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Undergraduate Nursing Students' and Lecturers' Attitudes towards Modular Object Oriented Dynamic Learning Environment: A Quasi Experimental Study

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Abstract E-learning is the coming approach in Egyptian higher education. Modular Object Oriented Dynamic Learning Environment (MOODLE) is among the e-learning tool at Mansoura University. Aim: To investigate the effect of Modular Object Oriented Dynamic Learning Environment on undergraduate nursing students' and lecturers' attitudes toward it. Methods: A quasi experimental research design (pre/ posttest) was utilized to conduct the present study at Faculty of Nursing, Mansoura University. A convenience sample of 286 nursing students and 30 nursing lecturers were recruited. Two tools for data collection were used; the first tool was undergraduate student' Moodle attitudes structured questionnaire and the second tool was nursing lecturers' Moodle attitudes structured questionnaire. Results: Undergraduate nursing students and lecturers had positive attitudes toward Modular Object Oriented Dynamic Learning Environment after utilization than before with statistically significant differences. Conclusion: Students' and lecturers' attitudes toward Moodle become positive after utilizing Moodle in their courses. Recommendation: Raising students' and lecturers' awareness toward the importance of integrating e-learning with the traditional learning.

Keywords: *attitude, electronic learning, lecturers, MOODLE, students*

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1. Introduction

Moodle is an acronym for Modular Object Oriented Dynamic Learning Environment [1]. Moodle is the most commonly used tool for creating e-learning academic courses. It is a software package designed specially to help lecturers to create e-learning courses [2,3]. Moodle is one service of the learning management systems (LMS); new e-learning system technologies and services that allow students to be active learners, actively participating in the on-line learning process which is accessed through a formal webpage that support a wide range of activities such as online discussion, quizzes solution, forums discussion, file upload, chat rooms entrance, assignments submission, resources and interactive videos vision which are generally sufficient for setting up e-learning courses by such new technology [4,5]. Moodle basic organizational unit is the course, a course is organized into sections that may correspond to topics by weeks, appearing in the middle column of the page. It is possible to include different resources and activities in all sections to be assigned as home or class work and be further developed by the students [6].

Recently, there is an improvement in higher education regarding the online learning, by emphasizing on the growth of information technology and use of e-learning [7]. Moodle has become the most preferred teaching tool all over the world that foster the need for educational technology with its numerous benefits for lecturers and students in their learning experience in a mix with traditional classroom learning experience [8].

Encouragement of the students' engagement in online discussion and activities via Moodle can frame and define their learning attitudes [9]. Moodle as a free open tool of LMS is purchased and maintained by the educational universities and institutions to provide students with a space for online learning. An LMS is usually a password-protected system which enables the educational institution to open multiple course environments for online learning interaction between lecturers and students. Each lecturer who decides to open a Moodle page for a course shall send a message for the Central E-Leaning Unit to create a page for the selected course and create a username and a password for the lecturers and their students [10,11].

E-learning platforms have transformed the ways in which lecturers can teach and students can learn. The role of the lecturer is guiding students through their learning experience. Within this framework, University lecturers had to modify their teaching methods and tools to let students' be active in learning collaboration with their colleagues and lecturers [12].

1.1. Significance of the Study

For many developing countries as Egypt, Moodle as an e-learning tool is considered to be a solution to the increased demand for higher education; increased numbers of students at classrooms and the limited time for all students and lecturers interaction [13,14]. Moodle is also expected to improve the quality of learning experiences, students' computer literacy and skills needed in the current work market [15,16,17]. There is a significant implication for the delivery of education in the 21st century to have an a synchronous student-centered learning environment where each student receives a personalized education at any time on line, in addition to synchronous learning in which all learners and their lecturer being at the same time on their learning environment. So, this study will be done in attempt to collaborate the Moodle as an e-learning tool with the traditional method.

1.2. Aim of the Study

The study aimed to evaluate the effect of using Modular Object Oriented Dynamic Learning Environment on undergraduate nursing students' and lecturers' attitudes toward it.

