Faculty Attitudes and Use of Moodle Course Management System as a Supplement to Face-to-Face Instruction: A Jordanian Case Study

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Abstract

This study examined faculty members' attitudes and use of various Moodle CMS tools at Zarqa Private University in Jordan. This is a qualitative study were two sources of data collection were used. They were interviews with 28 faculty members and document analysis of samples of their teaching materials.

The results indicated that instructors hold a strong interest in using Moodle, and they see it as an effective tool for enhancing teaching and learning. However, much of faculty' use focused on tools that help them manage large classes and distribute course materials, without changing the teaching process or course content.

In addition, the study revealed that the most important factors that motivate faculty to use Moodle tools were the convenient distribution of class materials, the opportunity to enhance the communication with students, and the opportunity to improve students learning. The most important inhibiting factors in the use of Moodle were the increase of workload and difficulty of time management, students' lack of technological skills or access to technology, and the lack of professional development programs for effective use of the Moodle tools.

Key words: higher education, course management system (CMS), moodle, e-learning, technology, teaching and learning.

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اتجاهات أعضاء هيئة التدريس ومدى استخدامهم نظام إدارة المساق (الموديل) كأداة مساندة لزيادة فعالية عملية التدريس التقليدية : دراسة حالة في الأردن

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الملخص

هدفت هذه الدراسة إلى تقصي اتجاهات أعضاء هيئة التدريس ومدى استخدامهم نظام إدارة المساق (الموديل) في جامعة الزرقاء الخاصة في الأردن. وتعد هذه الدراسة من الدراسات النوعية، فقد استخدم الباحث فيها المقابلات الشخصية مع ٢٨ عضو هيئة تدريس وقام بتحليل نماذج من المواد التعليمية لهم.

وقد أشارت النتائج إلى أن أعضاء هيئة التدريس لديهم رغبة قوية في استخدام نظام الموديل ويرون أنه وسيلة فعالة لإثراء التدريس والتعلم. ومع ذلك، فقد ركز معظم المشاركين في الدراسة على استخدام الأدوات التي تساعدهم على إدارة الفصول كبيرة الحجم وتوزيع المواد التعليمية على الطلبة دون إحداث أي تغييرات جوهرية على العملية التدريسية أو محتوى المساق.

كما بينت الدراسة أن أهم العوامل التي تشجع أعضاء هيئة التدريس على استخدام أدوات الموديل هي: سهولة توزيع المواد التعليمية، وزيادة إمكانية التواصل مع الطلاب، وتحسين عملية التعلم. أما أهم العوامل التي تقلل من استخدام عضو هيئة التدريس لنظام الموديل فهي: زيادة عبء العمل وصعوبة إدارة الوقت، وعدم امتلاك الطلاب مهارات استخدام التقنيات أوعدم توافر التكنولوجيا لديهم، وعدم توافر برامج التطوير المهني لاستخدام نظام الموديل بفعالية.

الكلمات المفتاحية: التعليم العالي، نظام إدارة المساق، الموديل، التعلم الإلكتروني، التقنيات، التدريس والتعلم.

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Introduction

Course management systems (CMS), also called learning management systems (LMS) or virtual learning environments (VLE) are "comprehensive software packages that support some or all aspects of course preparation, delivery, communication, participation and interaction and allows these aspects to be accessible via a network" (Collis & Boer, 2004). According to Meerts (2003), CMS have become ubiquitous on our campuses and have evolved from simple HTML based one-way communication tools between faculty and students to multifunctional enterprise level applications. It is a way to enable instructors who do not have web design skills to be able to easily create a web accompaniment to their courses. While these tools were initially developed for use in distance education pedagogies, their use to compliment traditional courses is now considered a viable and preferred option.

Course management systems (CMSs) have become mission critical systems for educational institutions. According to Simonson (2007) the need for CMSs has become a significant one for colleges and universities, and going back to instruction without an adequate CMS is no longer seen as acceptable by most students and faculty members. Behind only the Internet and common office software, course management systems are now probably the most used educational technologies in higher education institutions. Those tools are being used by over than 95% of colleges and universities in the United States (Pollack, 2003). Actually, it is surprising just how quickly the CMS tool has taken hold of higher educational institutions, which are usually known for their grip on traditional forms of teaching and for their

reluctance towards change (West, Waddoups, & Graham, 2007a).

There are two categories of CMSs, they are proprietary and open source. Proprietary, single vendor systems (such as WebCT and Blackboard) are software products that are purchased or licensed from one vendor. These systems are installed and used by the institution. On the other hand, open-source course management systems are free educational software that are maintained by users who implement, even modify, and ultimately support their system to meet local, specific needs. There are many open-source or freely distributed CMS products, such as the Manhattan Virtual Classroom Project, Sakai Project, and Moodle (West, Waddoups, Kennedy, Graham, 2007b).

The name Moodle is an acronym of Modular Object Oriented Dynamic Learning Environment (Wikipedia, 2006). It was created in Australia by Martin Dougiamas as part of a research project to answer the question how can Internet software successfully support social constructionist epistemologies of teaching and learning? More specifically, the research was designed to study which web features encourage or act as barriers to community based e-learning (Winter, 2006).

Moodle is freely available as open source software, and it is flexible and easy to modify. It is highly modular, and supports a large active community worldwide, including programmers who are continually modifying and expanding its code. Such modifications are incorporated into the main software, and thus the project continually develops and expands to reflect the needs and interests of the Moodle community (Winter, 2006). In contrast to other CMSs, Moodle is beginning to stand out as a very convenient and financially available for instructors and students worldwide. As of the fall of 2007, Moodle claimed to have over 14 million users, with over 35,000 sites in 195 countries (Hargadon, 2008); however, since there is no requirement for registration when using Moodle, there are no definitive statistics on the actual number of total implementations. Moodle had the largest market share of CMSs in small companies. There is a considerable degree of interest in Moodle in higher education for its e-learning applications citing its ease of use, robust user and developer community, functionality of tools valued by educators, and its rich set of administrator tools (Hargadon, 2008).

