THE IMPACT OF BLENDED LEARNING WITH MOODLE AS A LEARNING MANAGEMENT SYSTEM ON ACADEMIC PERFORMANCE OF DEVELOPMENTAL PSYCHOLOGY STUDENTS AT THE MALDIVES NATIONAL UNIVERSITY

NIUMA MOHAMED

The Maldives National University, Maldives

Abstract - Sanctioning new generations with technology by using blended learning approach of instruction has been recently investigated by many researchers in various contexts. This research was aimed at examining the impact of the blended learning approach of instruction on developmental psychology students' academic performance. To achieve the objectives of the study, participants were chosen from both blended and traditional learning groups. Among the 50 students in the sample, those in the blended learning group (n=25) were using Moodle while those in the traditional learning group (n=25) were using conventional methods of learning. The study was conducted for 2 consecutive semesters in the academic year 2018. Semester final examination results and a survey questionnaire were used as the data collection instruments. The paired sample t test results showed that there is no significant difference in students' achievement whether using traditional learning method or blended teaching method. The Spearman Rho Correlation analysis showed that the relationship between content materials and student engagement is significant which is ($r = 0.638$, $\rho = 0.00$, $\rho < 0.05$) with medium relationship rate. The Analysis of the Friedman Test result for the third question showed that overall all the items uploaded on Moodle draw students' interest to study. Items that gain highest mean rank value are YouTube and Website links.

Keywords - Blended Learning, Learning Management System, Academic Performance, Moodle, Developmental Psychology

I. INTRODUCTION

It's being more than a decade that blended learning approach has been practicing at MNU, and this was at Centre for Open Learning (COL) only. Allowing students to study with technology, i.e., by using blended learning approach of instruction has been using across many countries around the world and this has recently begun throughout the faculties of MNU. Since the number of researches on this approach of instruction has investigated by many researches in various contexts around the world, it is vital to conduct a study on this newly adopted approach of instruction at MNU. It is essential to investigate if the approach is favorable for a context like Maldives.

This research was aimed at examining the impact of the blended learning approach of instruction on developmental psychology students' academic performance. Participants were chosen from both blended and traditional learning groups; those in the blended learning group were using Moodle while those in the traditional learning group used conventional methods of learning. The study was conducted for 2 consecutive semesters. Semester final examination results and a survey questionnaire were used as the data collection instruments. Paired sample t-test was done to examine if there were significant differences in students' achievement either by using traditional learning method or blended teaching approach. Spearman Rho Correlation analysis was done to determine the relationship between content materials and student engagement. Analysis of the Friedman Test was done to determine which items uploaded on Moodle draw students' interest to study.

II. BACKGROUND OF THE RESEARCH

Combination of both asynchronous and synchronous learning has become a reality in current education and several educational institutions are adopting and implementing it to provide an attractive and motivating learning environment. While many universities around the world have at least partly implemented blended learning to leverage its benefits, it is still in the basic stage at The Maldives National University (MNU), where it is used only as an aid to support learning and teaching in regular classrooms and block sessions. Still the university is encouraging its faculties to integrate online learning into their regular and block classes.

Since the beginning of 1semster, 2019, the faculties have begun to consider online learning and attempted to integrate it across the modules they offer. However, the blended learning seemed to be a complicated process for the faculties that requires substantial efforts as well as trainings to get an effective involvement of the learners. According to the academic staff who has been teaching developmental psychology, several students are failing to comprehend the new terminologies related to the module. It is assumed that blended learning can help both academic staff and learners reach higher potentials by improving their learning practices and utilizing technology to create innovative learning experiences. Thus, many learning management

systems (LMS), have been designed to support learning and teaching experiences, such as Moodle, Easy LMS, OpenEdX, LearningCart, and many others. Recently, Moodle, the Modular Object-Oriented Dynamic Learning Environment, has been utilizing by the faculties of The Maldives National University (MNU). The MNU has been promoting Moodle as the LMS to complement conventional classroom instruction and online with the help of Moodle.