1.3. Study Hypothesis

Hypothesis I. Undergraduate nursing students have a more positive attitude toward Modular Object Oriented Dynamic Learning Environment after utilizing than before.

Hypothesis II. Undergraduate nursing lecturers have a more positive attitude toward Modular Object Oriented Dynamic Learning Environment after utilizing than before.

1.4. Subjects and Method

Study Design: A quasi experimental research design (Pre / Posttest) was utilized.

Study Setting: The study was carried out at Faculty of Nursing, Mansoura University during the first semester of academic year 2017- 2018.

Subjects: The study included a convenience sample composed of two groups. First group compromised 286 of nursing students enrolled in four credit policy courses during the first semester of academic year 2017-2018. Second group included 30 nursing lecturers who open an electronic page on Moodle for their courses and agreed to participate in the study..

1.5. Tools

Tool (1): Undergraduate nursing students' Moodle attitudes Structured Questionnaire

This tool was developed by the researchers after reviewing the related literatures [8,18]. The alpha reliability was (0.85). The questionnaire had two parts as follows: Part I: It included students' general characteristics such as age, gender, academic level, availability of internet access and the previous learning experience with MOODLE. Part II: It consisted of 18 questions to assess the undergraduate students' attitudes toward MOODLE on a 3-point Likert scale ranging from negative, indifference and positive. These were scored from one to three, respectively. The total score for each subject ranged from 18 – 54. Where scoring from 18-> 30 indicates negative attitude, the scoring from 30-> 42 indicates indifferent and the scoring ≥ 42 indicates positive attitudes.

Tool (2): Nursing lecturers' Moodle attitudes Structured Questionnaire

It was adapted from [1]. It constituted of 9 questions to assess lecturers' attitudes toward Moodle; a Likert scale with three options was utilized ranging from negative, indifference and positive. These were scored from one to three, respectively. The total score for each subject ranged from 9 – 27. Where scoring from 9-> 15 indicates negative attitude, the scoring from 15-> 21 indicates indifferent and the scoring ≥ 21 indicates positive attitudes. Lecturers' general characteristics as age, previous teaching experience with MOODLE and years of teaching experience was also included.

2. Methods

After review of literature related to the aim of this study; tools of data collection were reviewed by five panels of experts to test face and content validity of these tools. Tools were tested for content reliability by using Cronbach alpha test which was (0.85) for undergraduate nursing students' attitudes toward Moodle structured questionnaire and was (0.90) for nursing lecturers' attitudes toward Moodle structured questionnaire

2.1. Ethical Considerations

An approval letter was obtained from Research Ethics Committee of Faculty of Nursing, Mansoura University. An informed written consent was obtained from nursing lecturers and students after explaining of the aims of the study. All participants' lecturers and students were assured that their participation in the study is voluntary and the collected data will be treated confidentially and will be only used for the purpose of the study. Also all participants' lecturers and students were informed that they have the right to be withdrawal at any time from the study without giving any reason.

2.2. Pilot Study

It was implemented prior to data collection on 28 nursing students and 3 nursing lecturers (10%) of the participants to ensure the clarity, feasibility and applicability of the tools. Based on the findings of the pilot study, necessary modifications were done such as making action verb and summering the long sentences.

2.3. Field Work

At the start of the first semester 2017- 2018, the researchers been assigned to four credit policy nursing

undergraduate courses and within the first lecture for all researchers, the researchers introduced themselves to the undergraduate nursing students and explained the aim of the study, then the students were invited for voluntary involvement in the study.

Before the start of the first lecture for each researcher, a Student Structured Interviewing Questionnaire and Students' Moodle attitudes Questionnaire were distributed to assess students' socio-demographic data and students' knowledge and attitudes regarding Moodle (pretest) for duration of 10 minutes.

Each researcher provide orientation introduction about Moodle including; definition, how to access to Moodle, how to get the user and password for entering the course page via Moodle, how to download and upload files and videos, lectures' PowerPoint and resources, how to enter a forum of scientific discussion and chats room with the course' lecturer and colleagues and how to send a question or a message for the course' lecturer or colleagues.