Using Moodle to supplement classes provides many advantages for students and instructors. To be specific, the Moodle environment includes a platform for several features including: class schedule, assignments, participant profiles, chats, wikis, an interactiveglossary, e-mail, lessons that the instructor can create, quizzes, surveys, and workshops. Moodle has been built to support a «social constructionist pedagogy,» which is based on the active contribution and collaboration of the students. For instance, workshops, which include an adaptable rubric, allow students to engage in peer feedback as well as self-assessment. Wikis, forums, and chats serve as useful platforms for brainstorming, discussions, and debates. On the instructor's side, Moodle provides several benefits. Instructors can monitor student on-line behavior in a secure environment. They can create and deliver lessons, which the students can access independently, or in groups. In addition, they can post resources, including text or links to web pages that the students can use to complete their assignments and for further independent learning. Feedback for any task can be given in plain text or HTML (Hargadon, 2008; Robb, 2004).

Research on CMS tools reports that a majority of institutions invested a large amount of its resources on building technology infrastructure and offering some forms of e-learning professional development for faculty. These efforts created both opportunities and challenges for colleges to provide services that will assist faculty in designing and implementing CMS applications to supplement their instruction (Murdock, 2006; West et al., 2007b).

Despite the expanding adoption of CMS as a mean to develop e-learning materials and activities, faculty members at higher education institutions have been slow to embrace changes in technology (Ishtaiwa, 2006; Murdock, 2006). With training and technological support, the number of faculty members who utilize CMS tools in their teaching is increasing (Cavanaugh, 2005). However, many faculty members still are skeptical about integrating those tools as an integral part of the teaching and learning process (Maguire, 2006). CMS adopters can be split into two broad groups: early adopters and followers. Early adopters are characterized as faculty members who comfortable with new technologies and eager to try the new

innovations in the teaching and learning process. They take great pleasure in trying the newest tools. Followers are more apprehensive and cautious individuals, perhaps not so technological literate, who need to wait and see how things work (Harrington, Gordon, & Schibik, 2004).

Even those faculty members considered CMS users; early research indicated that they implement mainly the parts of functions that replace older techniques for reproducing and distributing documents (Bongalos et al., 2006; Garrote & Pettersson, 2007; Morgan, 2003; West et al., 2007b). For instance, Morgan (2003) examined the use of CMS by the faculty of University of Wisconsin. Three methods for collecting data were used. There were interviews (n= 140 faculty members and staff), surveys (n= 740 faculty and instructional staff), and examining six CMS user logs. He found that the use of CMS tools is increasing rapidly, but much of that use is concentrated on the content presentation applications. Faculty members were much slower to utilize more complicated or interactive parts of CMS such as, discussion or quiz tools.

In another study, Garrote and Pettersson (2007) examined lecturers' attitudes towards Course management systems (CMS), with particular reference to identifying obstacles to increased use. At the University College of Boras, Sweden, 22 lecturers who had used WebCT were interviewed. Almost all lecturers used the institution>s CMS to distribute material that would otherwise have been handed out as paper copies. Approximately half of the lecturers have used communication tools, such as email, discussion forums or chat, and almost half of them have used tools that allow students to take tests and hand in assignments. The remaining tools are infrequently used, except by a small group of lecturers.

In their study, West, et al., (2007b) investigated the impact of the implementation of a CMS (Blackboard) on students and faculty at the university of Georgia, the benefits, and challenges from supporting this tool on an institution-wide basis. A combination of surveys (n=124 instructors; 163 students), call-log analysis (n=1,341), and interviews (n=48) was used for collecting data. The study findings concluded that instructors and students are moderately satisfied with the course management tool, but only if it is stable. However, there were only four features regularly used, primarily to

increase the efficient transfer of information from teacher to student.

In term of studying the adoption and diffusion of CMS technologies, one study was found that attempted to look at faculty perceptions as they participated in a CMS training program. Bennett and Bennett (2003) administered a pre- and post-version of a survey to 20 instructors, measuring their perceptions of their own abilities in using the tool, the impact the technology could have on student learning, and the usefulness of the tool. Attitudes in all of these areas improved, seeming to indicate that the training would improve the likelihood of instructor adoption of Blackboard.

Such findings suggest that the issue is not about purchasing or up keeping CMS tools on universities' campuses. The challenge is finding ways to convince faculty of the value of these tools, and motivate them to enhance their levels of effective use. E-learning innovation involves more than the physical infrastructure of an institution. It also involves the human infrastructure (West et al., 2007a). Rogers (2003) concluded that the innovation rate of technology adoption is determined by many factors such as the individuals' perceptions of and experiences with the advantages of the innovations, the difficulties and limitations for potential uses, and the need for social understanding. Webster and Hackley (1997) suggested that three teacher characteristics strongly affect learning outcomes. They are attitude towards technology, teaching style, and control of technology. They maintain that students will experience more positive learning if guided by an instructor who has a positive attitude towards technology and exhibits more control over it. For CMS to be an effective means of instruction, higher education institutions need to understand the important factors influencing faculty members' decision to use or not to use any part of CMS applications.

Research on faculty motivation indicates that the desire of an individual to participate in a given activity is influenced by such characteristics as age, race, gender, and social knowledge, and environmental characteristics including institutional norms, access to resources, and the system of faculty governance (Blackburn & Lawrence, 1995). Although research studies show that individual and environmental characteristics play an important role in promoting successful learning and productive behavior, there is an

on-going debate about the significance of these factors as they relate to intrinsic and extrinsic influences (Ishtaiwa, 2006).

