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MOODLE-BASED PREPARATION OF COURSEWARE MATERIALS FOR A MASTERS PROGRAMME AT THE UNIVERSITY OF EDUCATION, WINNEBA

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ABSTRACT*: Advances in information communication technologies (ICT) and the exponential growth of internet usage are rapidly influencing the delivery of education and the transformation of teaching and learning approaches. One such transformation is the Moodle, an e-learning software platform, which is a Learning Management System (LMS) with the potential of integrating course deliveries in teaching and learning modes. The moodle platform is being adopted in a hybrid form into a Masters degree programme offered by the Distance Education Centre at the University of Education, Winneba in Ghana. A review of the literature reveals that there has been successful implementation of the LMS in diverse academic programme deliveries. However, since this is an innovation in the Ghanaian context, the study aims at exploring the experiences of developers during the preparation and development of coursewares for a distance mode delivery programme. Mixed methodologies of quantitative and qualitative methods using questionnaires and interview guides as instruments were used in collecting data from 50 courseware developers who worked collaboratively in developing the materials. Findings from the study will be used in informing the development of other coursewares and during the revision of the current materials.*

KEYWORDS: Learning Management Systems (LMS), distance education, online tutoring, courseware,development and collaborative work

BACKGROUND

This paper presents data gathered from some faculty members and graduate students who were engaged to develop courseware for a newly designed Masters programme in Mathematics, English and Science Education by distance. The personnel were engaged to develop the modules using the MOODLE Learning Management System (LMS). The views and experiences of these courseware developers were to serve as a guide to future developers who will anticipate using the MOODLE as a mode of instructional delivery and interaction with students. It is also assumed that the findings will inform developers as to what works best or do not work best under the current context and circumstances. Therefore, the paper is to contribute to a better understanding of issues involved in developing online learning courseware using the MOODLE as a teaching and Learning Managing System, particularly for distance education delivery.

In recent times, pedagogical integration of information communications technologies, in other words e-learning or online learning seems to be the focus of teaching and learning at all levels of formal education, particularly higher education and open and distance learning. Advances in new

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technologies and the exponential growth of internet usage collaboratively are rapidly influencing the delivery of higher education programmes thereby transforming how teaching and learning should be done in the present learning environment. One such transformation is the MOODLE, an e-learning software platform, which is a Learning Management System (LMS). MOODLE is an abbreviation, which stands for Modular Object-Oriented Dynamic Learning Environment. It is a Learning Management System for producing internet-based courses and helps instructors deliver their instructions virtually. The LMS is assumed to have the potential of integrating the delivery of courses into a teaching and learning mode. Swinney (2004), cited in Vovides, Sanchez-Alonso, Mitropoulou & Nickmans, 2007) indicates that the implementation of LMS in higher education institutions depends on the insurgency of educational technology that promised better quality, learner-centered education with an emphasis on training independent and active students. Boud et. al. (2001), writing about the extent to which higher education has embraced the use of LMS, asserts that it is broadly accepted that the almost universal response to e-learning within Universities has been the selection and use of LMS.

But interestingly, Weaver, Spratt and Nair (2008), note that many higher education institutions have implemented a learning management system (LMS) to manage online learning and teaching, with varying levels of support provided to staff and students, but often there is little subsequent investigation into the quality of the online sites or the use made of the support structures provided. These issues call for investigation just as this study seeks to do.

A brief review of the literature reveals the successful implementation of LMS use in diverse programmes and contexts. However, there is still insufficient insight into challenges faced during the preparation or development process of coursewares by distance mode delivery especially in the Ghanaian context. This study, therefore aims to find out the lessons learned and challenges encountered during the process of developing courseware modules for distance learners using the moodle platform and from the findings make suggestions for future development.

