

# **Attitude towards E-learning Among Students: Evidence from A Malaysian Public University**

***Yusniza Kamarulzaman, PhD\****

***Department of Marketing, Faculty of Business and Accountancy  
University of Malaya, 50603 Kuala Lumpur, Malaysia***

***E-mail: yusniza@um.edu.my***

***Tel: +603-7967 3915; Fax: +603-7967 3810***

***Azian Madun, PhD***

***Academy of Islamic Studies, University of Malaya, Kuala Lumpur, Malaysia***

***Email: azianm@um.edu.my***

***Tel: +603-7967 6049; Fax: +603-7967 6140***

***Farinda Abdul Ghani***

***UM Centre for Continuing Education, University of Malaya, Kuala Lumpur, Malaysia***

***Email: farinda@um.edu.my***

***Tel: +603-7967 3800; Fax: +603-7967 3810***

## **Abstract**

The study examines students' experience in using e-learning as a collaborative learning tool. A qualitative methodology used in this study is based on content analysis of online forums and survey among 144 undergraduate students at University of Malaya, Malaysia who have responded to online forums posted on a few course websites through Moodle. Using Rogers' (1995) diffusion of innovations model, this study attempts to understand the factors that influence the adoption of Moodle e-learning system based on users' own experience. Although in this case the students have no choices and are required to use Moodle, the study finds that there are elements of relative advantages, compatibility and complexity for students to adopt Moodle. Furthermore, the positive experience among students using Moodle motivates them to continuously use Moodle. Overall, the results provide insights and recommendations to the government, learning institutions, lecturers and instructors to accelerate the adoption of e-learning in Malaysia.

**Keywords:** E-learning, Internet, Behavioural Science, Moodle, Malaysia.

## **1. Introduction**

E-learning (or Internet-based learning) has emerged as one of the fastest moving trends in today's education (Palmer et al., 2001) that provides an exceptional opportunity to increase student access to education. The using of e-learning has seen rapid growth in recent years in developed countries such as the United States (US) and the United Kingdom (UK). In the US, common terms used for e-learning are course management system (CMS) and learning management system (LMS); while in the UK, virtual learning environment (VLE) and managed learning environment (MLE) are more common (Martin-Blas & Serrano-Fernandez, 2009).

In Malaysia, computer usage in higher education institutions (HEIs) has positive impact and development into learning. Some universities have started using e-learning as a tool to enhance learning among students. However the acceptance of e-learning by HEIs and their students is somewhat unknown. As e-learning starts to gain popularity, consideration needs to be given to the delivery system to be used, the instructors and also students that will be using the system. There is a need for HEIs to expose and train their instructors before adopting an e-learning system. In short, all stakeholders should be taken into consideration.

For example, a study in China states that the conception of e-learning in HEIs is still considerably low as many instructors do not believe in e-learning (Wang et al., 2009). Moreover, e-learning can sometime isolate students from others; therefore the success of e-learning depends heavily on an individual's motivation (Ettinger et al., 2006).

## **2. Previous Research**

### **2.1 E-learning**

E-learning or internet-based learning is the state of the art technology that has facilitated students' learning activities through online delivery of instructions and supply of electronic resources of knowledge. Many HEIs incorporate web pages to deliver learning and teaching besides the usual face-to-face classroom. E-learning can be described as the using of technology in the learning process, therefore other terminologies such as virtual learning, online learning and online education which also refer to e-learning. The term used can be different but essentially it refers to the same idea.

Target audience of e-learning is almost everyone from primary schools students to mature adults who undertake lifelong learning courses. There is a lot of resistance and barriers during the early days of e-learning deployment such as infrastructure barriers (Koper & Tattersall, 2004). As technology improves, nowadays e-learning facilitates better quality of online interaction between instructors and students as well as interaction among students and has added positive social elements to the benefits of e-learning (Ettinger et al., 2006). For example, Baldwin-Evans (2004) interviewed 200 respondents who were using e-learning in 14 countries and found that 93.5% of the students enjoyed their experience and 98% would suggest it to others.