Intrinsic motivation refers to an individual's desire to participate in a given activity for the activity itself (Deci & Ryan, 2000). It includes influences that lie within the individual or task, such as feelings of self-satisfaction, belief that one's efforts make a difference, and being appreciated by others (Bess, 1997). Extrinsic motivation as defined by Deci and Ryan (2000) refers to an individual's desire to participate in an activity for something other than the activity itself. It includes factors that lie outside the individual or the task being performed, such as salaries, promotions, and reassigned time.

Several studies have examined the factors that motivate faculty to use some or all CMS tools. They included a mix of intrinsic and extrinsic factors. The most common factors included improvement of classroom management, improvement the level of faculty-student communications, personal motivation to use technology, students' access to course materials, convenience and transparency of the online grad book, and pressure from colleagues and administrators (Garrote & Pettersson, 2007; Morgan, 2003; West et al., 2007b).

On the other hand, the research literature has linked faculty reluctance to utilize CMS tools to lack of institutional support and professional development programs, work load, the inflexibility and difficulty to use, lack of release time for planning and restructuring courses, and negative perceptions of the value of technology (Cavanaugh, 2005; Morgan, 2003; West et al., 2007b).

In term of the comparison between the kinds of CMS tools, numerous research studies positively evaluate Moodle over other CMS. For example, Goba et al. (2004) at the University of Cape Town's computer science department investigated various existing course management systems. An evaluation of four different tools showed that the Moodle CMS offered the most benefits in terms of the services and features that it offers to its users. Similarly, Graf and List (2005), evaluated, through detailed academic analysis, Moodle against other on-line course management systems, demonstrating its positive features and concluding on its potentialities. The Moodle' superior characteristics for instructors worldwide as concluded by

Schulte-Mecklenbeck (2004) are: Handling is easy and intuitive, community support is great, and there is the possibility of suggesting new features and working on them in the spirit of open source software.

The previous studies provided valuable information about the CMS tools that faculty used and issues that influenced their use. This information greatly contributed to the current study, particularly in relation to making this study as one of the first studies in Jordan of its kind and in constructing the interview guide. However, the literature lacks a discussion of cultural and contextual influences regarding CMS in higher education institutions. Attitudes and use can differ based on the academic structure, educational goals, and the culture of an institution (Berge, 1998; Maguire, 2006). Jordan like other countries is involved in an educational renewal effort to use digital technologies more effectively. A major goal is to enable the higher educational system to move away from instructional strategies that focus on lecturing and recall examinations to an e-learning environment that uses computer technologies and the Internet more effectively in each of its programs of study, and one in which the students are more actively engaged in the learning process. Therefore, this study had attempted to identify faculty members' attitudes and experiences of Moodle CMS at Zarqa Private University in Jordan. Understanding such issues will guide researchers, administrators, and legislators in establishing e-learning environments that assist faculty to deal with the change affecting them. Otherwise, they will not be able to offer appropriate resources and policies to spread the power of the new innovation.

The Purpose of the Study

The rapid adoption of Moodle CMS has raised questions concerning faculty beliefs and attitudes about the value of instruction delivered through those technologies. The primary purpose of this study was to examine the Jordanian faculty current use of various Moodle applications for classroom instruction and communication with and among students, their general attitudes toward Moodle applications, and issues that shape their decisions to use those tools or not.

The Research Questions

Considering the cost and effort required to support Moodle CMS on our campus, it is imperative to think of faculty members' attitudes and use of Moodle as a Supplement to their class instructions. In particular, this study seeks to provide insight into the following questions:

1- What Moodle tools did faculty members use and in what ways?

2- What is the overall profile of faculty members' attitudes towards Moodle use?

3- What impact does Moodle have on their classroom instruction?

4- What are the factors influencing faculty members use of Moodle in their teaching?

Significance of the Study

In contributing to the body of CMS and e-learning research literature, this study is expected to have the following significance regarding the implementation of Moodle CMS in Jordan:

1- Providing valuable insights about faculty use and attitudes of Moodle. This information may be used by policymakers and administrators to develop e-learning support structures and incentives necessary to lead to more rapid and effective implementation of Moodle CMS tools as an integral part of the teaching and learning process.

2- Leading to further research in the area of e-learning course development in higher education depending on the analysis of data collected within this study.

Limitations of the Study

There were several limitations to this study. The first one was the population of the study. Only full time faculty members at ZPU, who used Moodle CMS as a Supplement to their Instruction during the first semester of the academic year 2008- 2009 participated in the research. Thus, the results cannot be generalized to any other university. Attitudes toward and use of CMS could differ based on the size and location of each institution, and the specific faculty members.

Another limitation of the study was the size of the sample of the study. Although the 28 participants was a large enough number to meet

the conventions of qualitative research, it is small for the findings to be generalized. Another closely related limitation was the study focused on faculty members' attitudes and use of Moodle as a supplement to face-to-face instruction, but did not use other software to compare with the Moodle software.

Definition of Terms

The following definitions were addressed for this study:

E-learning: An innovative development in education that uses information and communication technology to improve teaching and learning, and promote educational interaction between instructors and students in traditional face-to-face classrooms, hybrid courses, or online distance learning courses.

Course management System (CMS): comprehensive software packages that support some or all aspects of course preparation, delivery, communication, participation and interaction and allows these aspects to be accessible via a network (Collis & Boer, 2004).

Moodle: A free, Open Source software package designed using sound pedagogical principles, to help educators create effective online learning activities.

Motivating factors: Issues related to the factors that encourage faculty members to integrate Moodle tools in their teaching and learning process.

Inhibiting factors: Issues related to the factors that hinder faculty members' wide and effective use of Moodle tools as a part of their instruction.