III. RESEARCH AIMS, OBJECTIVES, HYPOTHESIS AND QUESTIONS

a. Aims

This research was aimed at examining the impact of the blended learning approach of instruction on EST101 (Developmental Psychology) students' academic performance and their attitudes toward utilizing blended learning.

b. Objectives

- To identify the usage of Moodle which can have an impact to students' achievement in developmental psychology
- To review the relationship between factors, like, contents, opportunities, and facilities which can affect students' achievement in EST101(Developmental Psychology)
- To review which items on the Moodle have attracted students' interest more to learn in blended environment

c. Research Hypothesis

$H1_0$: There was no difference in students' achievement when using traditional learning method or blended learning method

H1: There was difference in students' achievement when using traditional learning method or blended learning method

$H2_0$: There was no relationship between contents, opportunities and facilities that can influence students' achievement in Developmental Psychology

H2: There was relationship between contents, opportunities and facilities that can influence students' achievement in Developmental Psychology

$H3_0$: The items on Moodle did not draw students' interest to learn in blended learning environment

H3: The items on Moodle draw students' interest to learn in blended learning environment

IV. SIGNIFICANCE

This research would have a significant contribution to instructional design at CETE by providing recommendations in light of the study to improve the designing of Moodle pages which has being using as LMS at MNU. It can offer great opportunities for leaners to be actively involved examining the key features of Moodle while using them in their learning. This could also allow learners to have an exposure to range of new learning styles.

V. LITERTURE REVIEW

Blended courses are classes where a portion of the traditional face-to-face instruction is replaced by web-based online learning. McGee and Reis (2012) point out that while there is no absolute agreement within higher education on the exact make-up of a blended course, institutions generally use "blended" to refer to some combination of on-campus class meeting and online activities. Graham, Henrie, and Gibbons (2014) concur that models adopting the (combining online and face-to-face instruction) definition are the most prominent in the research. Blended learning is a phenomenon subjected to much on-going research. After reviewing over 200 masters' theses and doctoral dissertations related to blended learning, Drysdale, Graham, Spring, and Halverson (2013) concluded that more graduate research is being conducted on blended learning each year. Additionally, Dziuban, Picciano, Graham and Moskal (2016) have edited a new collection of research on blended learning as a sequel to the two landmark books previously published (Picciano and Dziuban, 2007; Picciano, Dziuban, and Graham, 2014).

According to Poon (2012), the benefits of blended learning at the university level cannot be denied. Poon (2012) has identified number of benefits of blended learning, such as encouraging dynamic, simultaneous, free, joint and significant learning experience. According to Poon (2012), blended learning helps learners to accomplish satisfaction and achievement effectively and enhance learning and outcomes. He also identified further advantages such as dealing more effectively with individual differences, managing and controlling the class easily as well as reducing cost per credit hour.

Blended learning can also become a challenge if it is not implemented properly. Faculty members and the learners should be confident and supported as they are the key members of implementing blended learning (Darrow et al., 2013). According to Hofmann (2011), potential challenges to blended learning include, accessibility of technology, the need for an LMS, aptitudes and attitudes to cope with new technology, interaction to address learners' questions, cultural adaption and management of the class to assess and observe the learners.

Moodle is one of the most well-known LMS with which instructors, administrators, and learners form personalized learning settings. Moodle pages created for the certain courses include resources and activities of approximately 20 distinct sorts, such as quizzes, assignments, forums, chats and wikis. These activities can help both teachers and learners navigate and complete courses. As a result, more than 90 million people from both academic and enterprise settings use it because of the numerous benefits it brings, such

as its ease of use lack of licensing fees, multipurpose platform, flexibility, security and privacy, accessibility, free content and courses, and availability in multiple languages (Moodle, 2018). Designing a module using technology to helps to improve their English language skills along with giving them numerous chances to practice the skills involved in the module (Butler-Pascoe, 2003). However, Moodle also can assist in learning many educational subjects like developmental psychology. Faculty members can integrate Moodle content into their regular teaching classrooms and take advantage of the available activities and sources, such as by providing real interaction with people from different backgrounds and by fostering a truly collaborative learning environment.

