

Moodle Adoption at the University of Zambia: Opportunities and Challenges

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ABSTRACT

Using the Internet to enhance e-learning has become a trend in modern higher education institutes. E-learning systems are increasingly becoming an important part of the strategy for delivering online and flexible e-learning. The main advantage of e-learning is the opportunity for students to interact electronically with each other and their teachers during forums, on discussion boards, by e-mail and in chat rooms. Though recognizing that the world at large will continue to use terminology in different and often ambiguous ways, the term e-learning is used to refer to the on-line interactions of a variety of kinds that take place between learners and instructors. This study set out to understand the potentials and challenges of adopting Moodle e-learning software at the University of Zambia (UNZA). Specific objectives were to establish awareness and usage levels of Moodle, potential benefits and challenges and possible adoption strategies. Results indicated that majority of UNZA community were not aware of Moodle's existence and thus did not use it. It was however, established that despite people not knowing of Moodle's existence, a larger population was willing to support its adoption. The study also revealed that UNZA has the capacity to effectively implement Moodle due to the availability of skilled manpower, ICT facilities such as Internet/intranet connectivity and infrastructure. The research further established various strategies that would lead to a successful adoption process such as (1) train lecturers first so that they could in turn train their students (2) conduct campus-wide sensitization campaigns through workshops and (3) implement Moodle in stages.

KEYWORD: E-learning software, Moodle, University of Zambia

INTRODUCTION

1.1 Background

The application of Information and Communication Technologies (ICTs) is already changing the organization and delivery of teaching/learning content in higher learning institutions. The pedagogical and socio-economic forces that have driven such institutions to adopt and incorporate ICTs in teaching and learning include many factors such as greater information access; greater communication; synchronous and asynchronous learning; increased cooperation and collaboration, cost-effectiveness and pedagogical improvement. There are many pieces of software available that provide VLE systems, both commercial and Open Source Software (OSS). One such system that has been gradually gaining worldwide popularity is known as Moodle. The university chose Moodle as its next LMS because the software is based on the constructivist theory of learning. Moodle also has a large community of users and developers. Becoming part of this

larger community gave the university an advantage in achieving its objectives.

1.2 Moodle e-Learning Software

The word Moodle (<http://moodle.org/>) is an acronym for modular object-oriented dynamic learning environment, Moodle is an enormously versatile system for course and learning management. Moodle development started as doctoral research by an Australian, Martin Dougiamas. Today, Moodle has attracted a long list of developers devoted to Moodle improvements. Moodle is free source e-learning software provided, maintained, and continually improved through the Open Source software development model. Since its first development in 1999, Moodle has continued to evolve in terms of accessibility and flexibility. This is because its features can easily be customized according to user suitability and need. In higher education, Moodle's reputation stems from the academic community's values of freedom, peer review, and knowledge sharing. Supporters say that Moodle helps educators create an effective collaborative online-learning community using sound pedagogical principles at a low cost. You can easily and quickly install it, it can scale up to accommodate a large user base, and it provides typical LMS features present in most similar commercial products. Moodle updates are common, the development community is very supportive, and its universal use is providing reliable learning solutions. Moodle can provide different collaborative learning activities such as assignments, forums, Wikis, Blogs, quizzes, tracking, etc. Nonetheless, the introduction process of such software in any traditional learning institution is inherent with challenges and problems such as technical support and human characteristics. Technical support includes factors like installation, operation, maintenance, network administration and security, etc. while human characteristics involve age, gender, technical know-how, etc. Thus, the process requires proper planning, wide publicity and involvement of every stakeholder at every stage of implementation in order for it to be successful. Otherwise the adoption process can be impeded by these factors. Upon realizing the opportunities Moodle offers, the University of Zambia (UNZA) is in the process of adopting Moodle as an e-learning platform. Currently, Moodle is being used by a few lecturers in some departments on a trial basis. There is therefore need for more publicity, training and

involvement of every stakeholder in the implementation process.