Methodology

This study used qualitative research methodology to gather evidence and data to answer the research questions. The choice of qualitative methodology was most suitable for this study were the participants are targeted for their knowledge and expertise of phenomenon under study. According to Taylor and Bogdan (1998), qualitative methodology refers to "research that produces descriptive data, it represents the observable behavior and people's own spoken or written words" (p. 7). The Methodology describes the research design which includes participants selected from the population, data

collection methods (interviews and documents analysis) and procedures of data analysis such as creating codes, noting any reflections or remarks, creating codes for identifying similar patterns, themes, and common sequences in the data set, creating a set of generalizations, and writing the final report.

Participants

The site of the study was Zarqa Private University (ZPU) located in Zarqa city in Jordan. ZPU is a private university that welcomed the first group of students in 1994. The number of students enrolled at ZPU during the academic year 2008/2009 is 5400 students. The number of academic staff members in the academic year 2008/2009 is 186. The academic staff is distributed as the following in Table 1.

Table 1
Number of Academic Staff by Rank

Status	Prof.	Assoc. Prof.	Asst. Prof.	Lecturer	Total
Number	10	24	98	54	186

The university is structured into nine faculties that are responsible for teaching 26 programs. The faculties are: Faculty of Islamic studies, Arts, Sciences and Information Technology, Economics and Administrative Sciences, Educational Sciences, Law, Allied Medical Sciences, Nursing, and Engineering.

The investigation covers all faculty members at ZPU, who used Moodle CMS as a Supplement to their Instruction during the first semester of the academic year 2008-2009. The population was mapped using a list of faculty members in all courses given at ZPU during the time frame and a list of the courses registered in the institution's Moodle CMS. Thus 103 faculty members were registered as Moodle users.

In sampling participants for the interviews, faculty members originally were selected randomly from every school on campus, and requested participation by email. When we did not receive enough participation from some faculties, we continued to randomly select other instructors from that school to petition for participation.

Because much of our sample represented Moodle users who employed the same tools in very similar ways, theoretical sampling was employed (Glaser & Strauss, 1967) in order to find users who integrated different features of the Moodle CMS. Theoretical sampling could verify how our developing ideas matched the experiences of different kinds of users. For our theoretical sampling, we asked participants in the interviews if they knew of somebody in their school who used Moodle in different, creative, or effective ways. We also used theoretical sampling to help fill holes that existed from a lack of sample in any demographical area. For example, when we found we had not interviewed any participants from Faculty of Islamic studies and faculty of law, we purposefully focused on obtaining participation from those two particular schools. Our final sample consisted of 28 full-time faculty members drawn from all faculties at the university. They represented a spectrum of ages (33-51), and teaching experience (2-16). Among them, 11 considered themselves as Moodle experts, 12 thought of themselves as intermediate-level users and five designated themselves as novice users. These variations were useful to get broader perspectives about Moodle CMS from different faculty at different levels of professional engagement (see Table 2).

Table 2
Description of Participants by College and Gender

College	Gender		Total
	Male	**Female**	
Economics and Administrative Sciences	5	1	6
Sciences and Information Technology	3	2	5
Arts	2	3	5
Allied Medical Sciences	2	1	3
Nursing	-	3	3
Educational Sciences	2	1	3
Law	1	-	1
Islamic studies	1	-	1
Engineering	1	-	1
Total	17	11	28

Data Collection and Data Analysis

The study relied on the collection of data from participants through semi-

structured individual interviews and document analysis. Semi-structured interviews were employed to obtain in-depth perspectives, personal stories, and personal contexts of the participants. The interview questions were developed from the literature review, research questions, and the researcher's experience in the field. They dealt with the following areas of inquiry:

1- Individual Moodle CMS background and use,

2- Impact of Moodle on the teaching and learning process,

3- Faculty members' attitudes towards Moodle use,

4- Perspectives regarding factors that influence the use of Moodle tools.

Once the initial interview guide was developed, it was submitted to a panel of six experts in the field of curriculum and instruction, instructional technology, and research and evaluation at Hashemite University and Zarqa Private University. Experts were asked to judge the questions for their quality and adequacy to achieve the goals of the study. Based on that, three questions were rewritten, and one item was added. To pilot the interview process, the researchers interviewed four faculty members (two males and two females) who were not participants in the actual study. Questions and comments raised during these interviews helped the researcher to further clarify the intentions of the study, and the wording of the questions. However, they did not lead to the addition or deletion to the list of preliminary questions. This piloting process was valuable in improving confidence that the interview questions were easy to understand, and would generate data congruent with the purposes of the study. The questions were presented and discussed in Arabic. Then translations were made by the researcher.

In the beginning, the interviews elicited more descriptive, or substantive information (Glaser, 1978), such as which features of Moodle were used, what motivated faculty to utilize new features, and what faculty considered the impact to be of using Moodle in their teaching. As the research progressed, and patterns began to develop, less time was spent asking what features faculty members used, didn't use, etc., and more time was spent exploring with the instructors the reasons why they used the features they did, and what the impacts on their teaching had been. Each participant was interviewed one time for 45-60 minutes. Each interview was audio taped and transcribed.

A secondary data source for this study was document analysis. A variety of documents were collected, including participants' lesson plans, instructional web pages, handouts and assignments, on-line quizzes, e-mails, slides from faculty's PowerPoint presentations, examples of students' electronic activities and assignments, and samples of instructors' feedback.

Miles and Huberman (1994) offered guidelines to analyze qualitative data. They include creating codes for the field notes drawn from interviews, noting any reflections or remarks in the margins, creating codes for identifying similar patterns, themes, and common sequences in the data set, and creating a set of generalizations that derive from the available data. To analyze the data drawn from interviews, ideas for possible themes in an evaluation journal and in memos were written during collecting data attached to interview transcripts. As a result of doing this, categories in the data grew more evident. Later, the qualitative research tool Hyper Research (http://www.researchware.com/) was used to help manage the data. That included two steps. First, setting up the major categories the study was interested in as (usage, impact, perspectives, motivation, and obstacles). Second, a constant-comparison approach within these categories was employed to determine the sub-categories, properties, and relationships existing in these categories. The constant comparison approach (Glaser & Strauss, 1967) is an analytical method where the researcher first compares a portion of the data with another portion, determines whether they are alike or different, and then creates categories to represent these differences. New data are then compared against existing categories until a complex coding structure emerges.

