussion sessions with concerned stakeholders, ensuring that they understand the change issues involved to ensure clear communication and understanding of the phases of the project;
2. Get as much information as possible regarding the LMS to be implemented, making sure to understand incompatibilities with existing infrastructure so that issues could be immediately addressed;
3. Come up with proper planning regarding customization of the LMS so that it will fit the implementation schedule.

Developing online materials and activities for courses

The development of online materials and activities in the pilot implementation was comparatively easy compared to the next phase (succeeding academic years). This is because of the fewer courses involved and the fact that teachers who participated in the pilot implementation had prior Moodle experiences.

A series of workshops were conducted using these courses as actual examples to prepare other staff for wider implementation in the next phase. A comprehensive manual regarding the use of Moodle for NCT was also prepared (Lontok & Lontok, 2008). A special online course in e-learning was also created for teachers so that they could practice in the actual Moodle environment.

As the pilot implementation progresses, eLWG and CET groups continue to work in the background to further improve the implementation as their understanding of the technology deepened. eLWG also continued giving seminars on blended learning approach, as well as workshops on other e-learning products such as Hot Potatoes and other Adobe products. CET's improvement works in Moodle continued as well. To

make the system more robust, they replaced the platform to Linux (from Windows), and adopted MySQL as the backend in the succeeding implementation.

As the implementation progressed, the groups set their sights on the institutional implementation planned for the next phase. Thus, improved course design, faster course development process, more specialized faculty training, and more effective communication of the complexities of the technology and the philosophy became new priorities. NCT started to collectively redefine its processes and rethink its services in its effort to institutionalize the new philosophy of blended learning using the web-enabled Moodle LMS.

Lessons learned from experiences in this area of implementation are:

1. Come up with a very good plan regarding the development of online supplementary materials for courses;
2. Give focus on staff training on the new system, and don't stop with the training plan;
3. Continuously monitor the online course development process, instituting required adjustments as the project rolls, to keep pace with the changes.

Providing end-user support

Students at NCT are given IT Foundation courses in their Foundation Level. When the college started to institutionalize blended learning, Foundation Level students were also introduced to Moodle by integrating it to their Foundation Level IT courses. Later, all multimedia courses in Foundation Level were required to be conducted using Moodle. Aside from this, CET staff also provided regular Moodle orientation for students.

In the case of teachers, the process was a little bit more complicated as they need to grasp a better understanding of the features of the system since they have to use it regularly to integrate parts of their materials in online activities. In this regard, CET scheduled more stringent workshops for staff throughout the semester. This slowly evolved into intensive tutorials of Moodle features by members of eLWG, assisted by CET staff, for each academic department. These regular tutorials and workshops were further supplemented by requests for more workshops on specific Moodle features, which were requested by academic departments from time to time.

Although the initial stage of providing workshops and tutorials were beset by some unavoidable "growing pains" such as slow response to obscure issues and problems encountered and changes to some system features as they are improved and made stable, a system was slowly developed, whereby first tier assistance and support from CET is further backed up by more specialized support to make the technical support and LMS tutorials more systematized and effective. Subsequently, the e-learning course previously created for seminars and workshops to prepare the faculty evolved into a central repository of information and a central discussion forum where issues are lodged by users and answered by technical support staff.

The evolution of a systematized support and tutorial system became an important part of CET's change management strategy, as providing relevant feedback and

communicating quickly with individual users was of paramount importance. Information taken from these channels was also continuously and regularly provided to the Moodle team in CET to quickly fix technical issues and further improve the system.

Some important lessons learned from the college experience in this area of implementation include:

1. Development of training and other resources (e.g. manuals, quick guides) for all end-users;
2. Creation of a dedicated team that will handle end-user training and support;
3. Giving focus in the development of feedback channels that prioritizes giving timely responses to users' queries and other needs.

The next steps

After the successful initial implementation of blended learning philosophy and the Moodle LMS in the college, NCT started institutionalizing the implementation of its e-Learning Mediated Blended Learning Approach through an internal decree.