1.2.1 Problem statement

The adoption of e-learning tools such as Moodle software in any traditional learning institution like UNZA comes along with its many intrinsic challenges and problems. Nevertheless, due to the fact that the benefits that Moodle offers to its user community outweighs these experienced challenges and problems most universities have adopted the software to enhance their teaching and learning activities. Like any other higher learning institution, the University of Zambia has felt the need to embrace, among these soft-wares, a cost effective e-learning management system known as Moodle. From realizing this need, the software has been introduced to some with the idea that they would be champions in their schools towards Moodle implementation to the entire university. Further, sensitization, though on a smaller scale was done in some Board of Studies meetings. The problem has been that these efforts have not yield the desired results. The reasons for non-response to take up the challenge are not known. This research therefore set out to investigate factors that would impede the process of adopting Moodle in the institution and how they could be mitigated. The study further attempted to establish potentials and possible strategies that could be used to make Moodle implementation process a success.

1.3 Objectives

The main objective of this study was to investigate the likely potentials and challenges of adopting Moodle e-learning software at UNZA.

The specific objectives were:

1. To ascertain the level of Moodle awareness and use by lecturers, students and information specialists.
2. To establish the potential benefits of Moodle use
3. To determine potential challenges of adopting Moodle software as an e-learning instrument.
4. To identify workable adoption strategies/initiatives for Moodle

1.4 Questions

1. Are lecturers, students and information specialists aware of and using Moodle?
2. What are the potential benefits of using Moodle software?
3. What are the potential challenges of adopting Moodle software as an e-learning instrument?
4. What strategies would lead to a successful Moodle implementation process?

1.5 Rationale

It was anticipated that the findings of the study would lead to a successful adoption process of Moodle e-learning tool. It was further hoped that when Moodle is fully functional, teaching and learning activities would become more simplified, interesting and more beneficial to both lecturers and students. This would ultimately improve the quality of

graduates, who will effectively participate in national development programs.

2.0 LITERATURE REVIEWS

2.1 Moodle in education and training

Although initially designed for higher education environment (university), Moodle has quickly become used across a broad range of organizations worldwide to conduct courses fully online or support face-to-face teaching and learning. Its modularity, flexibility, security and free availability have attracted learning communities ranging from single primary school classrooms to large universities, businesses, government departments and other places where people learn. Dougiamas (1998) developed Moodle for educators from the beginning under a philosophy so called social constructionist pedagogy (SCP). He claims that constructivism occurs especially well when the learner is engaged in constructing something for others to see. In the same vein, Britto (2006) introduces Moodle with a quick guide for beginner users at Sophia University under the support of the university media center and also provides his teaching experiences of using Moodle courses as an auxiliary tool. He emphasizes the importance of the educational philosophy of 'social constructivism' to understand and appreciate Moodle as an ideal e-Learning environment for both teachers and students.

Similarly, Berggren et al. (2005) documents the discussions and experiments of a team of teachers active in the Moodle community who are concerned with the development of international standards in the future versions of Moodle. After the analysis of the implications of integrating the learning design (LD) specification into Moodle and the operation of various tools within the Moodle environment, they concluded that continued and open dialogue between teachers and developers of both LD and Moodle is necessary to achieve transparent integration.

Baskerville and Robb (2005) report the summary of how Moodle has successfully been implemented at Kyoto Sangyo University with a Business English course with an emphasis on written communication. It was a hybrid course with a published textbook and Moodle providing the interactive aspects.

2.2 Benefits of using Moodle

In explaining why Moodle has gained popularity over the recent past years, Martinez and Jagannathan (2008) reveal that members who adopted Moodle reported high satisfaction rates, low costs, and easy implementation and use. As such, 95% percent of the users indicated no intention of finding alternative software. Martinez and Jagannathan (2008) explain that the fast growth of Moodle especially within the higher-education market is due to its reputation stemming from the academic community's values of freedom, peer review, and knowledge sharing where educators can create effective collaborative online-learning communities using sound pedagogical principles at a very low cost. Moodle can scale up to accommodate a large user base, and it provides typical LMS features present in most similar commercial products, its updates are common, the development community is very supportive, and its universal use is providing reliable learning solutions. Martinez and Jagannathan (2008) further describe a variety