This process of constant comparison yielded many codes, which were used to code all of the interview transcripts. Once all of the transcripts were coded, each domain was re-analyzed to synthesize and determine the relationships between the codes and to identify the key findings relevant to each particular domain.

Establishing Trustworthiness of Qualitative Data

There are two important elements to judging the value of a qualitative study: the internal and external validity of the project. Internal validity

in qualitative data was defined as pertaining to how closely the findings match reality (Merriam, 1998). Methods commonly used to establish internal validity include triangulation, peer debriefing, member checking, and negative case analysis. For this Study, the researcher emphasized using triangulation, peer debriefing techniques and member checking to validate the descriptions of the data and the interpretations. The researcher triangulated the findings between interviews and documents analysis from multiple academic departments, and he checked the final descriptions of the cases with the participants to ensure they were accurate portrayals of their experiences.

External validity is "concerned with the extent to which the findings of one study can be applied to other situations" (Merriam, 1998, p. 207). According to Merriam (1998), external validity can be increased through rich, thick description. She also emphasizes the importance of multi-site designs, or research designs that require collecting data at multiple sites and in different situations. In this study, attempts were made to provide as much thick description as possible while addressing all of the diverse aspects of our findings by utilizing quotes from the interviews and case studies. Moreover, the study was designed to study many multiple contexts by taking cases from as many departments as possible, and represented faculty differences in gender, teaching experience, technology expertise, and other factors. A research journal was also kept to describe thoughts and steps were taken to complete this study.

Results of the Study
Results Related to the First Question

The first research question in this study was "What Moodle features did faculty members use and in what ways?" Based on the analysis of data collected from participants, it was concluded that faculty members at ZPU vary in their levels of perceived e-learning expertise and their levels of Moodle implementation. Participants were asked to select from a list of tools the ones that they use as a part of classroom instructions and for student interaction, and to indicate the frequency of use.

The study indicated that while faculty members hold a strong interest

in using Moodle tools, much of their use focused on tools that help them manage large classes and replace existing technology, such as copying machines and overhead projectors. All participants used the Moodle to distribute course materials that would otherwise have been handed out as hard copies. For the most part, instructors enjoyed using PowerPoint and Moodle to deliver their instructional materials, and they seemed to feel that the two tools compliment each other. As evidenced in a participant's response: "My experience with the Moodle is very well established as I use it more often in my courses that I teach. It is a huge communication and information system, which will reform our school. I adopted the Moodle because most of my students like it. I try to focus on different ways of teaching to bring in all tools that may help them to learn. They learn more by using different methods; they seem to be so much more excited about sitting down at a computer than sitting down with a paper and a pen to learn something new. As a result I make sure to post required readings and other related materials on the course web page"

A novice technology user stated that: "The more I practice the Moodle, the more skills I get at using the program and solving problems. For now I only focus on posting class syllabus, announcements, lectures notes or presentations, required readings, and links to discipline- related sites. Hopefully in the future I will be able to use other features".

The second most adopted application was the use of communication tools. Using emails to support online communication was frequently cited as an important teaching tool. Twenty six participants reported that they used emails to communicate with their students on a regular basis. A participant stated that: "I believe that it is the time to use the Moodle extensively in my classrooms and students should learn how to use it for the purpose of class work. Moodle system is a valuable communication tool. I can communicate electronically with my students from different locations and also students communicate with their peers to discuss different topics in a dynamic learning environment. It is a good teaching tool".

On the other hand, participants' comments indicated that communication tools such as wiki, blogs, or chat were not in much use. Only eight participants reported that they use such applications few times each semester. For

instance, a motivated participant described her experience with the Moodle communication tools as following: "Wiki and Chat provide opportunities for collaborative teaching and learning. It enabled me to cover some topics I teach in a way that would not have really been possible without it. So students learn more, and I enjoy learning more when they are actively involved. But I use it quite heavily because it needs a huge time for planning and conducting".

Research data revealed there was a minimal use of other applications, such as online quizzes or assignments, surveys, grade books, and group pages for student team projects. Only four participants out of 28 reported that they utilized such applications. An expert technology user stated that: "An example of my use of this innovation is posting a set of questions on the Moodle that required the students to conduct an investigation. I usually group my students in pairs to complete the task. Then I require them to conduct some research using the class text, and to find some World Wide Websites that relevant. After completing the task that incorporated investigation, research, analysis, and problem-solving, I ask them to summit their work electronically".

These findings are summarized in Table 3 by application, number, and percentage of participants' use.

Table 3
Number of Faculty Participating in the Study by Moodle Use

Application	Number	Percent
Distributing class materials	28	100
Using emails to support communication	26	92.8
Wiki, blogs, or chat	8	28.5
Online quizzes, assignments, surveys, grade books, and group pages for students projects	4	14.2

Results Related to the Second Question

Based on the analysis of the data collected regarding participants' response to: What is the overall profile of faculty members' attitudes towards Moodle use? The study indicated that participants hold a strong interest in Moodle CMS; all of them were highly willing and interested in using its applications. Participants used the system in their teaching and learning to

achieve a number of objectives. The most significant objectives included supplementing content presentations, increasing the level of communication with and among student, and improving the class administration. In addition, they were willing to attend more professional development programs to learn about those topics and applications. They see Moodle as an effective and powerful tool for enhancing teaching and learning. They now able to employ information and communication technologies in many and varied ways in their instruction requirements. An evidence of change in participants' efficacy regarding Moodle usage and implementation, one of the participants stated: "I chose to adopt Moodle system because it is a creative way to teach and learn. The system enabled me to communicate with both students and other faculty alike. It gave me access to a number of teaching approaches. Last semester, I posted all my courses materials, I communicated extensively with my students, and I managed some online assignments. I also assessed my students' work online and submit my feedback to them. Using the Moodle just seems like opening up a whole other door to students".

