The Effect of Moodle Implementation in English for Multimedia Classroom on Students' Achievement in Reading and Writing

Ika Agustina[1], N Nasrudin[2], Syahripal Putra[3], A Akrim[4], Dewi Maharani[5]
{agustina.ika87@gmail.com[1], *nasrudin_sh_map*@gmail.com[2], syahripalputra@gmail.com[3], akrim.fai@gmail.com[4], dewimaharani922@gmail.com[5]}

[1,2]Politeknik Negeri Media Kreatif, Medan, Indonesia
[3]SMA Negeri 1 Limapuluh, Limapuluh, Indonesia
[4,5]*Universitas Muhammadiyah Sumatera Utara, Medan, Indonesia*

Abstract: Moodle is an application that serves to create and conduct internet-based courses/training/education. In this paper, the researchers attempted to find out whether using Moodle is effective to increase student's achievement especially on reading and writing English for multimedia. This research conducted at Politeknik Negri Media Kreatif, especially on Multimedia program. English subject in this campus is not a general English that focuses on grammar, but rather English for specific purposes in which English application should be related to every department, such as English for Multimedia. Quasi-experiment with non-equivalent control group design was a method implemented to solve the research's problem. Two classes that had 30 students in each class became the sample. Class A of the fourth semester was decided as the experimental group and class B as the control group. Before investigating the effectiveness of Moodle, the researchers created Moodle based learning system. After that, Moodle was used in experimental class as a treatment. researchers collected the data by administrating reading multiple choice test and writing an essay. The reading test consisted 30 multiple choice questions with 5 options both in pre-test and posttest. In computing Independent t-test, founded that sig. (2-tailed) for reading was 0.000 and for writing was also 0.00. Both sig values were less than 0.05, it meant that there was a significant effect of using Moodle in teaching English for Multimedia on students' achievement in Reading. However, Moodle significantly improves writing rather than reading in which the t-test of writing (12.812) was greater than t-test of writing (9.128).

Keywords: E-learning, ESP, Reading Test, Writing Test, Quasi-Experiment

1 Introduction

Developments in educational technology experience significant changes, it cannot be separated from the role of education stakeholders. One of the supporting factors to achieve the goal or concept of education is the rapid development of information technology so that it can produce software and hardware. One alternative is the development of e-Learning system that can provide more time and opportunity for students to learn independently. Internet technology advances and computer information technology and networked learning made it possible to design and utilize new generation learning environments (Janner, et al., 2018).

WMA 2019, December 11-14, Medan, Indonesia

DOI 10.4108/eai.11-12-2019.2290814

English subject in Politeknik Negeri Media Kreatif is not a general English that focuses on grammar, but rather English for specific purposes in which English application should be related to every department, such as English for Multimedia, English for Design, English for Graphic Art and other majors. Teaching English for specific purpose is difficult for many lecturers as stated ---Some common issues in teaching ESP include lack of needs analysis in designing ESP courses and teaching materials, low student proficiency, and low quality of ESP teachers---[1]. Most of them felt hesitant teaching ESP, because of their shortcoming of the specific discipline. Moreover, limited teaching resources, prescribed textbook or syllabus make this problem worse [2].

Using Moodle in learning English for multimedia should be relevant to the students' educational need. Moodle is an application that serves to create and conduct internet-based courses/training/education. It is designed to support the social construct framework in education [3]. Some of the learning activities supported by Moodle are (1) Assignment: used to assign the assignment, (2) Chat: used to conduct an online conversation process between the teacher and the learning participant, (3) Forums: online forums created to discuss learning material, (4) Quiz: this facility allows for online exams or tests, (5) Survey: is used for polling.