Each researcher started the traditional lecture; and all participants' students were asked to enter and solve the quizzes related to the lecture via Moodle after viewing the interactive video which contains the registered lecture that had been registered by the researcher at the central e-learning unit and uploaded at the Moodle course page.

The researchers had the benefits of their Moodle course page by making scientific chatting and forum related to the lectures or any activities related to course by letting the students enter at a settled time and answer the students' questions. Also the researchers used the Moodle course page permit the students to submit their scientific assignments electronic via Moodle, make announcement about students' distributions on clinical areas, oral and written exam committees and make appreciation certifications for distinguished students.

Each researcher continuing their assigned lectures for their courses by the traditional way and at the same time encourage the participants students to enter the course Moodle page to see the interactive videos, solve the quizzes, download the lectures' PowerPoint, enter the chatting room and have the benefits of entering the exam depository which contains a sample of the previous exams which is provided also through the learning management system. At the last lecture of every course, each researcher distribute the student' Moodle attitudes questionnaire to assess their attitudes to Moodle (Posttest).

On the other hand, at the start of the academic year, the researchers distribute Lecturers' Moodle Attitudes Questionnaire to the lecturers who want to open an electronic page on Moodle for uploading their course content to their students and who accept to participate in the study to assess lecturers' knowledge and attitudes regarding Moodle (pretest).

The researchers conducted a workshop for nursing lecturer about Moodle illustrating; definition, how to access to Moodle, how to request from the central e-learning unit to open a page for a course via Moodle, how to get the username and password for entering the course page via Moodle. Also the researchers focused on how to register an interactive video for registration of lectures and let the students be interactive with solving interactive quizzes, how to prepare electronic quizzes and download the quizzes grades immediately after students' answers and how to upload resources and activities to students. Furthermore, the researchers demonstrated how to set assignments to students and how to set scores to download assignment with grades immediately after each student submission of his assignment, how to make chatting rooms, scientific forum and how to distribute the activities and resources at the course Moodle page.

At the end of the first semester of academic year 2017-2018, Lecturers' Moodle attitudes Questionnaire was distributed to assess lecturers' knowledge and attitudes toward Moodle (posttest).

2.4. Statistical Analysis

The collected data were coded, computed and analyzed statistically utilizing SPSS (Statistical Package of Social Sciences) version 21.0 (SPSS Inc., Chicago, IL, USA). All data were categorical data and were expressed in number and percentage. The differences between two groups or more were determined using chi-square test. Statistical significance was set at $p<0.05$.

3. Results

Table 1 exhibits that the mean age of the undergraduate nursing students was (20.06 ± 0.91), more than half of them were female (86.0%),66.4% of them lived in rural area, and the high percentage of their academic level was for second and third level (45.8 %, 39.9%) respectively.

Figure 1 showed that 56.3 % of the studied students had previous learning experience about MOODLE, while 43.7 of the studied students did not have previous learning experience about MOODLE.

Table 2 shows that the mean age of the nursing lecturers was (39.2± 2.14), most of them (93.3%) were female, and more than half of them (56.7 %) experienced more than 15 years.

Table 1. Personal characteristics of the studied students (n=286)

characteristics	No.	%
Age (years)		
• 18-20	174	60.8
• 21-	112	39.2
Mean± (SD)	**20.06± (0.91)**	
Gender		
• Male	40	14.0
• Female	246	86.0
Residence during academic year		
• Urban	96	33.6
• Rural	190	66.4
Current academic level		
• First level	4	1.4
• Second level	131	45.8
• Third level	114	39.9
• Fourth level	37	12.9

Table 2. Personal characteristics of the nursing lecturers (n=30)

Personal characteristics	No.	%
Age (years)		
• >30-40	24	80.0
• >40-45	6	20.0
Mean (SD)	39.2 (2.14)	
Gender		
• Male	2	6.7
• Female	28	93.3
Years of experience		
• 10-15 years	13	43.3
• >15-20 years	17	56.7