Results Related to the Third Question

The third research question was "What impact does Moodle have on faculty's classroom instruction? The researcher conducted data analysis of faculty members' responses to identify the impact of Moodle on classroom instruction. It was concluded that the common opinion among the participants is the use of Moodle may change some aspects of teaching, communication process, planning and course administration, but will not be enough to ensure that a radical change in faculty's instructional practices would occur. They explained the disability of implementing Moodle tools as integral part of their teaching and learning because of decision makers' unaware of the situations those faculty are facing. Educational decision makers are seeking to shift traditional education dramatically into a new pedagogical environment where faculty members are not adequately familiar with its objectives, content, and learning outcomes. Participants consented that they lack an explicit policy coming from their university or department that defines the specific mechanisms or timetables for implementing Moodle

CMS tools.

Some participants focused on the point of being in a society that has a long and deeply ingrained educational tradition that influences how professors teach, and how students act and learn. For example, the primary roles of professors are to give lectures, assign tasks, give exams, and grade papers. The roles of students are restricted to listening to their professors, taking notes, memorizing information, and recalling it for exams. The educational system represents the culture and political system, and changing this system needs a long time. One participant pointed out: "Moodle system was introduced without much warning and enough preparation. I felt that I was under pressure to use it. I already have little time to prepare my classes as it is so how if I want to use the Moodle system. They expected me to learn about the new technology as well as using it. I am really worried about the new technology. I think that will not going to happen immediately".

Results Related to the Forth Question

In order to answer the question of "What are the factors influencing faculty members use of Moodle in their teaching", factors were divided to motivating factors and inhibiting factors.

1- Important Motivating Factors

Participants identified a range of issues related to the factors that motivate them to integrate Moodle tools in their teaching and learning process. The main issue mentioned by participants was the convenient distribution of class materials. It was common for participants to feel that Moodle saved their time by giving students the access to all kinds of documents related to their course. A participant said: "By using Moodle applications, my teaching job became much convenient. Now I'm not worry about creating documents and passing out to students. All class documents are in the same place. It is much easier for both of us: teacher and students".

The second factor identified by participants was the opportunity to enhance the communication with students. According to most of faculty participated in this study, the Moodle communication tools was used to broaden both the type and amount of communication both across and between groups.

Faculty members have an additional method of communicating with students and students have alternative means of communicating not only with their faculty but with each other. As one participant said: "I can't believe how much more the students and I communicated since I've been using the Moodle. It is possible now to get in touch with my students whenever and wherever. Students can use Moodle to contact me or helping each other. Although it required a lot of my time, I was so happy to give them quick and efficient feedback."

The third motivating factor was the opportunity to improve students learning. Eight participants reported that their motivation to adopt Moodle tools in their teaching came from their intent that such tools positively impacted their students' learning. For example, one participant described how the new technology had enhanced his students' learning: "Moodle is a very powerful tool. I could see the changes in my students' learning. Their interest levels are so much higher, and are willing to do more research. In most of class assignments, I saw that they have produced work that was worthwhile. The new technology helped them to achieve more than ever".

The fourth motivation factor was faculty technological skills. Research data suggested that faculty members who have high self-beliefs about efficacy regarding the use of technology tools will most likely invest time and apply their knowledge to utilize Moodle applications. An expert participant expressed his feeling about his experience in using Moodle tools: "My knowledge in using computers is very well established, and that motivated me to take the advantages of Moodle system without any problem." Another participant said: "Since the Moodle was introduced; I did not hesitate to use it in my teaching. Actually, I get great pleasure in trying the newest technological tools".

The fifth motivator to use the Moodle was the availability of technical support. There was a common opinion among participants about the importance of the technical support as an aspect to ensure their implementation continuity. They emphasized that they cannot be able to integrate the Moodle into their lessons without adequate technical support. A participant expressed the significance of the technical support by saying: "At the beginning, my students wanted electronic copies of my Power Point

Presentations but I didn't know how to get it done. I called the e-learning center to check with them how I can work this out. They told me that technicians are available to help faculty members when needed. Now I have all my materials online. Thankfully, I get help when I need it".

2- Inhibiting Factors

The participants interviewed identified a range of issues that might hinder their wide and effective use of Moodle tools as a part of their instructions. The most important issue concerning participants was workload and time management. The amount of work and time required for the use of the system was raised in all the interviews. There was an agreement among them that Utilization of Moodle CMS needs significant time to rethink, restructure, and re-engineer the course to adapt it for online delivery, attend technical and pedagogical professional training programs, and communicate with and provide feedback to students. For example, a participant included his feelings about the workload and time increases when he said: "Using the Moodle was taking more time away from my other responsibilities. Most of my time is concentrating on preparation of teaching material, finding information and resources, email dialogues, and giving feedback. The new technology puts an extra stress on my life".

Most participants indicated the need to develop additional technological skills in order to cope with the new technologies. Time needed to attend more training programs created a problem of balance between their professional and personal lives. This was most evident in participant's comment: "The amount of work for me has increased incredibly. I do not know how to use many Moodle applications. That means I should ask my colleagues or attend more training which needs time and effort. But I do have other things beside the Moodle".

A second area of concern regarding Moodle CMS utilization was students' lack of technological skills or access to technology. Participants indicated that not all students have the needed technological skills to effectively participate in Moodle applications. As a result they were hesitant about integrating a wide range of such tools. In addition, they consented that reliable technology access was a major factor in determining whether

faculty would plan and use the Moodle in their teaching. Participants revealed that a digital divide exists among students. The access level to technology differs for students who must use a public computer lab versus those who can use the technology in their own homes.

