Moodle as an ODL teaching tool: A Perspective of Students and Academics

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Abstract: This article describes the use of Moodle as a suitable platform to support the postgraduate open and distance learning (ODL) courses offered by Universiti Sains Islam Malaysia (USIM). Many USIM postgraduate students who take obligatory courses (e.g., research methodology and data analysis) are taught at different venues to facilitate students' access to higher education and enhance quality of lifelong learning. Managing this complex teaching network has called for the adaptation of Moodle platform. This approach meets two relevant requirements, (a) to ensure consistency, compliance, and quality of teaching, (b) to reduce educational costs, which largely depend on the number of peripheral venues for teaching activities. This article analyses the functionalities of the Moodle platform and its use among USIM postgraduate students and academics. The data was collected based on content analysis via questionnaire applied to 18 USIM ODL postgraduate students and 4 lecturers. The results show that despite having great potential, Moodle is mainly used as a repository for materials. Moreover, lecturers recognize the importance of the use of other functionalities of this platform in order to promote the success of the teaching and learning process.

Keywords: open and distance learning, learning management systems, pedagogical tools, postgraduate courses, higher education

1 Introduction

Nowadays it is not possible to discuss about the teaching and learning process without associating it with the the Information and Communication Technologies (ICT). Eventually, ICT will be present in all processes that involve collection of data, processing of information and knowledge creation. On the other hand, teaching and learning is considered as one of the most typical processes that have these characteristics (Nurkhamimi, 2011).

ICT play an important role in education, having a special relevance in the instructional component, and is supported by Learning Management Systems (LMS), such as Moodle, Edmodo, ConnectEDU and Schoology. These platforms have many capabilities provided that they are fully utilized. For example, interaction, feedback, conversation and networking are some of the possible actions in using learning platforms. Furthermore, they provide a lot of opportunities to explore new methods of teaching and learning. Particularly, the Moodle platform adopted by Universiti Sains Islam Malaysia (USIM) integrates several modules which allow creation, organization, delivery, communication, collaboration and assessment activities.

The present paper analyses the main functionalities and tools available on the Moodle platform and their use by USIM. Additionally, it discusses the results of a study carried out at the Global Open Access Learning Centre (GOAL Centre) through the application of a questionnaire to students with the objective of characterizing their uses for Moodle and its main tools. Through this method, the study intends to contribute to the systematization of the activities and the respective modules provided by Moodle, as well as their importance in the students' perspective, revealed in an exploratory study.

2 Postgraduate ODL courses at Universiti Sains Islam Malaysia

Universiti Sains Islam Malaysia (USIM) is the 12th public higher education institution in Malaysia. USIM aims to uphold and enhance Islamic studies through the integration of *Naqli* (revealed) and *Aqli* (human) with emphasis on the use of information technology in education and research system, as well as the mastery of Arabic and English.

USIM's Centre for Graduate Studies (CGS) is responsible for administering and monitoring academic programmes as well as students' academic progress. The centre encourages academic research to generate knowledgeable, competent, and professional graduates in various fields. The main objective is to create opportunities for researchers and students to share knowledge relating to Islam and the Muslim community.

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As of 2014, the new intake of postgraduate students can choose whether to complete the two mandatory courses (Research Methodology and Data Analysis) by normal mode or by ODL mode. These new students must complete these courses within their first semester in order to prevent a hold from being placed on their records. Relatively, as compiled by Mohamed Amin Embi (2013), USIM is equipped with its own e-learning system known as GOALS (Global Open Access Learning System) based on Moodle.