of advantages and disadvantages for using Moodle such as higher levels of security, peer review, greater flexibility, ability to customize by modifying code, audit ability and code availability, technical support, well-tested updates and plug-ins, variety of capabilities and tools and its availability in many languages. Likewise Hill (2009) further recommends the use of Moodle because by nature of being web-based, Moodle allows people to participate in virtual classroom from anywhere in the world at any time as long as they have access to an Internet connection and a web browser. Moodle gives immediate access to important course information and material, additional learning tools, such as forums and quizzes (self tests) and the freedom to access course materials at any time away from campus. Correspondingly Nozawa (2011) also claims five benefits that Moodle offers to its users. That it enhances student-student interactions as well as teacher-student interactions; helps students work independently hence fosters students' independence; brings about flexibility in routine teaching/learning systems. Compared to most commercial CMS systems are tool-centered, Moodle is learning-centered through social constructionism where people learn best when they are engaged in a social process of constructing knowledge through the act of constructing an artifact for others.

3.0 Research methodology

The study adopted a survey research design. Using a stratified random sampling technique, the research utilized questionnaires to collect data from a sample population of 80 respondents comprising lecturers and students. Further, three interviews with information specialists were conducted for the purpose of triangulation as well as getting in-depth information from respondents which could result from direct interactions and probing. Among the interviewees, one was an ICT specialist from the Centre for Information and Computer Technology (CICT), another was a librarian and the third one was a lecturer in the school of education. The reason behind selecting these three people was because they are central in the Moodle implementation process. For example, the ICT department is responsible for managing the Moodle software; the librarian is there to provide information while the lecturer interacts with students and provides teaching materials to them.

Collected data from questionnaires was analyzed using Statistical Package for Social Sciences (SPSS), while data collected through interviews was analyzed by content analysis.

4.0 RESEARCH FINDINGS AND DISCUSSIONS

4.1 General information of respondents

4.1.1 Questionnaire responses

80 questionnaires were distributed to students and lecturers and 44 were returned and used for data analysis. Out of the 44 respondents that answered the questionnaires, 19 (43%) were female and 25 (57%) were male; 39 (88%) were pursuing their first degree, 2 (5%) were post graduates and 3 (7%) were lecturers all with PhD. Two (5%) were in the school of Agriculture, 18(41%) School of Education, 15 (34%) school of Humanities & Social Sciences, 4(9%) Natural Sciences, and 5(11%) were in Veterinary

Medicine. Ten (23%) were in first year, another 10(23%) were in second year, 8(18%) were in third year, another 8(18%) were in fourth year, 1(2%) was in fifth year, another 1(2%) was in sixth year, 1(2%) was parallel, 2(5%) were postgraduates and 3 (7%) were lecturers. Since most respondents were students, it is obvious that the average age would be between 20 and 30 years. The results showed that 7 (16%) were 20 years and below, 30 (68%) were aged between 21 and 30 years, 3(7%) were between 31 and 40 while 4(9%) were above 41 years.

4.1.2 Interview responses

Three people were interviewed, one ICT specialist from the CICT, one librarian and one lecturer. The ICT specialist has a first degree in Engineering; the librarian has a Masters degree in Library and Information Science, while the lecturer has a Master of Science degree in Library and Information science.

4.2 Moodle awareness and use by lecturers and students

Out of the 44 questionnaire respondents in table 1, only 3(7%) indicated awareness of Moodle while 41 (93%) were not aware. This indicates that the larger population does not know that there is Moodle e-learning tool for their use. There is therefore need for UNZA to publicize the software. There is still much to be done in making Moodle known by the intended users as well as ensuring that they fully put it to its intended use. Among the three that said they were aware of Moodle's existence, one revealed that he knew through a workshop, another knew through his lecturer and the third one knew through the Consolidated Support Systems (CSS) project meetings. CSS is one of the Netherland's Organizations for International Cooperation in Higher Education (Nuffic). As a starting point therefore, one of the strategies UNZA can use in marketing Moodle can include the above first two avenues. Results from interviews on Moodle awareness indicated that all the three were aware of its existence. Staff from CICT knew about Moodle because CICT department is responsible in managing Moodle even though it is hosted on the Library server. The Librarian knew because she attended training on Moodle under CSS project. The lecturer revealed that he knew about Moodle through interactions with librarians. They all however admitted that the majority of UNZA staff was not aware of Moodle and hence the need for a pro-active team that would spearhead Moodle implementation. The study further endeavored to establish the usage of Moodle by students and lecturers and the results are shown in the table below.