One of the participants mentioned, "Do not you think that having students with no technological skills and access to technology is a major challenge? How can you plan for an online exam while some of your students do not know how to use the computer? How can you create an online activity while many students do not have access to the internet at their homes? There are some computers labs on campus, but it always full of students. As a result, how can I manage large and a diverse group of students is the main issue to think of when I plan to use the Moodle".

The third inhibiting factor identified by interviewed participants was the lack of professional development programs for effective use of the Moodle. The instructors did not struggle in understanding how to use Moodle's features, but how to use these features effectively to achieve their goals. According to some participants, this lack of integration knowledge is deepened because the instructors have not seen any of their colleagues using the features, so they struggle to understand how to apply them to teaching their particular subject matter. They agreed that professional development programs could help them implement Moodle applications as independently as possible. In the same time, participants considered that the kind of professional development programs offered by ZPU is an effective strategy to provide basic knowledge and skills about using technology; however, because of time commitments, teaching styles, and individual levels of proficiency with technology a "one-size-fits-all" professional development program for faculty does not achieve the desired outcomes. As an alternative to the generic model, participants suggested that focused training activities such as one-on-one instruction, face-to-face training, coworker assistance, instructional video tapes, hands-on workshops, and online training may better support faculty's implementation of the Moodle. They stated that failure to support the CMS would likely be disastrous for their long-term e-learning implementation goals.

For example, one instructor said about using the discussion features that:

"for the wiki feature. I just don't know how I'd use it. I don't know how other people use it. The type of class I teach is discussion-based in class. I stay away from that right now because I'm thinking about how I would manage that, I'm thinking it's going to take more time and I'm not willing to invest the cost right now to do that".

Another participant expressed his opinion about the value of technology mentor as an effective way to help faculty to implement the Moodle, he stated, "A single, general, and shot training will not lead me to successful implementation of Moodle tools. There is too much to know in the Moodle. I also lack a lot of technology knowledge and skills. I do want support to put my foot on the right track. For instance, a mentor is a great way. I need some one to help go through the challenges of using new ideas and complicated technologies. Such professional development will impact my work in and outside the classroom. It gives me the opportunity to utilize Moodle applications more frequently and effectively".

Finally, some participants complained about the lack of incentives on incorporating Moodle tools in instruction. They indicated that using such techniques in teaching consumes more time than traditional teaching. Failure to compensate faculty members for this additional workload probably will decreases faculty satisfaction and willingness to use it. They asserted that incentives play an important role in encouraging faculty members to incorporate technology in their instruction. As evidence, a participant concluded, "I do like Moodle CMS. It is very powerful and beneficial in teaching. But the university's policy discourages me from increasing my level of use. Utilizing the new innovations in teaching increased my work load, and consumed much of my time. In the same time, there are no incentives or promotions on that huge effort. For instance, policies that favor research and publication over extensive technology implementation affected technology use".

Discussion

Technology continues to be a key feature of institutional initiatives in higher education. Perhaps no other innovation has resulted in such rapid and widespread use as the Course Management System (CMS). Such systems are

considered ubiquitous on most college campuses (Harrington et al., 2004; West et al., 2007a). In this age of rapid change and uncertainty, there is one thing of which we can be certain. Faculty will need to adapt to change if they are to survive and keep pace with new methods and technologies. They realize the need of change, but implementation of real change is difficult.

This study investigated faculty members' attitudes and use of Moodle. More specifically the study explored the direct users' experiences of the program, and the factors that affected their integration. All participants responded that they liked the Moodle overall. They expressed a high interest to learn the system, because they feel one or two features will provide an efficiency benefit. Instructors want to do what they are already doing faster and easier, and this is often the initial reason why they choose touse the Moodle.

This result was similar to other investigations such as (Garrote & Pettersson, 2007; Bongalos et al., 2006). For instance, Bongalos et al. (2006) concluded that: Interestingly, despite some doubts as to the place of a CMS in their instructional platform, instructors have generally expressed openness, excitement and motivation to learn.

However, Research data indicated that the use of the Moodle in ZPU is limited. Much of the faculty members' use of the Moodle at ZPU was concentrated on specific features. These features were primarily used to increase the efficient transfer of information from instructor to student. Participants used the Moodle to organize information about their courses and to share this information with students in a practical way. They augment their course content with handouts, charts, images, readings, or PowerPoint slides. For instance, they post PowerPoint slides that students might print and bring to class. Slides offer a rich collection of graphic images, and text that students use to review key points and enhance note taking. In other cases, some participants used the program to increase active learning outside classrooms. They created online activities that engage students in reading, writing, and reflecting on course content. In addition, using some online communication tools was frequently cited as a powerful feature. It enables instructors to create and support dynamic learning communities consistent with a social constructivist perspective. The asynchronous

communication tools allow time for reflection, which is beneficial for higher levels of thinking such as analysis, synthesis, and evaluation. These benefits certainly explain some of the wide growth of CMS in on-campus blended courses (Morgan, 2003).

An important result from this investigation is that the use of Moodle may change some aspects of teaching, communication process, planning and course administration, but will not lead to significant changes in learning experience or course content. This situation could be justified by two reasons. First, a comparison of the expectations faculty members have about Moodle and the tools they actually use shows that the average instructor uses the tools he or she believes will make their work easier and save time, if it doesn't take too much of an effort to get started. That means they choose not to use the tools that may have a large impact on education and tend to use the tools that merely facilitate a traditional teaching process.