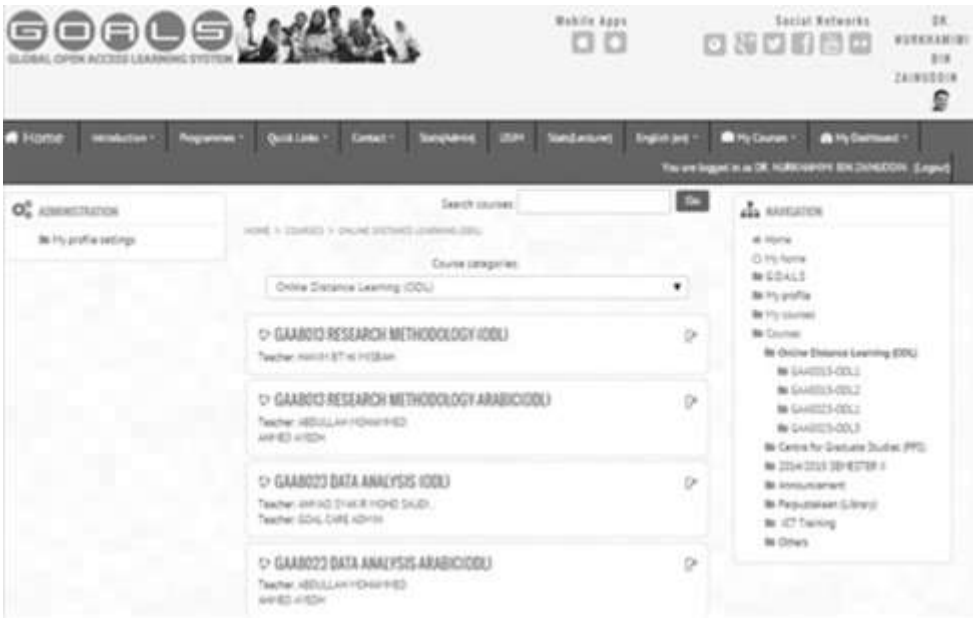

Figure 1: GOALS USIM interface

With its inception in 2011, USIM GOALS has since undergone periodic upgrading process (Alwi et al., 2014). From uploading course outlines, posting notices, setting up online quizzes to initiating online forum, USIM lecturers have utilized GOALS in their teaching and learning (TnL) activities. Looking at the advantageous functions of this system, there is a need to utilize Moodle as an innovative platform to support the smooth running of the postgraduate ODL courses in USIM.

The assessment requirement of the postgraduate ODL courses in USIM is much dependent on the optimization of GOALS. The assessment method of USIM's two mandatory courses (Research Methodology and Data Analysis) was set by The Centre of Graduate Studies (CGS) and it has been realigned with the approval of the subject matter expert of these two courses in a meeting dated 23 October 2014. This meeting approved the alignment of the assessment requirement for both courses (Research Methodology and Data Analysis) as shown in the Table 1 and 2.

Table 1: Activity weight of ODL assessment for Research Methodology Course

Research Methodology – GAA / GAW 8013				
No.	Category	%	Minimum activities per semester	Assessment method
i.	Assignment	30	3	Online assignment via GOALS
ii.	Individual proposal presentation	20	2	Face-to-face online presentation via BBB (GOALS) / Self-recorded video
iii.	Written research proposal submission	30	1	Online assignment via GOALS
iv.	Participation	20	2	GOALS online quizzes / GOALS forum participation / notes completion / communication

Table 2: Activity weight of ODL assessment for Data Analysis Course

Data Analysis – GAA / GAW 8023				
No.	Category	%	Minimum activities per semester	Assessment method
i.	Written Assignment / project	20	4	Online assignment via GOALS
ii.	Individual presentation	10	2	Face-to-face online presentation via BBB (GOALS) / Self-recorded video
iii.	Participation	20	2	Online quizzes / forum participation / notes completion / communication
iv.	Final Exam (take home)	50	1	GOALS online quizzes / test via GOALS

3 Moodle: An e-learning platform for ODL courses

Ketterl et al. (2009) observed that the use of systems for distance education, student blogs, wiki groups, chats and instant messages has grown into universities and outside of them. This trend isdue mostly to the fact that they are easy, fast and convenient. Additionally, Paiva (2010) observed that many applications were developed for e-learning platforms that brought features that contribute to the increase of shared knowledge and communication between students.