There are many e-learning platforms. Some of them are commercial software, such as WebCT and blackboard ([www.blackboard.com](http://www.blackboard.com)), whereas others are open-source software such as Moodle ([www.moodle.org](http://www.moodle.org)) and Atutor ([www.atutor.ca](http://www.atutor.ca)). All these applications have common features, but some are more flexible and complete (Martin-Blas & Serrano-Fernandez, 2009). However, the most important quality of e-learning is the superior instructional design (Ettinger et al., 2006). Students must be able to follow the make-up of the instructional design and no amount of modern technology can be good if this is not achieved. Technology is merely aiding the learning process.

## **2.2 Moodle**

Moodle is a global development project designed to support social framework of education (Moodle.org 2010). The word Moodle is an acronym for Modular Object-Oriented Dynamic Learning Environment, which is mostly useful to computer programmers. It is a copyrighted software package for creating and developing Internet-based courses and web sites. Moodle is offered freely as open source software to users. Users are allowed to copy, use and modify Moodle provided that they agree to provide the source to others, not modify or remove the original license and copyrights, and apply this same license to any derivative work. In other words, Moodle is flexible to changes.

Moodle is compatible with various operating systems such as Windows, Mac, and Linux. Within e-learning environment, Moodle is a complement to traditional teaching method in undergraduate as well as postgraduate courses. The method of instruction in the course could be described as a combination of traditional face-to-face teaching complemented by synchronous learning elements. Traditional methods included lecture and tutorials. There are many features available in Moodle. Besides providing online channel of continuous and prompt two-way communication between lecturers and students, Moodle allows lecturers to upload lecture notes, assignments and quizzes for students to view, save or print. There are a variety of other functions such as audio-video link, real-time chat, a personal calendar, forums, etc. for lecturers to use.

The University of Malaya (UM), Malaysia has been deploying Moodle to deliver e-learning since the third quarter of 2008. In order to increase the number of courses using e-learning for teaching and learning, the management of UM has required every departments to ensure that lecturers fully utilised Moodle by the second semester of year 2009/2010 session. Lecturers are also encouraged to attend to training to familiarise themselves with Moodle. Similarly, students are encouraged to use Moodle as a tool to enhance learning process.

## **2.3 Factors of Adoption of an Innovation**

The theory of diffusion of innovations by Rogers (1995) is a well-known theory that can be used to explain factors why students adopt or resist new technology. Diffusion is defined as the process by which an innovation is communicated through certain channels over time among the members of a social system. Rogers' theory of individual innovativeness suggested that people are inherently more or less predisposed to innovative behaviour. He theorised that individual adoption rates of innovations are usually distributed similar to normal distribution where innovators represent 2.5% of the population, early adopters 13.5%, early majority 34%, late majority 34% and laggards 2.5%.

According to Rogers, there are five attributes of innovations which influence an individual's attitude towards an innovation during the adoption process, namely, relative advantage, compatibility, complexity, trialability, and observability.

### *Relative advantage*

It is the degree to which an innovation is perceived to be better than the idea it supersedes. Basically, if there is greater advantage in the innovation, then it is more likely to be adopted.

### *Compatibility*

It is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and media of potential adopters. Basically, if the innovation is compatible with existing needs and expectation, it is more likely to be adopted.

### *Complexity*

It is the degree to which an innovation is perceived as difficult to understand and use. It means that if the innovation is simpler and not making it more difficult, then the innovation is more likely to be adopted.

#### *Triability*

It is the degree to which an innovation may be experimented with on a limited basis. It means that if the innovation can be used for trial without any commitment to change current practices, then it is more likely to be adopted.

#### *Observability*

It is the degree to which the results of an innovation are observable to others. Basically, if the innovation can be seen and observed by peers and friends, then it is more likely to be adopted.

Ultimately, an innovation should be seen, imagined, or described to the potential adopter. With e-learning, the technology and pedagogy of e-learning allow students to see the environment in which online teaching and learning occur. E-learning demonstration activities could assist potential adopters (Shea et al., 2004).

### **2.4 Motivation to Use Moodle**

There is a lot of literature on motivation with regard to students' motivation. For example, question such as what does one has to do to motivate students to learn may sound simple but responding to such question is not straightforward (Kember et al., 2008). In this research, the relevant question would be what motivates students to continuously use Moodle in their learning process. Since there are many dimensions of motivation, factors suggested by Clayton et al. (2010) and Blumberg et al. (2008) will be applied, namely, engaged learning, learner-instruction match, familiar, lifestyle fit, personal control and augmented learning.