Some studies in term of Moodle use around the world gave an overview in conducting this research. The use of LMS like Moodle is still rare at the school level because most teachers do not have enough technical knowledge to apply that [4]. In south region of Ecuador, the use of Technology in teaching is scarce. Whereas, to improve EFL students' English skills, teachers should be able to integrate technology devices with appropriate learning strategies [5]. Then, to create E-learning, a teacher has to master three substantial knowledges, namely technological matter, technological teaching, and technological teaching matter [6]. They should understand how technology affects teaching and learning outcomes. Unfortunately, in university level, many lecturers avoid to use e-learning. The barriers to using technology in university level are the lack of technical knowledge, assessment of technological effectiveness, management structure, and organizational shift [7]. Thus, to support teachers and lecturer in using e-learning, both school, and campus need to provide not only networks infrastructure, but also training of technological knowledge for them. The success of e-learning is decided by some components namely course, teacher, learner, and ICT in which these are interdependent and interrelated as stated by [8]. Hence, in developing e-learning system, those components should be set up properly. E-learning system also needs collaboration between individuals, institution, and environment.

Using Moodle in teaching English aims to increase student's learning interest, so that it can support their achievement. Previous researcher found some benefits of using Moodle in language learning. Based on students' perspective, using Moodle in English learning helped them to be more organized in doing the course requirements although it had no supervision [9]. Students using e-learning in Business English lesson get better results in listening comprehension than students taught face-to-face [10]. Doing homework in Moodle is more potent to increase students' capability in reading than using conventional way [11]. However, in this paper, the researchers attempt to find out whether using Moodle is effective to increase student's achievement, especially in reading and writing.

2 Methodology

The research was conducted in Politeknik Negeri Media Kreaif Medan on February 2017 until September 2017. It performed a quasi-experimental research with different control group class of the experimental class. The population was fourth-semester students of the multimedia department that amounted 30 per each class. All population became sample of the research. Then class A of Multimedia was the experimental class and class B as the control class as described in figure 1.

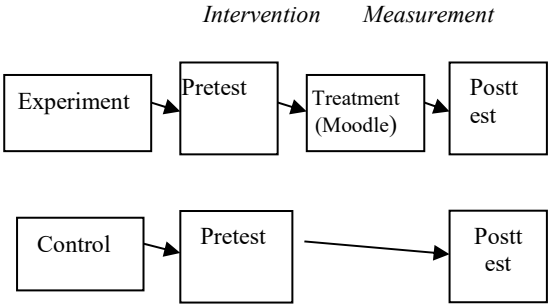

Fig.1. Quasi-Experimental Design

Before investigating whether the use of moodle effects students' reading and writing achievement on English for multimedia subject, the researchers created Moodle based learning system. In this development, researchers need a long time because they had to collect learning materials to be entered into the Moodle. After the Moodle-based learning system was completed, the next step was to validate the moodle to determine whether the moodle was feasible to use in English for multimedia subject. After the moodle was declared as valid, moodle would be used in the experimental class. But before being used, both experimental and control classes were given a pretest. After the pretest, the treatment was done for about 1 month. In the experimental class, the treatment is the teaching of english for multimedia by using Moodle, while the control class is only given the teaching using conventional way. The final step was giving posttest to both classes to see the effectiveness of Moodle.

2.1 Data Collection

After developing the Moodle, Moodle would be used in experimental class as a treatment. to find the effectiveness of Moodle, researchers accumulated the data by administrating multiple choice test for reading and writing essay for writing. The reading test consisted 30 multiple choice questions with 5 options for both groups. While in writing test, students were given an essay.

2.2 Data Analysis

After the data from each group collected, then performed a series of statistical tests in order to measure the effectiveness. A series of statistical tests were performed with SPSS software including normality and homogeneity tests. Then t-test was compared and analyzed to guarantee that there was a significant distinction in mean score on the test before and after Moodle implementation of the treatment class and non-treatment class. The t-test conducted in

this study was independent samples t-test because this study involved comparison of the mean score between two different groups, independent or unrelated to each other, and to see whether the differences occurred between the two groups due to a treatment [12]. Once the distinction between the treatment class and non-treatment class were known, it followed that the larger mean score was to see which achievement was more effective by performing the mean comparisons obtained by each group.