Most e-learning platforms offer tools such as forum, email, blog, wall (asynchronous communication), chat (synchronous communication), wikis, glossaries, texts, and surveys (collective construction and interactive tools). They also include educational activities, books, videos (educational tools); profile, registration, groups, databases, frequency control and daily classes (administrative tools). In this context, the Moodle (Modular Object Oriented Dynamic Learning Environment) tool is defined as a platform built from a constructivist perspective that emphasizes research and collaboration through its structure and available features developed for training (Martins and Giraffa, 2008). The training features include both communication (chats, forums, wikis, blogs, glossaries, quizzes) and information (textual data, audio and video links, and search) tools.

Considering the aforementioned characteristics, Moodle is an open-source, totally free and customizable e-learning platform (Ribeiro and Medina, 2009). The platform can be adapted using WML, PHP and MySQL. Choosing Moodle as an e-learning platform is usually motivated based on its simplicity, adaptability and open source configuration.

Regarding the activities of the e-learning platforms, a classification table based on six classes: Creation, Organization, Delivery, Communication, Collaboration and Assessment has been formed. Table 3 presents these activities, their correspondence to the modules, and a brief description based on the instantiation of some features that are possible to perform with them.

Table 3: Activities and modules which can be conducted via Moodle

Activity	**Module**	**Description**
Creation	Database	Allow to build, display and search a bank of record entries about any topic Allow to share a collection of data
Organization	Lessons	Represent a set of ordered topics summarizing the instructional materials and allow access to them through respective links
Delivery	Assignments	Allow teachers to collect work from students Allow teachers to evaluate the students' work and provide feedback including grades, in private mode Allow students to upload assignment files
	Workshops	Represent a peer assessment activity with many options Allow students to submit their work via an online text tool and attachments
Communication	Big Blue Button	Allow synchronous conversation
	Forums	Represent a communication tool where students and teachers can exchange ideas by posting comments
	News	Represent a special forum for general announcements Allow teachers to add posts and to send emails

Activity	Module	Description
Collaboration	Glossary	Allow creating and maintaining of a list of definitions Represent a mechanism for collaborative activities that can be restricted to entries made by the teacher
	Wikis	Allow users to edit collaborative Web pages Provide space for collaborative work
Assessment	Choice	Allow teachers to ask questions and specify multiple choice answers Represent a useful mechanism to stimulate thinking about a topic
	Quiz	Allow teachers to design and build quizzes with a variety of questions, with different types of answers, such as multiple choice, true/false, short answer
	Survey	Allow teachers to gather feedback from students using prepackaged questionnaires
	Feedback	Allow teachers to create surveys to collect feedback
Reusability	SCORM	Represent specifications that enable interoperability, accessibility and reusability of the learning content Represent tools that enable SCORM packages to be included in the course
	External Tools	Enable interaction with compliant learning resources (eg. Learning Tools Interoperability) and activities on other Web sites Provide access to new activity types or materials

USIM chose Moodle as an e-learning platform for postgraduate ODL courses over several Learning Management System (LMS) with similar features about a year ago. Since then, Moodle has been seen more as an interactive service than a research project. For this reason, the USIM staff has focused on its improvements instead of constantly comparing with other LMS. As a service to the entire campus, stability is crucial, at least until it fits the teaching requirements. Blackboard, Moodle, and more recently Sakai, are among the many other LMS that have plenty of features that allow the achievements of the same kind of goals.

4 Methodology

In this study the Moodle system used in USIM (GOALS) was examined through content analysis, complemented with a non-structured interview carried out with the administrator for the platform at USIM. Then, the use of the Moodle platform among students from Universiti Sains Islam Malaysia was analysed. The data was collected through a paper-based questionnaire developed on the basis of the literature review and validated through the referred interview, and applied to postgraduate students who were attending subjects under the responsibility and supervision of the Centre for Graduate Studies (CGS) of USIM. The questionnaire consisted of the following sections:

Section A

A1 - Characterization of the postgraduate students in terms of: age, course and degree attended, type of device and network used to access the Internet, purpose of the access on the learning context and average time of use of the Internet per day for learning purposes.