#### *Engaged Learning*

It refers to learning environment that actively involves students in learning where interactive learning takes place. It means that if there is greater engagement in e-learning, there will be greater motivation to use Moodle.

#### *Learner-Instruction Match*

It refers to the matching of students' style of learning retention and the lecturers' style of learning delivery. Basically, if e-learning induces greater match between the two of them, then students are more likely motivated to use Moodle.

#### *Familiar*

It refers to a situation whether students are familiar with the learning environment. It means that if e-learning leads students into unfamiliar environment, motivation to use Moodle will be reduced.

#### *Lifestyle Fit*

It refers to the convenience of learner's daily routine and schedule to suit learning environment. It means that if e-learning helps to suit the student's lifestyle; there is greater motivation to use Moodle.

#### *Personal Control*

It refers to the level of control the learners have in the learning process. Motivation to use Moodle will be greater if students have more control.

### *Augmented Learning*

It refers to a situation where learning is enhanced with the inclusion of technology. Motivation to use Moodle will be greater if technology is widely used.

### **3. Research Questions**

Based on the literature review, this study aims to address the following questions:

- a. What are students attitude towards e-learning?
- b. What are the factors that influence students' adoption of or resistance towards e-learning?
- c. What do motivate students to continuously use Moodle in learning process?

### **4. Research Method**

The purposes of this study were to examine students' attitude towards e-learning through Moodle, to identify factors that influence students' adoption or resistance of e-learning and to examine their experience in using Moodle. The survey instrument incorporated open-ended questions regarding their experiences with Moodle. The questions sought to determine whether students perceived that they had used the e-learning tool effectively, benefited by the tools, motivation of using the tools and what elements of Moodle they like to use, what difficulties they might have encountered, and their overall opinions regarding this e-learning tool.

The first question asked was their opinion towards using Moodle as part of their learning tools. This question is to capture whether Moodle is useful, compatible, or complex to the students. The second question asked about their preferred features of Moodle, followed by their attitude in using Moodle in the future. The students' responses were analysed using content analysis method by identifying themes which were then grouped into categories. The analysis was a continuous iterative process, with earlier data re-examined and identified concepts explored subsequently. The process was continued until no new categories were generated. A summary of the respondents' profile is presented in Table 1.

#### **4.1 Scope of the research**

This study investigated the attitude of undergraduate students in the University of Malaya (UM), the premier public university in Malaysia. We study this specific group of students because of; the new e-learning system that has been adopted by all undergraduate students, ease of access to the students' data, as well as, the protection of information of students and universities involved in the survey. The other reason for studying the undergraduate students is the usage and intensity of e-learning tool is higher than other degree levels.

#### **4.2 Sampling**

The sample size of the study was 350 undergraduate students that have been invited to participate in the survey through Moodle link and student email. The student name list was taken from one of the university core courses so that all schools and discipline involved in this survey. The survey was posted in Moodle for one month. A total of 144 undergraduate students participated in the survey using online forum function in Moodle undertaken at the end of the semester, after they have experience in using the courseware tool for various activities and tasks.

### **5. The Results**

The profile of students participating in the survey is indicated in Table 1. Item (iv) "Attitude towards Moodle" is the researchers' interpretation of the students overall opinion and experience of using Moodle, which can be categorized as positive, negative or mixed opinion. "Positive" means the students find Moodle useful in their learning process. "Negative" means the students have used

Moodle but they do not like it. “Mixed opinion” means that there is an issue with Moodle although they may find it helpful in their study.

Participants in this study are 144 undergraduate students who are studying in the 2009/2010 academic terms at the Faculty of Business and Accountancy, University of Malaya, Malaysia. Most of the respondents are female (89%) and Chinese (58%). Table 1 shows that most of the respondents think that Moodle is beneficial to them (62%), while only 11% are of the opinion that Moodle is neither good nor useful.