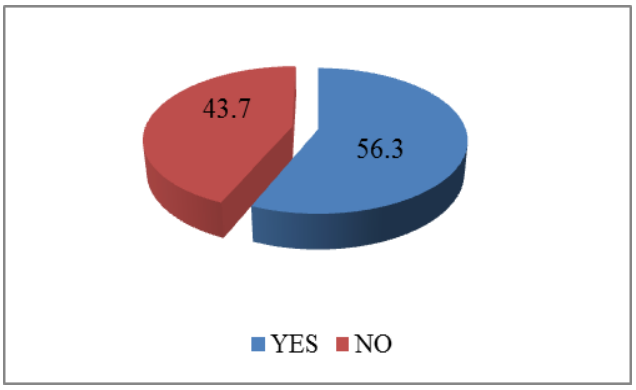

Figure 1. Nursing students' previous learning experience with Moodle

Table 3 illustrates that undergraduate nursing student's attitude toward Moodle improved post utilization in of Moodle at all items of attitude with highly statistical significance (P value ≤ 0.001).

Table 4 illustrates that there were statistically significant differences regarding nursing lecturers' attitude toward Moodle after utilization than before.

Table 5 describes that more than three-quarters of the studied nursing lecturers (76.7%) agreed that Moodle can help them to post classroom blogs on line. Also, more than two- thirds of them (70%) agreed that Moodle can help them to upload videos, audios and links to a lesson for students also create, conduct and guide quizzes and prompt students with survey questions.

Table 3. Attitudes of undergraduate nursing students toward Moodle before and after utilization (n = 286)

MOODLE		Negative		indifference		Positive		χ^2	P Value
		No	%	No	%	No	%		
1. Enable students to gain more persistent learning compared to traditional classroom environment	Pre	29	10.1	127	44.4	130	45.5	63.66	**0.000****
	Post	0	0.0	73	25.5	213	74.5		
2. Increase students' enjoyment in the lecture	Pre	152	53.1	109	38.1	25	8.7	99.38	**0.000****
	Post	54	18.9	124	43.4	108	37.8		
3. Increase students' chances for success	Pre	180	62.9	91	31.8	15	5.2	145.94	**0.000****
	Post	52	18.2	127	44.4	107	37.4		
4. Increase students' interesting to form activities in courses	Pre	183	64.0	91	31.8	12	4.2	160.04	**0.000****
	Post	56	19.6	107	37.4	123	43.0		
5. Increase effectiveness of Collaborative learning	Pre	183	64.0	87	30.4	16	5.6	142.98	**0.000****
	Post	61	21.3	104	36.4	212	42.3		
6. Increase students' efficiency at courses	Pre	176	61.5	94	32.9	16	5.6	212.71	**0.000****
	Post	23	8.0	134	46.9	129	45.1		
7. Enables students to express themselves during the lectures in a more comfortable way	Pre	162	56.6	104	36.4	20	7.0	169.47	**0.000****
	Post	36	12.6	111	38.8	139	48.6		
8. Increases students' motivation when used in courses	Pre	167	58.4	92	32.2	27	9.4	140.18	**0.000****
	Post	38	13.3	139	48.6	109	38.1		
9. Enables active learning	Pre	177	61.9	103	36.0	6	2.1	227.27	**0.000****
	Post	30	10.5	117	40.9	139	48.6		
10. Organizes different activities and share different perspectives of presentations	Pre	158	55.2	113	39.5	15	5.2	167.32	**0.000****
	Post	40	14.0	110	38.5	136	47.6		
11. Shares questions during the activities that enable better learning	Pre	166	58.0	101	35.3	19	6.6	242.51	**0.000****
	Post	13	4.5	113	39.5	160	55.9		
12. Provides richer content to the students	Pre	135	47.2	118	41.3	33	11.5	122.53	**0.000****
	Post	30	10.5	129	45.1	127	44.4		
13. Provides videos that attract more attention	Pre	180	62.9	89	31.1	17	5.9	308.26	**0.000****
	Post	14	4.9	64	22.4	208	72.7		
14. Provides online chat which is very effective	Pre	124	43.4	97	33.9	65	22.7	33.52	**0.000****
	Post	64	22.4	107	37.4	445	40.2		
15. Provides activities that make students ready for learning	Pre	172	60.1	96	33.6	18	6.3	193.68	**0.000****
	Post	26	9.1	136	47.6	124	43.4		
16. Motivates rapid students' thinking skills	Pre	169	59.1	106	37.1	11	3.8	205.84	**0.000****
	Post	28	9.8	125	43.7	133	46.5		
17. Limits peer to peer interactivity	Pre	163	57	110	38.5	13	4.5	84.94	**0.000****
	Post	75	26.2	128	44.8	83	29.0		
18. Increase students' interest of the course	Pre	152	53.1	89	31.1	45	15.7	86.47	**0.000****
	Post	54	18.9	106	37.1	126	44.1		