Table1: Moodle awareness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	3	6.8	6.8	6.8
	NO	41	93.2	93.2	100.0
	TOTAL	44	100.0	100.0	

Table 2: Moodle use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	2	4.5	4.8	4.8
	No	40	90.9	95.2	100.0
	Total	42	95.5	100.0	
Missing	System	2	4.5		
Total		44	100.0		

The results in table 2 above shows that only 2(5%) use it while 40(90%) do not use it and 2(5%) did not respond. Since most respondents did not know of Moodle's existence, it is obviously expected that they do not use it. The interviewed staff despite being aware of Moodle's existence

said they had not used it. Should the software be fully implemented for use, would the "would be users" be willing to learn how to use it and actually use it? The answers to this question are presented in table 3 below:

Table 3: Willingness to adopt Moodle

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	42	95.5	95.5	95.5
	NO	2	4.5	4.5	100.0
	TOTAL	44	100.0	100.0	

The results above show that even if a larger population was not aware of the existence of Moodle software, 42 (95%) indicated willingness to support Moodle's adoption while only 2(5%) were not willing to support its adoption. Interviewees also indicated that they were willing to adopt Moodle should the University implement it. This therefore is an indicator for great potential of a successful Moodle adoption process since it would receive maximum support

from all stakeholders. However, one of the respondents that did not show willingness to adopt Moodle explained that the introduction of Moodle would lead to students shunning physical classes, which he felt was more effective. Willingness to adopt Moodle was further cross tabulated with sex of respondents to establish if there was a relationship between the two variables. The results are recorded in table 4 below:-

Table 4: Willingness to adopt Moodle & Sex of respondents Cross-tabulation

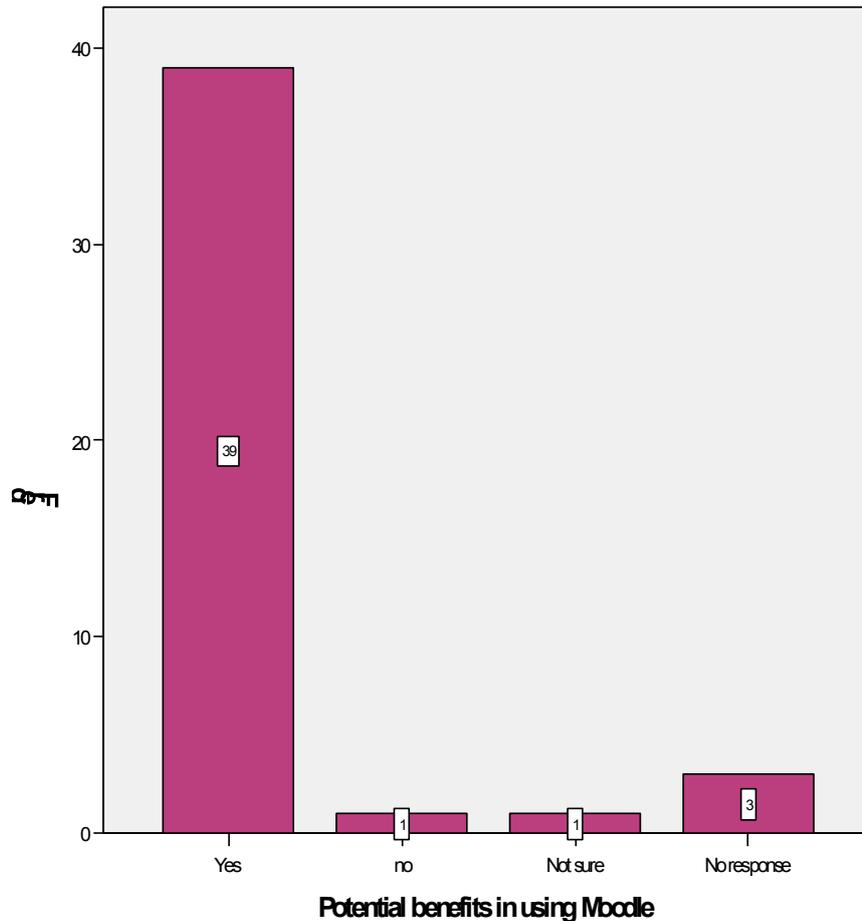
		Willingness to adopt		Total
		Yes	No	
Sex of respondents	Female	19	0	19
	Male	23	2	25
Total		42	2	44

