

The Effectiveness of Moodle as E-Learning in Accounting Education Program

Rochmawati¹, Susanti, Moh. Danang Bahtiar, and Suci Rohayati

¹Dep. of Accounting Education, Faculty of Economy, Universitas Negeri Surabaya, Surabaya, Indonesia,

(*)✉ (e-mail) rochmawati@unesa.ac.id

Abstract

The development of the industrial revolution 4.0 had an impact in all fields including the world of education. Changes in learning models from conventional-based to technology-based (E-Learning) are demands that must be fulfilled to prepare future generations who are able to keep up with the times. Therefore, the purpose of the study is to determine the level of effectiveness of the application of Moodle-based E-Learning on student learning outcomes in the Tax Accounting courses when compared to the use of conventional methods. The research method used in this study is the experimental research method. The research design used was the pretest-posttest control group design. Different tests (t-test) were conducted to measure the difference in effectiveness of learning by using Moodle-based E-Learning and conventional learning. The results of this study prove that the improvement of student learning outcomes using Moodle-based E-Learning is better when compared to conventional methods in Tax Accounting courses so that it can be concluded that the effectiveness of learning using Moodle-based E-Learning is higher than conventional based learning.

Keywords: Effectiveness, E-Learning, Student Learning Outcomes.

Introduction

Technological developments in the industrial revolution era 4.0 demanded various changes in all fields of life including in the education sector to offset the rapid development of industrial technology today. The application of information technology has become a demand in all fields. In the current field of education traditional learning systems that require face-to-face students and teachers are deemed incompetent with current developments (Tselios et al, 2014). There needs to be an innovative learning method where learning activities are no longer bound to space and time and use information technology

The use of information technology in learning needs to be developed as an innovation in the use of learning media and learning resources. We can take advantage of various forms of applications and facilities on the internet to improve the quality of education. In line with this, computer-based learning and learning through electronic media better known as e-learning began to be developed.

E-learning is an electronic-based information technology application through the internet network designed for the benefit of learning, with e-learning the instructors will be facilitated to update teaching materials and improve their competence. In addition, with e-learning the instructors will be easier to carry out teaching and learning activities, such as conducting distance learning (e-lectures), giving and evaluating assignments given, giving quizzes, and examining and evaluating the work of students without having to face to face (Eskandari and Soleimani, 2016). According to Haythornwhaite (2008) e-learning also offers a collaborative and interactive learning system that can stimulate students to be more active and participate in the learning process.

At present, the development of e-learning based on open source is very fast, open source is software and applications that can be downloaded for free and can be freely modified, one of the most widely used open source e-learning is Moodle (Daulay, Frimansyah, Zakaria, 2017). Moodle (modular object oriented dynamic learning environment) is a management system application package designed to help instructors create quality, collaborative and interactive online content to

support learning (Aranda, 2011; Athena, 2006; Alejandro and Mendoza, 2011; Beatty and Ulasewicz, 2006). Moodle was first introduced by Martin Dougiamas, who collaborated with Peter Taylor. Moodle was developed by Dougiamas with the aim of increasing the ability of teachers to use the internet to conduct distance learning and teaching activities and improve pedagogical abilities of instructors who are connected to each other without any limitations (Aranda, 2011).

Various studies on the phenomenon of e-learning have been carried out, the results of Herliani and Sibarani's (2017) study suggest that the application of e-learning based learning can increase student learning motivation by 41.78%, besides that e-learning based learning can also improve learning completeness student at 29.56%. Whereas according to Latifah and Susilowati (2011) that the learning approach based on blended learning and cooperative learning does not only equip students with the ability to lecture material, but the learning method is also proven to be able to improve communication and interpersonal skills, problem solving, critical analysis and other abilities needed by a person superior graduates. Another study conducted by Murniati and Hermawan (2017) tried to compare the learning methods based on E-Problem Based Learning (E-PBL) in management accounting practice courses with management accounting lectures using traditional methods. The results of this study indicate that the E-PBL learning method is felt more effective, E-PBL by utilizing features such as mobile devices and tablets has provided a virtual learning experience in solving problems that occur in the field of management accounting.