Many researchers have considered blended learning in teaching on various discipline. Isti'anah (2017) explores the effect of blended learning on students' grammar achievement. Twenty-six Indonesian university students were involved in this study. Analysis of pretest and posttest scores reveal that blended learning had a positive effect on learning English grammar and that it assists in enhancing the students' awareness of and interest in learning grammar. In another study in Thailand, Pumjarean et al. (2017) investigates the impact of blended e-learning on the grammatical knowledge and writing skills of 54 English major freshmen, their perceived satisfaction with Moodle's learning management system, and the effectiveness of blended learning for enhancing grammatical competency and paragraph writing skills. Their quasi-experimental design utilizes two instruments, namely a questionnaire and pre and post achievement tests. The findings show that the students' grammar competence is improved, but the students are neutral regarding their satisfaction with Moodle's LMS.

Aslani&Tabrizi (2015) investigates blended learning among 87 learners in their study. The findings demonstrate that blended learning has an encouraging effect on Iranian students' academic performance. In another study by Ahmad (2016), at a private college in Saudi Arabia, he explores the impact of Facebook on sixty university students' writing and grammar skills, utilizing achievement tests. The findings of the study reveal that Facebook has a positive effect on the students' performance on both writing and grammar. In his study, Alshwiah (2009) explores the impacts of a proposed blended learning strategy for teaching medical vocabulary to 50 students. The findings reveal that the experimental group students (n=28) are more satisfied with online learning when compared to the control group (n=22) due to administrative issues.

In the Jordanian context, only a few studies were conducted to investigate the effect of blended learning on students' grammatical performance. Bataineh&Mayyas (2017) carry out a quasi-experimental study to explore the effect of blended learning on 32 Jordanian EFL learners' grammar and reading comprehension in a state university, where Moodle is utilized in some classes. In their experimental group, Moodle is used to complement the conventional classroom. The findings reveal that the students in their experimental group outperform the students of the control group in grammar as well as reading comprehension. In general, Obiedat et al. (2014) find that blended learning has a positive and significant impact on university students' academic achievement. They conduct a survey study on a sample of 427 university students to investigate the usefulness of blending learning on academic achievement. The literature shows the impact of blended learning on students' general performance while many were specifically on language learning and teaching. Hence, this study will try to depict a realistic picture of how EST101 (Developmental Psychology) students personally perceived blended learning and its effect on their academic performance in an educational module.

VI. METHODOLOGY

A. Participant and setting

Participants were chosen from both blended and traditional learning groups; those in the blended learning group was using Moodle while those in the traditional learning group used conventional methods of learning in the Faculty of Education at MNU. The research was conducted for 2 consecutive semesters from semester1, 2019.

B. Instruments

Semester final examination results and a survey questionnaire were used as the data collection instruments.

To guarantee the validity of the survey questionnaire, the questionnaire will be given to an assistant professor, and a senior lecturer of the Educational Studies department, and revisions were made according to their recommendations. A pilot test study was also conducted to test the strength and consistency of the internal reliability (Cronbach's alpha) of the test. The pilot study also helped to test the clarity of the survey questions.

C. Research design and data analysis

To examine the impact of the blended learning approach of instruction on EST1010 (Developmental Psychology) students' academic performance, 3 different analysis were done using SPSS Version 22.0. Paired sample t test was done to examine the significant differences in students' achievement either by using traditional learning method or blended teaching approach. Spearman Rho Correlation analysis was done to determine the relationship between content materials and student engagement. Analysis of the Friedman Test was done to determine which items uploaded on Moodle draw students'

interest more to study in blended learning environment.

VII. ETHICS

There were no known risks in this research, and no cultural or social issuesarised. Permission to collect data was obtained from the gatekeepers by writing a letter. Once the permission was granted, the two groups of students (EST101 students of BL and traditional regular students) were invited and informed about the research by writing an email along with an informed consent letter. Participants' involvement in the research activities was also explained. The data collected in this research are confidential. Respondents name or personal information was not linked to data. Only the researcher in this study would see the data. Participants were given a 15-20 minutes survey questionnaire via Google form. Participants had the right to decline to participate and also withdraw the given information any time after data has been collected. Participants had the right to stop the study at any time, and the right to choose not to answer any question that the respondents feel uncomfortable answering. Letter, consent form and information sheet were handed over to them before the data collection. The information collected from the survey questionnaire and final exam results were used only for the purpose of this research, and in the publication and academic conference.