Table 1: Respondents Profile

Profile		Respondents (n=144) (%)
Gender	Male	19 (13.2%)
	Female	125 (86.8%)
Age	18 or below	-
	19-20	30 (20.8%)
	21-22	70 (48.6%)
	23 and above	44 (29.9%)
Ethnicity	Malay	52 (36.1%)
	Chinese	84 (58.3%)
	Indian	8 (5.6%)
Attitude towards Moodle	Positive	89 (61.8%)
	Negative	16 (11.1%)
	Mixed Opinion	39 (27.1%)

Table 2 presents the coding of responses to factors of adoption of e-learning based on the factors suggested by Rogers (1995) as well as the examples of statements of each theme respectively. Content analysis was applied in order to identify the theme. Content analysis “measures the semantic content or the aspect of a message which is useful to analyze written, audio or video data” (Cooper & Schindler, 2008, pg. 421-423). This inductive technique is commonly used in the qualitative-based approach.

Table 2: Content Analysis of Innovation Adoption Factors

Themes	Statements
1. Relative Advantages <ul style="list-style-type: none"> <li>▪ Communication</li> <li>▪ Convenience</li> <li>▪ Interactivity</li> <li>▪ Information Source</li> <li>▪ Users Freedom</li> <li>▪ Alternative Learning</li> <li>▪ Cost Saving</li> </ul>	<p>“... to emphasis the bond between students and lecturers ...”</p> <p>“... no time boundary, thus we can log in at our convenience to keep abreast ...”</p> <p>“... able to get latest information and announcement from my lecturers and coursemates ...”</p> <p>“... save time to wait in the queue at photocopy shops to copy notes ....”</p> <p>“... don’t have to wait for class to discuss my problems with the lecturers and friends ...”</p> <p>“... the information is up-to-date ...”</p> <p>“... save the environment as less paper used ...”</p> <p>“... save money to photocopy the class notes ...”</p>

<ul style="list-style-type: none"> <li>▪ Environmental Friendly</li> </ul>	<p><i>“... important news/ information can be spread very fast compared to writing notice and pasting on the faculty notice board ...”</i></p> <p><i>“... if I miss the class I can still cover the topics myself and get the lecture notes and other information precisely ...”</i></p>
<p>2. Compatibility</p> <ul style="list-style-type: none"> <li>▪ Relevant</li> <li>▪ Perception</li> <li>▪ Skills/ Experience</li> <li>▪ Accessibility</li> <li>▪ Intensity</li> <li>▪ Persistence</li> </ul>	<p><i>“ ... we can express our ideas freely without feeling shy because we don't have don't have to talk in front of class ...”</i></p> <p><i>“... we can exchange ideas and opinion especially those who are quiet in class ...”</i></p> <p><i>“... I can study the slides/ topics before coming to class ...”</i></p> <p><i>“... the students must know how to learn and use the technology themselves as it is not taught in the university ...”</i></p> <p><i>“... quite difficult for students who stay outside campus to use Moodle and don't have internet access ...”</i></p> <p><i>“... as the Internet is the prerequisite – the university must make sure the internet security is at the highest level ...”</i></p>
<p>3. Complexity</p> <ul style="list-style-type: none"> <li>▪ E-learning system</li> <li>▪ Web design</li> <li>▪ Infrastructure</li> <li>▪ Web features</li> <li>▪ Online functions</li> <li>▪ Ease of Use</li> </ul>	<p><i>“... should make the e-learning more warm with videos or moving icons ...”</i></p> <p><i>“... Moodle means everything will be in softcopy ...”</i></p> <p><i>“... this site is the favourite site for the students especially during the final exam month ...”</i></p> <p><i>“... can be better if there is an informal forum for all student to change their opinion and idea ...”</i></p> <p><i>“... use a lot of graphics where we could see how the demand and supply curve change, when the variables change ...”</i></p> <p><i>“... a fun factor – it's easier to memorise specific points and topics ...”</i></p> <p><i>“... make sure the university make an effort to keep improving the internet speed and Wi-Fi facilities ...”</i></p> <p><i>“... theme, colour, background should be more trendy and attractive ...”</i></p> <p><i>“... add more functions that can attain students interest such as link to Facebook, plug-ins, etc ...”</i></p> <p><i>“... the campus connection is unstable ... it took so long to download the slides ...”</i></p> <p><i>“... Moodle should be more user-friendly like Facebook and Twitter ...”</i></p> <p><i>“... It is good if we could be notified via SMS or email that there is a new post on Moodle ...”</i></p>

It can be summarised from Table 2 that students experience in using Moodle have been good and beneficial in their study. We can also see that two factors of the theory of diffusion of innovations (Rogers, 1995), namely, triability and observability are not relevant. Triability is not relevant because most of lecture notes and slides presentations are available from Moodle, and therefore students have to use Moodle, whether they like it or not. Similarly, observability is more relevant to innovations that might have impact on the users' reputation or image among peers and friends. Moodle is definitely not one of them.