A2 - Characterization of the general use of the Moodle platform in terms of: number of accesses per month and format of information accessed/posted.

A3 - Characterization of Moodle tools used by the participants.

A4 - Suggestions and comments from postgraduate students to improve the Moodle platform for the betterment of the ODL courses.

Section B

B1 – Lecturers' responses to questions related to their adoption of Moodle

B2 – Lecturers' responses to questions relating to interactions

B3 - Suggestions and comments from lecturers to improve the Moodle platform for the betterment of the ODL courses.

The collected data was analysed using the IBM SPSS Statistics 19 software. A descriptive analysis was performed in order to characterize the behavior of each variable measured.

5 Results

18 postgraduate students (for section A) and 4 lecturers (for section B) were selected to undergo the evaluation process. The determining of the sample size in the evaluation of a small group and the field user testing sessions were done based on Tessmer (1993) who stated that the usability of less than 20 participants in small group evaluations and between 20 and 30 participants for field test evaluations. The results are analysed as follows.

5.1 Characterization of the participants

The participants were 3 females and 15 males. The ages of the respondents were between 31 years old and 42 years old. Table 4 presents the distribution of the number of students per course and degree.

Table 4: Number of respondents attending the courses

Course	Masters	PhD
Research Methodology	2 Students	16 Students
Data Analysis		

It can be observed that most of the participants were PhD students (89%) and that most of them were from the Faculty of Science and Technology. Regarding the devices used to access the Internet, all the respondents referred to laptops and about 32% mentioned that they additionally use mobile phones. It was verified that 93% of the participants referred the use of a private network, while the remaining 7% mentioned that they do not have access to the Internet at home. The network from USIM was referred by 87% of respondents and 35% of the students referred the use of networks from broadband and Wifi.

5.2 Characterization of the general use of the Moodle platform.

The use of Moodle was analysed through the frequency of access, the purpose of the accesses and the formats of the information accessed or posted. Figure 2 presents the histogram of participants' answers about the frequency of weekly usage of Moodle.

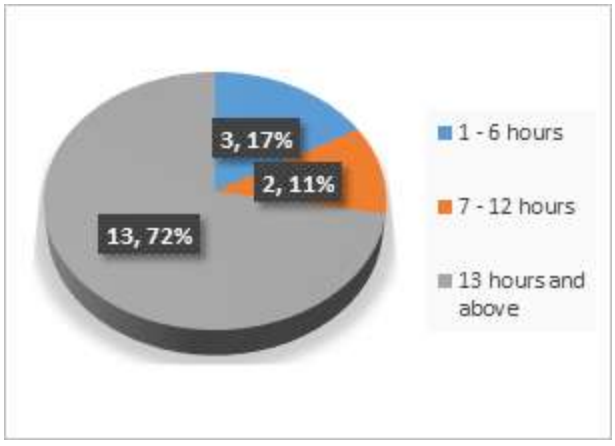

Figure 2: Average time of use per week

On average, students access the Moodle (GOALS) platform about 8 - 20 hours per week. It is interesting to note that there are three distinguished groups of users from Figure 1, namely: (1) those that have low frequency of access (17%, 1 – 6 hours), (2) those that have intermediate frequency of access (11%, 7 – 12 hours) and (3) those with high frequency of access (72%, 13 hours and above). Regarding Moodle's purpose of use, it can be seen in Figure 3 that: (a) the main purpose is 'Download materials', mentioned by about 98% the respondents and 'See news and course updates', mentioned by about 84% of them. 'Deliver assignments', 'Communicate with lecturers' and 'Ask questions', in this order, are much less mentioned.