The Accounting Education Study Program of Surabaya State University is still not maximal in utilizing E-Learning for lecture activities. Learning activities that take place are still mostly done conventionally by doing face-to-face meetings directly carried out in the classroom. The lecturer should start maximizing the use of information technology in learning activities, so that later it will be able to facilitate learning activities and can increase interaction between lecturers and students. Based on this background, this study aims to determine the effectiveness of the use of Moodle-based E-Learning in learning when compared to conventional learning methods in tax accounting courses in Accounting Education Study Program, Surabaya State University.

Method

This study uses a quantitative approach with experimental research designs. The experimental method used in this study by using a pattern of randomized control group pretest-posttest design, in this design a group of subjects taken from a particular population were grouped randomly into two groups, namely the E-Learning group and the conventional group. Conventional groups are subject to certain variables and treatments, then the two groups are taken the same measurements and then compared the results.

The population in this study were all Accounting Education Study Program students, while the study sample was randomly selected and divided into two groups, namely the control class and the experimental class with the number of each class of 30 students.

The main data sources in the study are from the student learning outcomes of the Surabaya State University Accounting Education Program obtained from the results of pre-test and post-test on tax accounting subjects using e-learning and conventional methods. The technical stages of data analysis in this study were first before being given treatment before the pre test was carried out, then from the results of the pre test the homogeneity test was carried out using levene's test to find out that the ability between groups was taught using E-Learning and conventional groups were the same or different, then the data normality test is done to find out the data used is normally distributed or not. In experimental research, it must be ensured that the conditions between the experimental class and the control class are the same and the data used is normally distributed. After the two groups were treated then a test post was conducted, the posttest results of the two groups were then analyzed using the mean values of each group and compared the posttest averages of the two groups using statistical tests. Parametric tests using paired samples t-test are used to test whether there are differences in the average of two related samples (pre-test and post-test for each conventional class and e-learning class).

Results and Discussion

In this study to determine the variance of two populations the same or different as a pre-condition for conducting experiments can be seen from the results of the Leven's test as follows:

Table 1. Levene Test Result

		Levene Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	Df	Sig. (2- tailed)
PREtest	Equal variances assumed	,008	,929	-1,085	58	,282
	Equal variances not assumed			-1,085	57,844	,282
POSTtest	Equal variances assumed	,355	,554	-3,450	58	,001
	Equal variances not assumed			-3,450	56,792	,001

In table 1 Independent Samples Test above, it can be seen that the F Levene's test for the results of the initial test (Pre Test) is 0.008 with a significance of 0.929 > 0.05, it can be concluded that the class variants that use e-learning and conventional learning are the same. Whereas for the final test results (Pos test) it can also be seen that F Levene's Test is 0.355 with a significance of 0.554 > 0.05 so it can be concluded that the class variants that use e-learning and conventional learning are also the same. After performing the homogeneity test, the next normality test is carried out to find out whether the pre test data is normally distributed or not. The results of the normality test can be seen in table 2 below:

Table 2. Normality Test Results

Shapiro-Wilk			
	Statistic	Df	Sig.
k_PRE	,948	30	,152
e_PRE	,959	30	,285

Based on the results of the normality test data, it can be known that the significance value based on Shapiro-Wilk for the conventional class is 0.152 > 0.05, which means that the conventional class pre test data values are normally distributed, while the E-Learning class is 0.285 > 0.05 which means Pre test value data are also normally distributed. After knowing that the condition of the class variants of the experimental and control groups was the same and the data were also normally distributed then experiments were conducted on the two groups.

The effectiveness of e-learning learning methods can be seen from the results of Paired T test on the value of pre-test and post-test students both in class using conventional learning methods and e-learning. The test results are shown in table 3:

Table 3. Paired Samples Statistics

		Mean	N	StandartDevia tion	Standart Error Mean
Pair 1	k_PRE	38,1667	30	12,62751	2,30546
	k_POST	54,6667	30	14,10144	2,57456
Pair 2	e_PRE	41,8000	30	13,30193	2,42859
	e_POST	68,2583	30	16,33268	2,98193

The average pre-test class value that uses e-learning is 41.8000 with a standard deviation of 13.30193 while the post-test value is 68.2583 with a standard deviation of 16.33268. This means that

there is an increase in the significant value obtained by students in the learning process using e-learning. The conventional learning class on the pre-test received an average value of 38.1667 with a standard deviation of 12.62751, while the post-test received an average score of 54.6667 with a standard deviation of 14.10144. The difference in value is proven by the statistical results shown in table 4 with a significance of 0,000. This shows the increase in post-test scores on learning using E-Learning is higher when compared to conventional learning.