Since students have positive experience using Moodle, it positively affects attitudes towards adoption of Moodle. In other words, students will continuously use Moodle in their study. Some examples of positive attitudes statements towards Moodle are as follows:

- a. *“... I love using Moodle ... really appreciate the technology ...”*
- b. *“... thank you Moodle ... enjoy looking at friends posts and photos ...”*

- c. "... all lecturers must adopt this facility ... upload all learning materials in Moodle ..."
- d. "... I think the university can replace the 1-hour tutorial classes with Moodle ..."
- e. "... we should have a competition on decorating individual profile or post ..."
- e. "...need to promote Moodle to encourage students and lecturers by highlighting the advantages..."

Largely, the model of diffusion of innovations can be applied to show students attitude towards Moodle. This is summarised and illustrated in Figure 1. Note that the factors have been reduced from five to three due to the unsuitability of factors for this innovation.

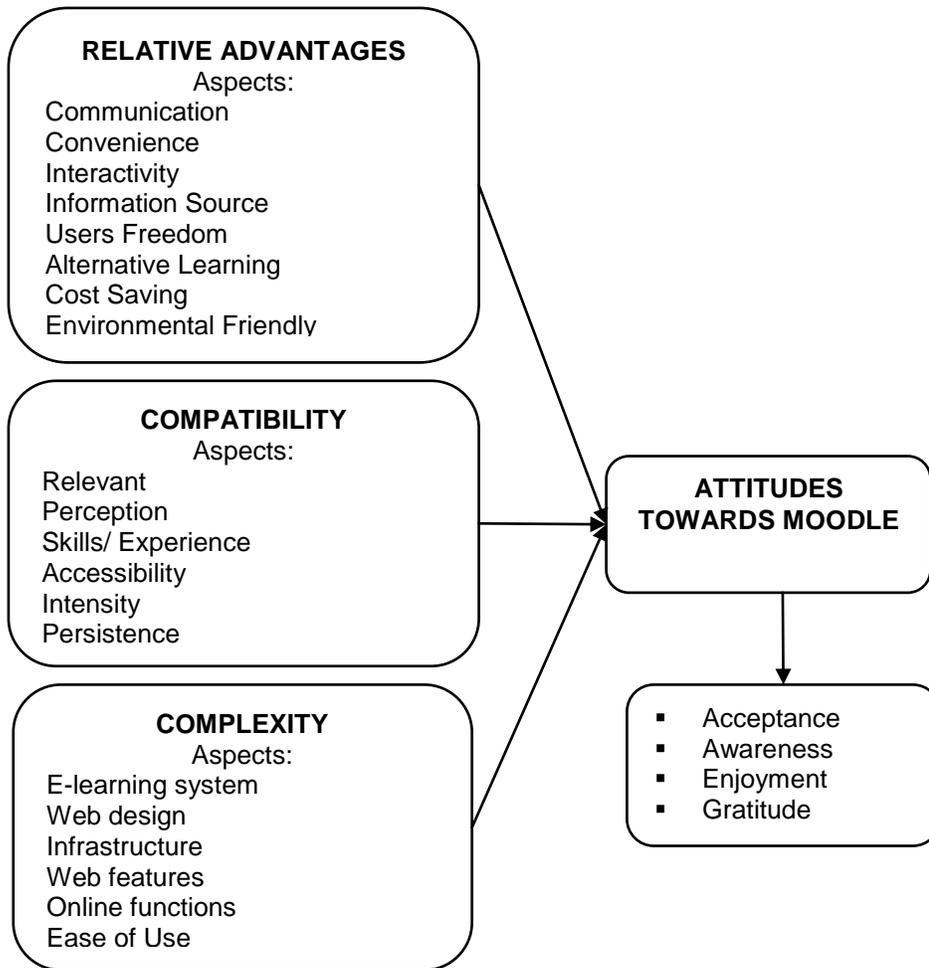


Figure 1: Model Showing the Factors Influencing Attitudes towards Moodle

Table 3 shows some responses which represent the motivational aspects of the students in adopting Moodle. It should be noted that some of the statements in Table 2 are also related to students' motivation in the adoption of e-learning. Therefore, Table 3 presented only a few statements that can be interpreted as motivational factors based on Clayton et al. (2010). Nevertheless, there is evidence that the factors mentioned in Table 3 are supported by students' responses. Although students have no choice whether or not to use Moodle, students are motivated to use Moodle because it makes learning more engaging and two ways interaction. Moreover, some students have different way of learning preference and Moodle provides the channel to match the needs of students.

Table 3: Content Analysis of Motivation Factors

Themes	Statements
Engaged learning	“... (Moodle is) effective way to increase the interaction between lecturers and students as well as among students themselves...”. “... I like looking at my friends photos in Moodle”
Learner-instruction match	“... (Moodle) suits to all students ...” “ ... Time in class is limited and students do not have enough information during lectures...”
Familiar	“... it is easy to for to us to get lecture notes and assignments ...” “... I didn't face difficulties in using Moodle...”
Lifestyle fit	“... (Moodle is) quite convenient for all the parties because they can communicate easily and not necessarily meet face-to-face ...” “...I could catch-up the subject although I have missed the class...”
Personal control	“... the internet line is so slow ...”. “... get into the old website which is <a href="http://www.adec.um.edu.my/code">www.adec.um.edu.my/code</a> ...”.
Augmented learning	“... We can carry out our studies easier and smoother ...”. “...when I lost my notes on.....I always know I have the backup on Moodle.”