The second reason that explains the faculty members' use of only few moodle's tools is the university's lack of an explicit policy that defines the specific mechanisms and support structure for implementing Moodle tools. The study shows that the ZPU has relied mostly on the faculty member' initiative to learn and implement the Moodle. It was evident in participants' responses that participants do not have problem in understanding how to use Moodle's tools, but how to use these tools effectively to achieve their goals. In other words, they are struggling to integrate the features successfully into their teaching practice.

Among faculty members, there was a shared vision of improving learning outcomes through the effective use of new technologies. Yet, use of the new technology in itself is not capable of achieving this. It requires innovation, creativity and adequate professional development for instructors and students. Educational policymakers believe that CMS is a mean to improve teaching and learning in higher education system. However, some of them do not seem to fully understand the supportive structures and incentives necessary to enrich and sustain faculty use of those tools. Participants have expressed frustration over things like lack of release time, lack of students' technological skills, lack of professional development for effective use, and lack of incentives. This finding supported the view that technology itself

will not directly change teaching and learning but the way it is incorporated into instruction will certainly be a critical element in its integration. If an institution wants faculty members to use the Moodle and fully exploit its possibilities, it is necessary to have a plan for introduction, support and evaluation. The commitment of some dedicated individuals will not suffice; the institution itself must make a commitment and has to develop a targeted implementation strategy (Collis & Van Der Wende, 2002).

On the other hand, several factors motivated participants to implement Moodle tools. The most important one was the convenient distribution of class materials. All of the interviewees stressed that the pressure they felt to use Moodle in their courses came from students. The students wanted copies of class materials. The Moodle has a standard shell format for every course created, and since the students had access to the system for any course they were taking, the faculty found this was the easiest way to distribute these materials. Once faculty members began using the Moodle, they realized they could cover more material in a single term, which proved beneficial to both faculty and students. The second motivator was the opportunity to enhance communication with students. The email and discussion board features allowed instructors and students to more easily communicate outside of class time, increasing the interaction and opportunity for feedback on performance. Chickering and Gamson (1987) wrote that feedback was a critical element to effective instruction. Many instructors and students felt that CMS made the giving of feedback more efficient, thus allowing instructors to give feedback more quickly and more often.

Other factors were mentioned included opportunity to improve students learning, high self-beliefs about efficacy regarding the use of technology tools, and availability of technical support. These motivations were identified by Sneller (2004) and Suen (2005) as aspects of effective e-learning experiences aligned with four of Chickering and Gamson's (1987) principles: student-faculty contact, cooperation between students, active learning and feedback.

Examining the five motivating factors mentioned by participants suggests that they are more highly motivated by intrinsic factors than extrinsic ones. Although participants in this study focused on intrinsic factors, they

acknowledged the importance of extrinsic motivators.

In summary, the challenge for higher education institutions is to design technologies for learning that draw both from knowledge about human cognition and from practical application of how information and communication technologies can facilitate complex tasks in the workplace.

Conclusion

In this study, we sought to better understand the faculty members' attitudes and use of Moodle CMS as an integral part in their teaching and learning process. The major conclusion of the study can be summarized in the following based on the findings of the research questions:

1- Most faculty members have chosen only to use limited parts of the Moodle system. The most common use is the distribution of documents to students, which faculty members and students found it more efficient compared with handling paper copies.

2- Faculty members hold a strong interest in using Moodle, and they see it as an effective tool for enhancing teaching and learning, but they have doubts about its effects on teaching processes and student performance. It seems that when faculty members decide to use the Moodle, they will use primarily those tools that facilitate their own work without affecting the teaching process.

3- There was a range of issues that shape a faculty's decision regarding using Moodle tools. The most important factors that motivate faculty to use Moodle tools were the convenient distribution of class materials, the opportunity to enhance the communication with students, the opportunity to improve students learning, faculty technological skills, and the availability of technical support. The most important inhibiting factors in the use of Moodle were the increase of workload and difficulty of time management, students' lack of technological skills or access to technology, the lack of professional development programs for effective use of the Moodle tools, and the lack of incentives on incorporating Moodle tools in instruction. From this conclusion, several recommendations were offered.

Recommendations

Several implications derived from this study that should be applied in implementing Moodle CMS to make it more meaningful to and integrative into the teaching and learning conducted by faculty members at ZPU. First, the university should address the challenges faculty encounter in implementing Moodle CMS. As indicated in this study, inhibiting factors negatively impact faculty use of such techniques in their teaching. Thus, institutions of higher education need to address these challenges such as, providing faculty with release time to rethink, restructure, and re-engineer the course to adapt it for CMS use, attend technical and pedagogical professional training programs, and communicate with and provide feedback to students.

Second, ZPU should provide professional development programs for faculty members that focus on the uses of Moodle tools. The results of this study revealed that faculty members vary in their levels of technological expertise. Professional development programs could help them create and implement their e-learning activities as independently as possible. But different time commitments, requirements, teaching and learning styles and levels of proficiency with technology mean a one-size-fits-all training activity for instructors will not work well. A variety of professional development activities should be used, such as one-on-one instruction, face-to-face training, coworker assistance, instructional video tapes, hands-on workshops, and online training. Professional development support for technology use should also focus on what faculty members really do and what they need rather than on mastering tools. Finally, it is recommended that technology training activities be held multiple times during the semester to ensure that all faculty members are able to attend.

Third, a combination of intrinsic and extrinsic motivating incentives should be offered to faculty members. Although this study suggested that faculty members are more likely to use e-learning when motivated by intrinsic factors, they acknowledged the intrinsic ones. Therefore, providing faculty members with a mixture of intrinsic and extrinsic factors is an important step to encourage them to use the program effectively.

Fourth, provide adequate and reliable technologies and technical

infrastructures. The cumulative effect of ICT is the expansion of ways in which individuals can learn, and the availability of more options for instructors and students. By using Moodle CMS, learning becomes more interactive and allows more learner control. But the potential for such an advantage can only be achieved if students and faculty have access to technology that supports effective teaching and learning.

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