The results showed that all the 19 female respondents to questionnaires were willing to adopt Moodle. Out of the 25 male respondents, 23 were willing to support Moodle adoption while 2 were not willing. These results could be a sign that the University is likely to experience less resistance from the female folks and some resistance from the male

folks. Hence greater care should be applied when dealing with male folks in order to win their support. The understanding is that if you win the support of key stakeholder from the start, implementation process would be smooth and achievable.

4.3 Potential benefits of using Moodle

Figure 1: Potential benefits of using Moodle



Here we wanted to find out whether Moodle as an e-learning tool has benefits for its users or not to enable us establish whether the project is worth undertaking or not. The bar graph above shows that 39 respondents indicated that there are potential benefits in using Moodle, 1 said there is no benefit, another 1 was not sure and 3 did not respond. This ultimately reveals that the majority of the population feels that Moodle would be beneficial to its users. Further, all the three interviewees indicated that there are benefits that Moodle offers its users. The following were the potential benefits the respondents felt would result from adopting Moodle e-learning tool in the University: - That Moodle:

- Brings about easy interaction and knowledge sharing among users, leading to improved understanding of issues and widens scope of knowledge in one's field of study. For example students can discuss issues with fellow students or ask their lecturers questions and get

feasible feedback.

- Is convenient and flexible, i.e. it enables users to attend class without physically going to a classroom hence saves time and good to distance learners.
- Moodle also allows easy access to knowledge/content delivery/study materials to students either from fellow students or their lecturers any time,
- Leads to improved learning standards
- Makes learning/teaching more favourable and affordable
- Is not affected by riots in situations where students or lecturers go on any physical protest.

In order to establish whether those respondents that indicated willingness to adopt Moodle were the only ones that felt that there are benefits in using Moodle, the two variables were cross tabulated. The results are as shown in table 5 below:-

Table 5: Willingness to adopt Moodle & Potential benefits of using Moodle Cross-tabulated

		Potential benefits in using Moodle				
		Yes	No	Not sure	No response	
willingness to adopt	Yes	37	1	1	3	42
	No	2	0	0	0	2
Total		39	1	1	3	44

The results show that out of the 42 questionnaire respondents that showed willingness to Moodle adoption, 37 revealed that there are potential benefits in using Moodle, 1 felt there are no benefits, 1 was not sure because he did not know what Moodle involved while 3 did not respond. However, the 2 respondents that were not willing to support Moodle adoption revealed that there are benefits that Moodle offers to its users. We can still therefore conclude that there are potential benefits that Moodle offers to its users, except UNZA has to come up with strategies that would change people's attitude towards Moodle implementation.

4.4 Potential challenges in Moodle adoption process

As UNZA prepares to implement this software, it was felt that there is need to determine what potential challenges are likely to be encountered in order put in place control measures. Respondents both for questionnaires and interviews indicated that the following challenges would have a negative impact on the smooth adoption process of Moodle:-

- Poor/limited connectivity, i.e. slow Internet connectivity due to small bandwidth
- Limited number of computers provided by the University for the purpose Internet access for students.
- Lack of personal computers by students
- Poor and limited Internet facilities in terms of infrastructure and Internet access points
- Apathy/ poor attitude towards ICT use by some people and rigidity to change (Especially old staff)
- Computer illiteracy (Poor ICT skills) among some users i.e. students & lecturers
- Poor funding to enable connectivity improvements
- Lack of awareness