Table 4. Result of Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Standart Deviation	Standart Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	k_PRE - k_POST	-16,50000	12,80827	2,33846	-21,28269	-11,71731	-7,056	29	,000
Pair 2	e_PRE - e_POST	-26,45833	13,20154	2,41026	-31,38787	-21,52880	-10,977	29	,000

To compare the level of effectiveness of conventional learning with E-Learning can be seen in table 5 below:

Table 5. Result of Descriptive Statistics

	N	Min	Max	Mean	Standart Deviation
k_PRE	30	13,00	58,00	38,1667	12,62751
k_POST	30	23,00	88,00	54,6667	14,10144
e_PRE	30	16,50	68,25	41,8000	13,30193
e_POST	30	22,25	100,00	68,2583	16,33268
Valid N (listwise)	30				

The test results state that learning using e-learning is better when compared to conventional learning, this can be seen from the increase in learning outcomes between conventional classes with e-learning classes, where in the conventional class there is an increase of 43.23%, while in class e - learning the amount of increase in learning outcomes is 63.30%. Based on the results of these studies indicate that learning in tax accounting subjects using e-learning based on Moodle is proven effective and able to improve student learning outcomes.

Conclusions

Based on the results of the study it can be concluded that the use of Moodle-based e-learning can be said to be effective to be used in learning in the Surabaya State University Accounting Education Study Program in Tax Accounting because it is proven to be able to improve student learning outcomes when compared to conventional learning models. Therefore, lecturers in accounting education study programs should begin to maximize the use of E-Learning in learning activities, so that later learning activities can be carried out effectively and optimally.

Acknowledgments

The author would like to thank all those who have helped in supporting this research activity, as well as reviewers who have given criticism and suggestions for the perfection of the results of this research.

References

- Aranda, D, A. (2011). *Moodle for distance education*. Distance learning Vol 8 issue 2.
 Athena, M. (2006). *Moodle: a free, easy, and constructivist online learning tool*. MultiMedia & Internet@Schools 13, 3; Research Library pg. 26.

- Beatty, B. Ulasewicz, C. *Online teaching transition and learning in transition: Faculty perspectives on moving from blackboard to the moodle learning management system*. TechTrends; Jul/Aug 2006; 50, 4; Research Library pg. 36.
- Daulay, L, A. Firmansyah. Zakaria R. (2017). *The development of e-learning media based moodle to increase science development and islamic studies in STAIN Gajah Putih*. Al Ta'lim Journal, 24 (2) 103-109.
- Eskandari, M. Soleimani, H. (2016). *The effect of collaborative discovery learning using moodle on the learning of conditional sentences by iranian EFL learners*. Theory and Practices in Languages Study, Vol pp 6 153-156.
- Garcia Mendoza, G.A. (2011). *A comparative study of computer and mobile phone-mediated collaboration: the case of university students in Japan*. Mobile Learning Applications in Higher Education [Special Section]. Revista de Universidad y Sociedad del Conocimiento (RUSC). Vol. 11, No 1. pp. 222-237.
- Ghozali, Imam. (2006). *Aplikasi Analisis Multivariate dengan Program SPSS (Edisi Ke 4)*. Semarang:Badan Penerbit Universitas Diponegoro.
- Haythornthwaite, C. (2008). *E-learning can have positive effect on classroom learning, scholar says*. <http://phys.org/pdf148064009.pdf>
- Herliani, R. Sibarani, C.G.T. (2017). *Penerapan model pembelajaran problem based learning (PBL) berbasis blended learning untuk meningkatkan motivasi dan hasil belajar akuntansi*. Jurnal Teknologi Pendidikan, Vol. 10 No. 2.
- Latifah, L. Susilowati, N. (2011). *Inovasi pembelajaran akuntansi berbasis blended learning*. Jurnal Pendidikan Ekonomi Dinamika Pendidikan Vol. VI No 2 Hal. 222-232.
- Murniati, A. Hermawan, A. (2017). *E problem based learning (E-PBL) pada mata kuliah akuntansi manajemen sebagai alternatif pembelajaran inovatif*. Jibeka, VOL 11 nomor: 1 – 10.
- Tselios, N. Daskalakis, S. Papadapaulo, M. (2014). *Assessing the acceptance of a blended learning university course*. Educational Technology & Society, 14 (2) 224-235.