## 5. Discussion

This study examined undergraduate students' adoption of, or resistance towards the using of e-learning or collaborative learning tools such as Moodle in enhancing their learning environment. Some universities and HEIs in Malaysia have started combining traditional and online approaches. It means that learning is now a combination of face-to-face classroom and online learning materials.

Findings indicated that students who used Moodle found it useful and helpful in their learning process. They have recommended students and lecturers to use it. Although there are some issues regarding accessibility, affordability and connectivity to the Internet, in general the students' experiences are consistent with the factors of innovation adoption (Rogers, 1995) and the motivation to use new learning tools (Clayton et al., 2010). There is no reason why students should not adopt Moodle as one of new innovations in learning tools. Although our approach in the study is qualitative, the results are consistent with the quantitative approach as in Martin-Blas and Serrano-Fernandez (2009).

Despite the evidence of positive experience among students, there is a resistance among lecturers to use Moodle. The usual reason is that Moodle means more work for the lecturers. It is because Moodle is a web-based application which means that students may contact lecturers any time during the day. Lecturers may find this annoying when they have other commitments to attend to. Kirkup and Kirkwood (2005) reported that tutors found it time-consuming and ponderous to use e-learning tools in learning and teaching. However, lecturers at the UM are required to put learning and teaching materials in Moodle.

Blin and Munro (2008) suggested that the use of Moodle at Dublin City University, Ireland (DCU) has little disruption of teaching practices. This is because Moodle is mainly used for administrative purposes, disseminate resources or information and to complement or replicate existing practices. Furthermore, the operating of Moodle, such as planning learning activities, uploading learning materials, etc., is not burdened to lecturers only but is supported by team of lecturers and technical staff. It could be another reason why there is lack of resistance to new technology such as Moodle at DCU. Taking cue from DCU's experience, it is recommended that the management of UM to undertake similar approach in order to reduce resistance from lecturers. The resistance from lecturers could also be approached by giving additional training, technical and pedagogical support, introducing of feedback loop and career incentives (de Freitas and Oliver, 2005).

Nevertheless, the exercise of incorporating greater online learning activities among HEIs should be taken with cautious. Some students prefer direct interaction with lecturers which has the elements of spontaneous, immediate feedback and relationship with other students (Clayton et al., 2010). Moreover, e-learning requires more maturity and self-discipline from students than traditional classroom (Zhang et al., 2004). In other words, e-learning is not everyone's cup of tea.