There are several reasons for an institution to adopt and implement online learning in its education system. The literature indicates that some advocates consider the mode as an alternative learning strategy to reach students who were denied access to the regular face-to-face system. Others are of the view that the growth of information technology and the abundance of rich information resources propel institutions to adopt the strategy so that anytime, anywhere both teachers and learners could have access to information. There is also the blended or hybrid approach where lecturers adopt online teaching and learning to augment the traditional classroom delivery as it offers more resources to students (Spender, 2001)

But despite the benefits of online teaching and learning, there are challenges and barriers to developing quality and effective learning environments and courseware for learners. The literature asserts that to develop a high quality courseware, specialized roles of experts are needed to support the process to integrate the system into a single systematic life-cycle mode. The roles include: subject-matter experts (content), instructional courseware, designers, courseware authors and

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editors, graphic designers (artist), multimedia developers and programmers as the technical and graphical authorities (Spender, 2001). Researchers (Kamaruddin, 2010, Rezaei, 2009, Helen, 2006, and Kabata & Weibe, 2005) have described challenges of developing online courseware from their experiences and studies to include: time, money, workload, balance between technical demands and pedagogical goals, skills and ability to cope with technological advancement, high cost of internet access and many more. Song et. al. (2004) state that lack of 'community', difficulty understanding instructional goals and technical problems were challenges he uncovered in his online experiences. Abdon et.at. (2007) in Rezaei (2009) cite relative and absolute higher cost of Internet access as a discourage factor to the development of online learning in developing countries. Others (Ng, 2007; Logan et al. 2002; Betts, 1998) have cited access to the necessary equipment and technological issues as barriers to developing online learning courseware.

Preece, Rogers and Sharp (2002) in Kamaruddin, (2012) are of the viewpoint that the objective of any courseware developer should be to design and implement a quality product to match the skills and experience and expectations of its anticipated end users. But often, courseware developers have a different view of the end product and enforces their own desires rather than those of the end users. In terms of media interface design, for example, developers need to consider the graphic visual and navigation that will engage learners in meaningful authentic tasks (Wilson, Jonassen Cole, 1993 in Kamaruddin, 2012). In other words, interface courseware design means knowing how to provide a learning environment that encourages and motivates learners to recognise the important concepts of meaningful learning. Thus, simply knowing basic interface design concepts will not be helpful to courseware developers to create effective learning courseware and facilitate learning in an electronic environment,

At the Centre for Distance Education, University of Education, Winneba, the LMS was adopted in a hybrid form with the print mode to provide a Masters degree programme by distance for teachers in English, Mathematics and Science Education. Three teams of writers in the subject areas were engaged to develop the modules for the programme. Since the writing and printing of the modules took a long time, adopting the moodle for the online support was nearly put off, despite the influence of the present ICT revolution. One reason given was that the hard print modules were enough as that had been the practice to meet the needs of all including those in rural communities. However, with the persuasion of the University authorities, the moodle was proposed to be used to support all masters courses by distance. Thus, writers had the responsibility to undergo training and thereafter develop the online components of their courses. This phase was still delayed until graduate students in the various subject areas were paired with lecturers to speed up the development of the coursewares. Implementers of the programme, therefore, sought to find out issues of concern to developers and put measures in place to address similar activities in future.

Bonk & Graham (2005) are of the view that blended instruction combines face-to-face instruction with online instruction in such a unique way that part of the course meetings or learning activities are conducted online. Blended or hybrid learning has a number of advantages over the traditional face-to-face learning which tends to be teacher-centered. This is so due to the combination of

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online learning and face-to-face learning in blended instruction. Dukes, Warring and Kirkland (2006) also assert that blended instruction encourages different learning styles and maintains quality lecturer–student interaction in the classroom at the same time. In other words, when instructors replace in-class time with online components such as uploading reading materials for students to download prior to class, discussion forums, quiz, etc., it frees up time for the lecturer to address students learning problems or areas that students may find particularly confusing. The benefits of using course management systems such as MOODLE as learning tools in the world today cannot be over emphasized especially in developing countries where the cost of proprietary LMSs are beyond the reach of the Institutions within those countries. It is useful for students to view MOODLE as a virtual classroom where learning materials and activities can be made available by a lecturer for the student to interact with. The benefit of this virtual classroom or platform for students is that they can have access to it from anywhere in the world at any time provided they have access to an Internet connection and a web browser.

Statement of the Problem

It has become necessary that the University of Education, Winneba, a teacher education institution should attempt to follow worldwide trend of employing modern approaches to teaching and learning such as the e-learning LMS especially for its ODL programmes. Therefore, as Centre for Distance Education contemplates the adoption of moodle in its Masters programme and continues to develop coursewares for other programmes by open and distance learning, it is appropriate to explore issues relating to the needs of developers that are likely to affect implementation. The main issue is that developers might have been confronted with certain challenges in relation to their needs and attitudes towards the development process in general that decision-makers need to be aware of to inform future activities.