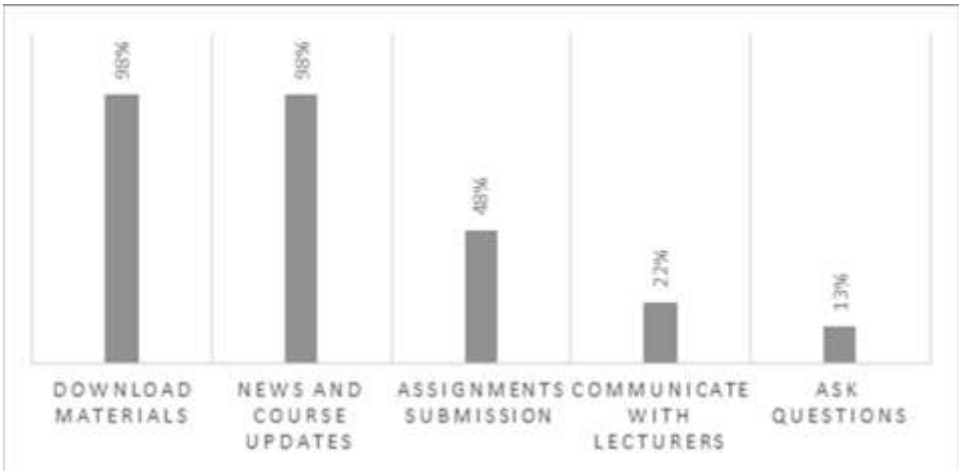

Figure 3: Purpose of using Moodle (GOALS)

These results can be interpreted as Moodle being used mainly as a repository of materials and information. This hypothesis is reinforced by the analysis of the results presented in Figure 4, where it can be observed that the most used materials' formats that respondents access/post are 'Texts", 'Videos' and 'Images'. 'Audio' is also referred, but used much less than the former three formats. Three of the students identified 'Animations' as another format used in Moodle.

Figure 4: Most used materials

5.3 Characterization of Moodle tools used by the participants

'News', 'Forum' and 'Assignments' are the most used Moodle tools and also those that respondents consider the most important. The other tools which they have been using at the same time on their ODL platform were 'Quiz/Survey', 'Questionnaires', 'Chats' and 'Web-conference'. Again the possibility of the main utilization of Moodle is that of a repository of materials and information must be considered.

5.4 Suggestions and comments from postgraduate students to improve the Moodle platform for the betterment of the ODL courses

Some of the significant suggestions and comments from the participants in order to improve GOALS as an ODL platform were put in table 5.

Table 5: Suggestions and comments

I found your GOALS system very up-to date. Still I think quick response from the tutors either in e-mail or in post will encourage the students in learning through this GOALS system. Thanks for your inquiry.
Overall, I am happy with the support given by the lecturer Dr. Ahmad Syakir (e-tutor), who has given good guidance for this subject.
I think in order for this system to run well it is important to have a dedicated lecturer who is able to guide students regardless of distance.
My suggestion is to increase the working hours (for goals service center at least one officer until midnight.

5.5 Lecturers responses to questions relating to their adoption of Moodle

Results revealed that almost all 4 lecturers had basic knowledge of Moodle and most of them had made an effort to fully integrate it into their teaching or papers. In doing so, the majority expressed confidence in their ability to use Moodle. In terms of long-term adoption, the majority of lecturers intended to make further use of Moodle, perhaps unsurprising, given that the USIM management had clearly stated its commitment to widespread adoption of an online component in all papers and programmes. In hindsight, the survey did not measure the motivation behind respondents' sustained utilization of Moodle, although several comments alluded to a perception of mandatory adoption.

Table 6: Lecturers' responses to questions relating to their adoption of Moodle

Lecturer 1	I have a basic knowledge of tools and features available on Moodle.
Lecturer 2	I have made an effort to fully integrate some of the different tools and features available in Moodle in my teaching/paper.
Lecturer 3	I am confident in my ability to use Moodle.
Lecturer 4	I have the intention of using Moodle again next semester.