Despite the above assumptions, most questionnaire respondents and two interviewees indicated that UNZA has the potential to successfully implement, manage and effectively use Moodle. For instance, out of the 44 questionnaire respondents, 34 (77%) indicated that the University has the capacity to successfully implement and use Moodle, 8 (18%) said the University does not have the capacity, 1 (2%) was not sure as he did not know what Moodle was while another 1 (2%) gave no response. The results are as shown in table 6 below:-

Table 6: Capacity of the University to implement & manage Moodle

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	34	77.3	77.3	77.3
	No	8	18.2		95.5
	Not sure (Don't know software)	1	2.3	2.3	97.7
	No response	1	2.3	2.3	100.0
Total		44	100.0	100.0	

One interviewee said UNZA did not have the full capacity to implement and manage Moodle due to reasons given under potential challenges in section 4.4. The respondents that said that the UNZA has the capacity to adopt Moodle gave the following explanations: The University has qualified manpower in ICT, who can manage the system and train other stakeholders on Moodle. They further explained that since UNZA has intellectuals in various fields, it would be easy for them to learn and adopt any new technology like Moodle. It was also revealed that the University has the needed facilities to host Moodle i.e. there is already Internet/intranet connectivity; computer laboratories meant for Internet use by students, Server specifically dedicated to Moodle; and existence of staff already trained in Moodle, who can be used as advocates. All what is needed is to expand such facilities to cater for the current UNZA population. The respondents further suggested the following solutions that would lead to a smooth Moodle adoption

process:- That the University should solicit for donor funding for purchasing more computers specifically meant for Moodle programs; train users i.e. students and lecturers both before and after implementation; improve Internet availability and accessibility through the provision of more free Internet access points with enough computers, wireless connectivity throughout the University, expand bandwidth to allow for high speed connections and increase time allocation to students for Internet use. Other suggestions were that the University should make everyone get involved and understand the benefits of using Moodle from the onset; improve learning infrastructures; introduce IT courses in all schools to improve students' Internet skills and have lecturers encourage students to use the software. Interviewees further suggested that Moodle implementation process should not be prolonged because if it takes longer, it will be outdated by the time it is being implemented due to newer and better software that might emerge.

4.5 Workable Moodle adoption strategies

In order to have a successful implementation process of Moodle, the study solicited for viable methodologies from respondents and the following eight (8) strategies were considered by respondents in their order of preference. To

- Train lecturers first on how to use Moodle so that they can train their students (33 respondents)
- Conduct campus-wide sensitization campaigns through workshops by the Moodle implementation committee (28 respondents)
- Implementation process to be done in stages i.e. from departmental level? to school level? Institutional level. This point was also mentioned in the interviews that the implementation should be done through piloting one department and depending on the response; it can then be rolled over to the entire University. (2 6 respondents)
- Establish a spearheading team for Moodle implementation (24 respondents)
- Bring on board key stakeholder (faculty and learners) at every stage of the implementation (16 Respondents)
- Identify and train change agents in each department, who will train and encourage their colleagues (10 Respondents)

Other strategies suggested by respondents were to:-

- Have the top management be involved with the implementing team at every stage.
- Have compulsory IT courses in all schools in order to help students improve their computer skills
- Introduce Moodle use to students immediately they come to the University in their first year

5.0 CONCLUSIONS

In order to have a successful Moodle adoption process at UNZA, the research findings have revealed quite a number of factors in relation to the study's specific objectives. Firstly, it was established that the majority of UNZA community is not aware of Moodle existence and thus do not use it. It was however, established that despite people not knowing of its existence, a larger population was willing to support its adoption and use. They further indicated that UNZA has the capacity to implement and effectively use Moodle because of opportunities the institution has such as availability of skilled manpower that can easily learn and use new technology, presence of ICT facilities in terms of Internet/intranet connectivity and infrastructure dedicated to Internet access. The research further established various strategies respondents felt would lead to a successful adoption process. Among them were to train lecturers first so that they could train their students; conduct campus-wide sensitization campaigns through workshops by the Moodle implementation team and to implement Moodle in stages i.e. from departmental level to school level and finally to the entire institution.

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