VIII. RESULTS AND FINDINGS

Paired sample t test was conducted to test the first hypothesis, 'There was difference in students' achievement when using traditional learning method or blended learning method'. The result of t test shows in Table 1 showed that there is no significant difference in students' achievement whether using traditional learning method or blended teaching method at t(25)=3.66, p=.727.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Traditional	107.5714	25	15.32816	5.79350
	Blended	107.1429	25	13.95742	5.27541

Paired Samples Correlations

Mean	N	Correlation	Sig.
107.5714	25	15.32816	5.79350
107.1429	25	13.95742	5.27541

Paired Samples Test

		Paired Differences				
					95% confidence Interval of the Difference	
		Mean	Std. Deviation	Std. Error Mean	Upper	Lower
Pair 1	Traditional-Blended	.42857	3.10146	1.17224	-2.43980	3.29694

Paired Samples Test

		t	df	Sig. (2-tailed)
Pair 1	Traditional-Blended	.366	6	.727

Table 1. Paired-sample t-test of Student Achievement by Traditional and Blended Learning

Table 2 below shows the results for the second hypothesis 'There was relationship between contents, opportunities and facilities that can influence students' achievement in Developmental Psychology'.

			Contents, opportunities & facilities	Student achievement
Spearman's rho	Contents, Opportunities & Facilities	Correlation Coefficient Sig. (2-tailed) N	1.000 . 25	.638*** .000 25
	Student Achievement	Correlation	.638**	1.000

		Coefficient Sig. (2-tailed) N	.000 25	. 25

Table 2. Spearman's Rho correlation analysis results between content, opportunities & facilities, and student achievement

**. Correlation is significant at the 0.01 level (2-tailed).

The Spearman Rho Correlation analysis showed that the relationship between content materials and student engagement is significant which is ($r = 0.638$, $\rho = 0.00$, $\rho < 0.05$) with medium relationship rate.
The Analysis of the Friedman Test result for the third question showed that overall all the items uploaded on Moodle draw students' interest to study. Items that gain highest mean rank value are YouTube and Website links.

Ranks

	Mean Rank
YouTube videos	4.05
Web links	3.76
Lecture presentation slides copy	3.54
Book chapters in pdf files	3.15
Assignments	2.97
Forums	2.78
Chats	2.03
Quizzes	1.18
Wikis	1.09

Test Statistics[a]

N	25
Chi-Square	79.454
Df	3
Asym. Sig.	.000

a. Friedman Test

Table 3. Friedman Test result for the items uploaded on Moodle that draw students' interest to study

IX. DISCUSSION

The results of this quantitative research showed that the students who took EST101 (Developmental Psychology) in blended mode out performed those who took this module in traditional face-to-face classrooms. Further the results revealed that integrating technology as a main part of teaching and learning process impacts the performance positively. Integrating technology allows students to become inspired towards learning. The results of this study aligns with the previous studies done by Bataaineh&Mayyas (2017), Isti'anah (2017), Punjarean et al. (2017), Aslani&Tabrizi (2015), &Fakhir (2015), since all of these studies found that blended learning has a positive impact on students' academic performance.
It also showed that the students' experience of blended learning with regards to the contents, opportunities and facilities has a positive impact on their academic achievement in the module EST101. Additionally the findings showed that the contents and items on the LMS (Moodle) elicit the student engagement with the content as well as with their peers.

X. CONCLUSION AND RECOMMENDATIONS

The result of this research showed that using blended learning approach in teaching and learning had a positive impact on the performance of learners in the module EST101 (Developmental Psychology). Students who took the module in blended mode engaged in a dynamic and significant learning experience. With the light of the findings of this research, MNU can implement blended mode of learning with Moodle as a learning management system (LMS) across the all the modules offer in the undergraduate programmes. For this, the computer systems use by the academic staff and the students computer labs should be upgraded and the required trainings should be provided to the respective academic staff and the students who enroll to study in blended mode of learning. Finally more researches can be done on the effectiveness of the blended learning environment based on universal quality matter rubrics. The findings of this research can be a guide to begin creating a blended learning environment across the faculties of the MNU.

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