## 6. Summary and Concluding Remarks

In conclusion, it appears that Moodle is a useful tool for students at all level. As it is easy to use and user friendly to the students, the adoption rate of Moodle is rather fast among UM students. The majority of UM students adjusted to the technology quickly and with enthusiasm. Students are comfortable with the technology and do not encounter serious technical problems with it apart from the infrastructure issues. However, there are always issues for future research in this area. Further research needs to be conducted to determine whether Moodle is being accepted by students and/or whether it is better than traditional instructional methods. It is also recommended that qualitative methods should be undertaken to confirm the theme and categories found in this study. Finally, it is recommended that the study be repeated with a larger sample size and with in-depth interviews with the participants possibly conducted. In short, the readiness of Internet infrastructure, students' affordability, students' learning preference and orientation as well as the institution's design of e-learning activities should be taken into consideration before the deployment of e-learning across the institution can take place.

## References

- [1] Baldwin-Evans, K., 2004. Employees and E-learning: What The End-users Think? *Journal of Industrial and Commercial Training*, 36 (7), pp.269-274.
- [2] Blin, F., & Munro, M., 2008. Why hasn't technology disrupted academics' teaching practices? Understanding resistance to change through the lens of activity theory. *Computers & Education*, 50, pp. 475-490.
- [3] Blumberg, F.C., Rosenthal, S.F., & Randall, J.D., 2008. Impasse-driven learning in the context of video games, *Computers in Human Behaviour*, 24, pp.1530-1541.
- [4] Clayton, K., Blumberg, F., & Auld, D.P., 2010. The relationship between motivation, learning strategies and choice of environment whether traditional or including an online component. *British Journal of Educational Technology*, 41 (3), pp. 349-364.
- [5] Cooper, D.R., & Schindler, P.S., 2008. *Business Research Methods*, 10th Edition. McGraw Hill.
- [6] de Freitas, S., & Oliver, M., 2005. Does e-learning policy drive change in Higher Education?: A case study relating models of organisational change to e-learning implementation. *Journal of Higher Education Policy and Management*, 27 (1), pp.81-96.

- [7] Ettinger, A., Holton, V. & Blass, E., 2006. E-learner Experiences: What is The Future of E-learning. *Journal of Commercial and Commercial Training*, 38 (4), pp.208–212.
- [8] Kember, D., Hong, C., & Ho, A., 2008. Characterizing the motivational orientation of students in higher education: A naturalistic study in three Hong Kong universities. *British Journal of Educational Psychology*, 78, pp.313-329.
- [9] Kirkup, G., & Kirkwood, A., 2005. Information and communications technologies (ICT) in higher education teaching – a tale of gradualism rather than revolution. *Learning, Media and Technology*, 30 (2), pp.185–199.
- [10] Koper, R., & Tattersall, C., 2004. New directions for lifelong learning using network technologies. *British Journal of Education Technology*, 35 (6), pp.689-700.
- [11] Martin-Blas, T., & Serrano-Fernandez, A., 2009. The role of new technologies in the learning process: Moodle as a teaching tool in Physics. *Computers & Education*, 52, pp.35-44.
- [12] Moodle.org., 2010, About Moodle, [online] <http://moodle.org/>, Accessed January, 10<sup>th</sup>.
- [13] Rogers, E.M., 1995. *Diffusion of Innovations*, 4th Edition. New York: The Free Press.
- [14] Shea, P., Pelz, W., Fredericksen, E., & Pickett, A., 2002. Online teaching as a catalyst for Classroom-based Instructional Transformation, *Elements of Quality Online Education*, edited by John Bourne & Janet Moore, the Sloan Consortium.
- [15] Wang, Q., Zhu, z., Chen, l. & Yan, H., 2009. E-learning in China. *Journal of Campus-Wide Information Systems*, 26 (2), pp.77-81.
- [16] Zhang, D., Zhao, J.L., Zhou, L., & Nunamaker, J.F., 2004. Can e-learning replace classroom learning? *Communications of the ACM*, 47 (5), pp.75-79.