The main research question guiding the study is: what views and experiences do UEW courseware developers hold towards the use of the MOODLE in developing their online coursewares for tutoring distance learners and what are the implications of these for future courseware development?

Sub-questions guiding the study are:

1. What factors are likely to affect courseware developers either positively or negatively in the process of courseware development?
2. What factors do developers consider as challenging in the process of developing their courseware?
3. How did courseware developers collaborate with assistants and facilitators during the development of their online courseware?

The purpose of this study therefore is to get a better understanding of lessons learnt and challenges encountered during the development of the M.Ed. online courseware using moodle so as to inform future courseware development activities.

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METHODOLOGY

Since this study was conceived as a result of the long delay that characterized the commencement of the online courseware development, the project team sought to explore the challenges that saddled developers and lessons learned from the process. An exploratory research design using phenomenology method was considered appropriate and was adopted for the study. Phenomenology is a theoretical point of view that advocates a study of direct experiences taken at face value; and one which sees behaviour as determined by the phenomena of experience rather than by external, objective and physically described reality (English and English in Cohen et. al. 2000). This method rests on an assumption that there is a structure and essence to share an experience that can be narrated (Pratt, 1992). It seeks to describe the meaning of a concept or phenomenon that several individuals share (Marshall & Rossman, 1999) such as the development of courseware, which recently is a common practice in higher education delivery. Forty-six lecturers and graduate students in the three subject areas were engaged as respondents to a questionnaire on the training. Ten of them, seven lecturers and three graduate students, were purposively sampled and interviewed during the final training and modification of the materials developed. This paper seeks to focus on the analysis and issues emerging from the interviews.

Interview is one data collection method that fosters face-to-face interactions with a respondent. It facilitates an immediate follow-up for clarification and the discovery of any nuances in culture. It provides contextual information, facilitates cooperation and is useful for uncovering respondents' perspectives. (Marshall and Rossman, 2006). The study employed a semi-structured interview method using a guide to collect the data. Since respondents were developers, there was no need for negotiating access. However, respondents were assured of confidentiality and anonymity, and their voluntary consent was sought before the interviews. A systematic format for analyzing data was designed having the research purpose and the objectives in mind. The questionnaires were analyzed using the software package for social science research namely, (SPSS) whilst responses from interviews were transcribed verbatim and thoroughly read through several times so that the data will be very familiar to researchers. All transcripts were numbered. During the reading process, memos were written at the margins of the transcripts to identify ideas and patterns emerging. Findings from the analysis were set for discussion as in the paragraphs following.

FINDINGS AND DISCUSSION

The findings that emerged from the interviews are being addressed in this paper. Responses were grouped into themes including: positive factors affecting courseware development; factors that pose as challenges & barriers to courseware developers during the process; opportunities for collaboration and suggestions for improvements.

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Positive Factors Affecting Courseware Development

From the total population of 50 developers, 34 responded to the questionnaire so the return rate was 68%. Out of this, there were 6 females and 28 males. Sixteen (16) of these respondents were in the age bracket of 31-35, with 13 in age range 36-45, 2 between 25-30 years and 3 between 46-50 and above. It was not surprising then that most of them, 25 out of 34 indicated that they had their own computers and were bringing them from home. Others were using departmental ones and sometimes had to share with others in the office. To a question of how respondents would rate the quality of the training contents, most of them, 29 out of 32 rated the sessions good and excellent with 3 rating them as fair as in Table 1.

Table 1: How do you rate the quality of the training materials?

		Rank		
		Student	Tutor	Total
13b. How do you rate the quality of the training materials?	Fair	5	6	11
	Good	11	7	18
	Excellent	2	1	3
Total		18	14	32

This was supported during the interviews where almost everyone admitted that the sessions were educative, timely for their literature reviews, practical and a lot of hands-on work. This was what some respondents said:

*Well it has been very helpful going thru the lectures that were given by professor I think that we had a very good exposure to the DE program for me and then the other experience we had was on the hands on at WESCO it was very useful. [*Lecturer, Adjah]

This one was more or less practical base, you were not just being taught but you were also partake in that you were following the instructor each step of the way so that at the end of the day I realise that I had both the theoretical skills as well as the hands on practical skills. [Student-Cosmos]