In this context, a plan was made on how courses will be created and how students will be registered. As the college registration system is a customized system built by the MIS Department of the Ministry of Manpower, there was the problem of directly connecting it to Moodle. In this regard, it was decided that new students will be generated from this system and will then batch-uploaded to the Moodle database. The students in turn will be registered by their respective teachers in individual courses. Although burdensome, this process eventually became the standard procedure for teachers during the succeeding semesters. This eventually became an important part of the blended learning strategy in NCT. Just recently, this process was slightly modified when the college migrated to Moodle 2.4. Instead of the usual batch upload of students to Moodle database by CET and then registration of students by their teachers in individual courses, the process had now been tremendously improved through batch uploading of eLWG of students in their respective courses and classes, thereby removing the burdensome step of individual student registration by teachers in various classes and sections. This greatly minimized administration and housekeeping work of teachers, giving them more time to focus their effort in improving the instructional design of their courses.

Lessons learned in the pilot implementation, particularly in the management of individual courses, became important points of discussion in the continuous orientation and workshop sessions that eLWG and CET provide to the different academic departments. The practice of regular seminars and workshops continued, as it proved very effective in familiarizing users with features of the Moodle system. As users better understood the system, more features were used and became standard. These include chats, wikis, improved utilization of discussion forums, attendance and online gradebook.

In terms of the functions of the eLWG and the CET groups, the groups were combined and streamlined and is now comprised only of the academic department e-learning representatives, the Moodle server technician, the web developer, and the Head of IT Department (former Head of ETC) as the leader of the group. The group

still provides regular reports to the Asst. Dean of Academic Affairs, who is now mainly concerned in the strategic aspects of implementation and not in the group's day-to-day activities.

Despite the challenges in adopting a new philosophy of delivering lessons and embracing new technology for learning, it was found out that after several semesters of implementation, majority of faculty and students embraced the change. From surveys that are conducted from time to time to get satisfaction and other opinions of users regarding the system, they felt that the new approach provides an alternative form of learning that gives them more flexibility in accessing information, as well as improved communication, especially between classmates (males and females), that would not normally have been possible in regular face-to-face scenario based on their norms and culture. Faculty members also appreciated tools that made the administration part of their teaching work easier.
Lessons learned from NCT experience after the pilot implementation include:

1. Establishment of a system for registering users in the LMS and making it an integral part of the process;
2. Conduct of regular workshops and tutorials regarding features of the system for all users, and conducting these year-round;
3. Establishment of an efficient flow of communication among all stakeholders.

Looking ahead

After several years of NCT's Moodle implementation, users, particularly teachers and technical support staff, look into better course development, more integration, and online course quality.

NCT's online course development process is still a work in progress, and it will probably stay that way. As new technologies are developed, there will always be new ways of developing online courses. The current focus is in effective instructional design and better integration with other open-source collaboration tools. The college is also successful in implementing Google Apps technology in other aspects of its operations, particularly in teaching and learning, and it will be an important milestone if a system or process would be developed which will integrate the two technologies, thereby enhancing user experience.

Another issue is quality. As online courses development improves and become mature, better quality can be achieved through an effective collaborative course development approach. The emphasis now is to give focus on identifying faculty needs and supporting them to make this new development model a reality. The goal is to empower faculty to develop and teach blended courses while maintaining high quality standards. This, and an effective training plan, should be incorporated in the college change management plan to ensure continuous effectiveness in this endeavor (Wallace & Young, 2010).

Conclusion

After several years of implementing the blended learning approach in delivering lessons anchored in e-learning through Moodle, it can be said that NCT has achieved considerable strides in enhancing the teaching-learning experience in the college. In this context, it is important to recognize the lessons learned in this journey, so as to identify proper change management strategies in various important issues such as becoming effective change agents (for staff and/or units), supporting stakeholders in adapting to changes in philosophy and technologies, communicating the change effectively to users, and monitoring development to assess success.

NCT is now looking forward to the next steps in further improving its approach. For sure, there will be more hurdles and challenges ahead, particularly in the area of LMS: the college has just migrated to Moodle 2.7, and is now focused on developing more quality courses; it is also still trying to find effective ways on further making trainings on blended learning and LMS better. Meanwhile, the eLWG and the CET continue to collect relevant data to establish NCT best practices in the blended learning area.

We believe that this is the only way we could have better planning and come up with better decisions regarding our approach in the coming years.

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Contact email: rolando.lontok@nct.edu.om