** Highly statistically Significant (P ≤0.01).

Table 4. Attitudes of the nursing lecturers toward Moodle pre and after utilization (n=30)

Moodle can help lecturers to		Negative		Indifference		Positive		χ^2	P -Value
		No.	%	No.	%	No.	%		
1. Enhance their teaching with online supplementary activities	Pre	13	43.3	7	23.3	10	33.3	17.2	**0.000****
	Post	0	0.0	9	30.0	21	70.0		
2.`Provide lecturers with links to websites relevant to a course	Pre	21	70.0	1	3.3	8	26.7	11.66	**0.003****
	Post	8	26.7	1	3.3	21	70		
3. Upload series of learning activities created in some authoring software	Pre	18	60.0	7	23.3	5	16.7	25.9	**0.000****
	Post	0	0.0	20	66.7	10	33.3		
4. Set up a list of things for students to do before coming to a lesson	Pre	22	73.3	8	26.7	0	0.0	11.28	**0.002****
	Post	0	0.0	9	30	21	70.0		
5. Collaborate with students effectively	Pre	14	46.7	4	13.3	12	40.0	6.37	**0.041***
	Post	5	16.7	5	16.7	20	66.7		
6. Have a chance to easily create web pages with information about the course and provide links to word documents, slides, and other resources that your students will want to access	Pre	12	40.0	9	30.0	9	30.0	16.8	**0.000****
	Post	0	0.0	9	30.0	21	70.0		
7. Know students and students to know lecturer at the start of the course, also hold information about course team and students in one place	Pre	16	53.3	6	20.0	8	26.7	8.87	**0.01****
	Post	5	16.7	11	36.7	14	46.7		
8. Post up slides	Pre	10	33.3	12	40.0	8	26.7	12.46	**0.002****
	Post	0	0.0	15.0	50.0	15	50.0		
9. Record lectures as podcasts or even arrange for videos of lectures or special events- posting them online and making it available to students	Pre	14	46.7	0	0.0	16	53.3	18.3	**0.000****
	Post	0	0.0	0	0.0	30	100.0		

* Statistically Significant ($P \leq 0.05$)
** Highly statistically Significant ($P \leq 0.01$).

Table 5. Reasons for utilizing Moodle as perceived by the studied nursing lecturers (n=30)

Reasons for utilizing Moodle Lecturer use Moodle to	Disagree		Sometime		Agree	
	NO	%	NO	%	NO	%
1. Upload videos, audios and links to a lesson for students	0	0.0	0	0.0	30	100.0
2. Engage lecturers in a discussion forum	10	33.3	6	20.0	14	46.7
3. Guide a real-time discussion or chat	1	3.3	15	50.0	14	46.7
4. Create, conduct and guide quizzes	0	0.0	0	0.0	30	100.0
5. Prompt students with survey questions	0	0.0	9	30.0	21	70.0
6. Post classroom blogs on line	1	3.3	6	20.0	23	76.7
7. Create and maintain a classroom glossary related to a lesson	0	0.0	15	50.0	15	50.0
8. Assign, collect, review and upgrade assignment	0	0.0	15	50.0	15	50.0
9. Work collaboratively on a classroom wiki or group-edited document and much more	9	30.0	5	16.7	16	53.3

4. Discussion

The aim of the present study was to investigate the effect of Modular Object Oriented Dynamic Learning Environment strategy on undergraduate nursing students' and lecturers' attitudes toward it. The hypothesizes were achieved through the present study findings which revealed that, nursing students and lecturers who utilize Modular Object Oriented Dynamic Learning Environment had positive attitudes toward Moodle after utilization with statistical significant differences post utilization than before.