Again, another factor that positively influenced the development process was the collaborative manner in which some lecturers and students worked on their courseware. All three students that were interviewed appreciated the team work, support and guidance that they received from their lecturers and colleague students as well as the instructional designers even though there were other comments which affected some teams negatively. This was what a student and a lecturer had to say:

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What helped me was that I worked with 'Akosua' so anytime I had a problem I asked for her help and in time of difficulty we put our heads together and find a solution, where we could not we called 'Ray' [the instructional designer] *to help us out.* [Student-Ben]

Yes, the assistants were very useful I was even surprised at how they worked so fast and able to catch the tits and bits that most lecturers were finding it as a problem... [Lecturer Opon]

My TA [Teaching assistant*] was good, Akosua she helped me a lot. She even mind to get other information and brought and then we shared before adding it to the …the work. She really helped me a lot. And I think that system even helped this work to go fast.* [Lecturer- Alany]

What can be gathered from Ben and Opon is that collaboration is critically needed during courseware development. Alany, who was a mentor stressed how the student/assistant helped him with the work. This supports Spender's (2001) assertion that to develop quality courseware, specialized roles and experts are needed at all stages. The students who were graduate students were already reading and writing their thesis. The exercise therefore gave them the opportunity to expand their scope to help their lecturers who served as 'mentors' to them. The teams worked together, shared ideas as colleagues on the job. There was collegiality in developing the materials online.

In a similar vein, the vast knowledge on the internet whereby a click of the button could lead a developer to so much information was an influence on developers, especially the students. Some indicated that:

There was so much information on the internet, on every aspect of knowledge; whichever word you type in you get different forms of it images, video recording as well as content. Then you also realise that it is so very convenient. You do it at your own time. Also, with regards to the convenience were ever you are you just have it. [Student- Justie].

To me as a lecturer it has increased my capacity to do a lot ... use the computer as a search engine to look for additional information not for the courseware alone but for lecturing students on the regular programme. Gathering material to lecture students in my field of err of the various courses ... [Lecturer, Ame]

Still, other factors that developers considered as having affected the process positively was the new knowledge and skills being gained on the programme. This was seen as an asset for the future. The continuous readings and expansion of their literature reviews became a regular activity as they got introduced to new articles, videos and many more materials in their field of study. In addition, the concept of self-directed or self-discovery learning became real to them during this exercise. Two students comments were that:

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I*t makes you marketable; some of the courses we are even developing for the students we have not learnt it ourselves but because of this programme you need to read it and in doing so it was adding to what I know already. Some of the courses too we were never thought on the graduate programme but because of this programme I watched the videos on topics and reading the books, I've learnt a lot. [Student-* Akos]

... we were given the opportunity ... you do whatever you can do and if you are stuck somewhere you call somebody and someone is at your aid if you don't know where to move at every point there was somebody is there to help you. [Student- Ben]

Challenges Encountered by Courseware Developers in the Process of Design

In spite of the usefulness that developers found the exercise to be, there were challenges that they encountered which need to be considered in future exercises. Respondents narrated challenges that included; time constraints, workload involved, lack of financial motivation, limited resources, slow internet connectivity and a few other misunderstanding among some team members. The commonest among these were the lack of resources and the internet connectivity, which almost all of them mentioned. This was what two of them said:

It was the accessibility to the internet, you know on campus it was difficult to get it sometimes…especially at the South Campus; most of the time it was either slow or… or not even available ...[Lecturer, Joeanin]

Then also the issue of internet services ... at the beginning it was not easy. You know we got to the computer lab at IEDE we were told that even though they told them verbally, official communication had not taken place so we had to wait. And sometimes you see us sitting outside on the verandah there trying to get internet services. Anyway, with time those issues were sorted out. [Student, Cos]

This is a prerequisite for an effective courseware development implementation. Internet connectivity or infrastructure development in developing countries is gradually improving even though it still persists as a challenge. Nonetheless, developers found a way of getting around it as admitted by the student. Some also indicated acquiring mobile modems to help them work at all times.