5.6 Lecturers' responses to questions relating to interactions

When asked about connectedness with students (which could be seen as a sign of quality interaction), almost all 4 lecturers agreed that Moodle had helped feelings of connectedness with their ODL students.

Table 7: Lecturers' responses to questions relating to their adoption of Moodle

Lecturer 1	I believe the use of Moodle has enhanced the level of staff-student and student interaction in my course and it promotes more active learning
Lecturer 2	I believe the use of Moodle has enhanced the quality of student-student interaction in my course and I feel reasonably neutral about the pedagogical benefits of Moodle.
Lecturer 3	Moodle has helped me to feel more connected with my students. It also increases staff-student interaction
Lecturer 4	Moodle has helped me to feel more connected with my ODL students

5.7 Suggestions and comments from lecturers to improve the Moodle platform for the betterment of the ODL courses.

Some of the significant suggestions and comments from the participants in order to improve GOALS as an ODL platform were put in table 8.

Table 8: Suggestions and comments

Lecturer 1	Redesign the user interface and reduce duplicate icons
Lecturer 2	Restructure the navigation layout to have consistent colours and layouts
Lecturer 3	Reduce overload of information by grouping related information, and removing world news and guidelines
Lecturer 4	Provide descriptions for icons, symbols or features

6 Conclusion and Discussion

This paper analysed the main functionalities and tools available on the Moodle platform and their use at Universiti Sains Islam Malaysia. It was found that GOALS USIM contains some of the main tools found on the standard Moodle platform, like Assignments, Chats, Forums, News and Quiz/Survey. Furthermore, it incorporates some external tools like Blogs, Wikis, Questionnaires and Web-conference. This might be the strong reason for utilizing Moodle in postgraduate ODL courses at USIM as these features in Moodle facilitated the pedagogy requirements needed such as collaborative and blended learning.

The analysis of the students' answers to the survey revealed that the most mentioned purpose of the use of GOALS were 'Download materials', 'News' and 'Submit assignments' and that the most used information materials are 'Texts' and 'Images'. Additionally, students gave more importance to 'News' and 'Assignments'. These results are compatible with the hypothesis that Moodle (GOALS) is being used mainly as a repository of materials and information. It can also be noted that these tools enable interaction, collaboration and real time communication as described by Nurkhamimi (2014).

From the brainstorming solutions and results described, several ideas generated from both users show interest in personalizing the user interface. Users are expected to have more interaction using the learning management system, in order to carry out tasks easily and effectively. It is obvious that user interface changes the layout and elements, based on user control or context and are required to ease communication between software and users. Novice users will also have less confusion accessing the entire system. Therefore, an adaptive user interface is suitable in designing the upcoming Moodle prototype. An adaptive user interface has emerged in personalized user interfaces to improve the ability of an application to serve the user's needs. Previous research indicates that redesigning an application's user interface from the feedback of interaction measurement between users and applications can substantially improve usability (Granić, A., Glavinić, V., & Stankov, S., 2004).

However, the current survey revealed greater scope for Moodle to influence ODL teaching and curriculum design at a deep level. This would involve a shift in attitude away from seeing Moodle as a "pump and dump repository", towards becoming the frontier of innovation in teaching.

To overcome the constraints and challenges faced by the postgraduate ODL courses, it should be taken into account that the successful use of e-learning platforms in the teaching and learning context critically depends on the teachers having knowledge about the tools, being aware of how they should be used and being capable of organizing all the communication process. There is unlikely to be a one-size fits all model to digitalization, as Laurillard writes:

> *Blended learning is now a steady constant in education. A combination of 90 percent conventional methods and 10 percent digital influences may not be ideal for some courses but may be the perfect formula for others. Therefore, instructors will need to determine the best while choosing their materials is and be aware that the best way to do this is to embrace blended learning (Joint Information Systems Committee, 2009).*

As future work, it is considered important to perform a careful analysis of the underlying reasons for the use of the e-learning tools by the academic community, as well as to investigate on how these tools can help in promoting the success of the teaching and learning process.

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