Regarding the first hypothesis about students' attitudes toward Moodle, the present study revealed that, around three-quarters of the undergraduate students' had positive attitudes toward Moodle that it enable them to gain more persistent learning compared to traditional classroom environment and also allow them to use videos that attract more students attention with highly statistical significant difference post utilization than before. This study finding is in accordance with a descriptive survey conducted by [8] on 120 volunteer lecturers from Near East University to determine the efficiency of implementing Moodle in Remote Flipped learning environments. They reported that the respondents had positive attitudes toward effectiveness of Moodle to provide persistent learning in posttest than before. Furthermore, they also founded that using video in Moodle attracts more students attention with a mean =4.60.

Furthermore, the present study revealed that, more than two-fifths of undergraduate nursing students had positive attitude that Moodle increase the effectiveness of collaborative learning with highly statistical significant difference. This study finding is in the same line with a descriptive online survey conducted by [19] which conducted at the University of Baltimore to describe students' attitudes toward online and collaborative learning experiences. They founded that more than two-fifths of students had a positive attitude toward the effectiveness of Moodle in helping them to work on in a collaborative manner.

The present study revealed that more than two-fifths of the undergraduate nursing students had a positive attitude toward Moodle ability to increase their interest of the course. This study finding is in the same line with [20] who conducted a study at faculty of nursing, Tanta University, Egypt, about attitude of students regarding blended learning implementation of community health nursing course and revealed that, their students had a positive attitude toward blended e-learning which increase

the students' interest of the course. Other supported study to the present study finding was conducted by [21] who revealed that students prefer blended learning which is more interested than traditional learning.

On the other hand, another contradicted study conducted by [18] to assess the students' attitudes regarding implementation of e-learning in Egyptian universities. They reported that students prefer traditional learning than the e-learning. This contradiction may be attributed to the learning style of the students.

The present study revealed that more than half of the undergraduate nursing students had negative attitudes toward chat via Moodle even after using Moodle. This study finding may be attributed to lack of students' internet access. This study finding is in contradiction with a descriptive survey conducted by [22] to describe university nursing students' attitudes toward Learning Management Systems (LMS) in a low-resource setting using a technology acceptance model. Their nursing students had positive attitudes toward the effectiveness of chat in LMS. This contradiction could be attributed to that students in the present study used to express questions or concerns by face to face discussion more than the chatting especially with their academic lecturer to clarify or exquisite of information.

Regarding the second hypothesis, it was achieved as the present study finding showed that the lecturers had positive attitudes toward Moodle after utilizing it. The present study finding revealed that, more than three-quarters of nursing lecturers had positive attitudes toward Moodle usability for post classroom blogs. Also, more than two-thirds of them had positive attitudes toward Moodle usability for uploading videos, audio and link to a lesson, creating, conducting and guiding quizzes and prompting students with survey questions. These study findings were in an agreement with [1] who conducted a descriptive study to assess usability, benefits of Moodle and educators' attitudes towards it. They reported in his study that, lecturers had positive attitudes toward Moodle usability in uploading video, audio and linking to a lesson with mean score Mean ±SD 3.43 ± 0.49, they also had positive attitudes toward Moodle usability to create, conduct and guide quizzes and help students with survey questions (Mean ± SD 3.34 ± 0.47& 3.24 ±0.42) respectively).

5. Conclusion

Integrating Moodle as an e-learning tool with traditional learning had a positive effect on the undergraduate nursing students' and lecturers' attitudes toward Moodle especially after utilization it in courses.

6. Recommendations

Based on the present study findings, the following recommendations are made:

1. Raising students' and lecturer's awareness toward the usability of integrating e-learning with the traditional learning.

2. Appling further research concerning:

- Factors affecting the application and usability of Moodle at University level.
- Effect of Moodle integration at University on the students' academic performance.

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