One of the biggest challenges faced by developers was time constraint in doing the work. This was indicated by both lecturers and students. considering the fact that lecturers were already loaded with their regular work, which embodies large class sizes, this was seen as an extra work load that needed time to accomplish. It was not surprising therefore that they were unhappy about the lack of financial motivation from the administrators. These were comments from two of them:

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I think people need to have a timetable of what is being done; so you can prepare yourself since we have a lot on our hands already. Again, we are using our personal laptops for this academic exercise ... this courseware developments…you know our laptops are already loaded so….if err.. people were well resourced in terms of laptops, in terms of modems so that they can easily work on their materials wherever you find yourself I think that would have been very appropriate... [Lecturer, Ame]

So the little time that you may have ... there are other additional jobs that you can do somewhere but ... if people are well resourced, well motivated financially, I think our colleagues will get the interest to join and be part of the programme. [Lecturer, Ayal]

This is evident in the literature as asserted by Helen (2006) in Kamaruddin (2010). She indicated that to create a great interface in courseware development the emphasis should be on time consuming, money and skill of the developers. In this regard, some of the critical challenges should not be underestimated. In other words, for developers to be committed, administrators would have to support in all aspects of the process. Similarly, the students commented on the workload from their perspective as it being enormous and unexpected.

... but the difficulty comes when you have to read materials to upload. Because sometimes you have the material but it is bulky so you can't just upload it. With the heading, you have to read and know which part to upload and which part not to upload and listen to videos, it is too much work. You know the difficulty comes So the little time that you may have ... there are other additional jobs that you can do somewhere but ... if people are well resourced, well motivated financially, I think our colleagues will get the interest to join and be part of the programme. [Student, Akos]

in when you have to upload things on the moodle sit down for so many minutes, listen and watch videos, watch so many videos and decide which ones to upload. It is really time consuming. [Student, Cos]

From their submissions, it can be understood that the courseware development is not merely a simple process of converting a printed module with exercises into an electronic format as some initially thought. Rather, it is a thought through, planning and structuring the whole process to be able to deliver quality courseware that is interactive as argued by Kamaruddin (2010).

The diversity and complex mixture of students call for caution when matching or pairing students and lecturers in such an exercise. It was the assumption of Administrators of the programme that merely pairing a lecturer and student in the same subject area would work. But the evidence is that certain factors such as personal and cultural values and well as interpersonal relationship elements need to be taken into consideration. This was a comment from a student:

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Another problem was that some of the lecturers were initially a bit hostile. They thought we were coming to hijack or take their contract from them so their attitudes were very negative. If a person gets such a notion he may indirectly influence the work ... [Student, Jus]

This understanding calls for some degree of background search of individuals that will be engaed and paired to work as a team for collegiality and effectiveness of the process.

Suggestions for Improvement

Most respondents made valuable suggestions for similar exercises in future. They suggested engaging all experts before starting. Considering the usefulness of the exercise, they indicated that all students and lecturers should be exposed to it.

In training people or developing courseware you need all categories of people to be present, for instance you'll need the instructional designer, you need the course content expert, you need technical assistants and others then support from administrators financially, provide resources and so many things. We didn't see much in this exercise. [Lecturer, Rubbi]

As an M.Phil student, I will suggest that all students should be taken through this program. Because doing this course it has help me to draw a course outline, course description etc. If not this course I wouldn't have known how do to it. I was talking with friend and I said I was designing a course outline he asked whether I was already a lecturer I said I was just learning it on the programme. Now if they give me a course to teach with this experience I should be able to draw a course outline and description ... [Student, Jus]

Sincerely, I will recommend that periodically lecturers are taking through such experiences to upgrade their knowledge and learn from other lecturers somewhere when they are uploading videos and other works from other journal and so on and so forth so I think that within if we could ask other all lectures to go through the experience.[Lecturer, Opon]

CONCLUSION

The objective of this paper was to gain an insight into the challenges and lessons learned from courseware developers during the process. Based on the findings from respondents it has emerged that various elements need to be considered when implementing courseware development activities. Respondents have highlighted many factors that influence the process positively encouraging them to be part of such an exercise. The factors include; the opportunity to work collaboratively with their lecturers and students in a collegial relationship, the exposure to an enormous amount of information on the internet and how to access them, new knowledge and skills gained, which seem to be an asset for an employable life and the opportunity to add to their existing professional practice. On the other hand, respondents also emphasized on some factors,

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which were barriers that have the potential to discourage them from embarking on such an activity. The factors include: the time constraints they had in doing the work, the enormous workload which was not attracting adequate financial motivation, lack of resources, inconsistent connectivity and power and on a few occasion interpersonal clashes as individuals worked in teams. These findings call for negotiations and planning when organizing future courseware development.

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