3 Result Discussion

Before investigating the effectivity of implementing Moodle in English language learning for Multimedia on students' achievement in Reading and Writing, the researchers designed Moodle-based learning. The learning on Moodle version 2 consists of several formats, namely: SCORM, Social, Topics, and Weekly.The composition of the course content package was organized in accordance with the rules of Content Aggregation Package composition. In order to be easily accessed and followed by the students, then in the composition of the content of English Multimedia course content was divided into two, namely: 1) Learning module, 2) Course Presentation. In this Learning Module is divided into two Content Aggregation Package, which is Summary of Computer System Architecture and Computer Organization Module. In summary Computer System Architecture is divided into 10 materials, while the Computer Organization Module is divided into 7 Chapters. All assets in Content Aggregation Package are text files in PDF format, so they can be directly followed by students online and can be stored as self-study materials.

The Course Presentation is arranged for 16 meetings with the assumption that the number of meetings for one semester is 14 lecture meetings, 1 midterm exam and one final semester examination. The preparation of the learning content package is based on the lecture unit that has been prepared so that each meeting has its own Content Aggregation Package. Figure 2 shows the Content aggregation package of the Course Presentation.

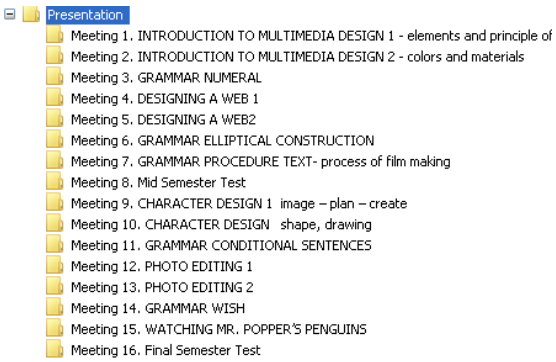

Fig. 2. The Content Aggregation Package

Each Content Aggregation Package has an imsmanifest.xml file which is then stored in ZIP and uploaded into MOODLE that has been installed on the server. To facilitate the management of the lecture, sub category under the category of English for Multimedia 4 Course with the map of category position is shown in Figure 4.2.

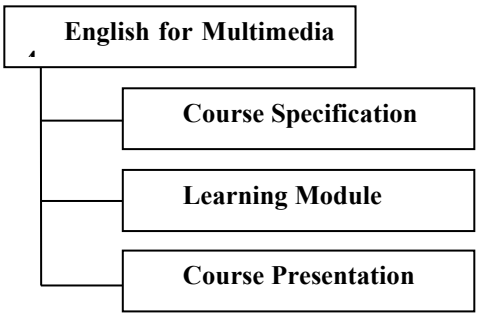

Fig.3. The Content aggregation package

3.1 Validation of Moodle-Based Learning

To know the efficacy of Moodle designed, the validation was conducted on 2 important aspects, namely design and reliability of Moodle and English learning content appropriateness. The validation involved the experts in some disciplines. First validation was done by 3 experts of English teaching, second validation involved 3 experts of Education Technology and third involved 3 experts of multimedia. The criteria of validation score were shown in table 2.

---X > 4,2 = Very Good
3,4 < X ≤ 4,2 = Good
2,6 < X ≤ 3,4 = Enough
1,8 < X ≤ 2,6 = Low
X ≤ 1,8 = Very Low--- [13]

Table 1. Validation of Moodle-Based Learning

No	Aspect	Validation Score		
		Val 1	Val 2	Val 3
1	Design and reliability of application system	4.3	4.1	4.2
2	Course content appropriateness	4.1	4.1	4.0
	Average	**4.4**	**4.2**	**4.2**
	Total Average		**4.27**	

The data in table 2 shows that validation of Moodle designed by researchers to be used in English for multimedia subject is very good with average score 4.27. Overall, the validators affirmed Moodle-based e-learning model that has been designed by researchers had good quality. It means that English learning materials designed in Moodle were proper to be used in the experimental classroom in order to be verified the effectiveness either in reading or writing skills.

3.2 The Effectiveness of Moodle on Students' Reading and Writing Achievement

The control group, as well as the experimental group generally reached different results. Differences in students' achievement obtained by each group in the pretest and posttests are then illustrated in figure 4:

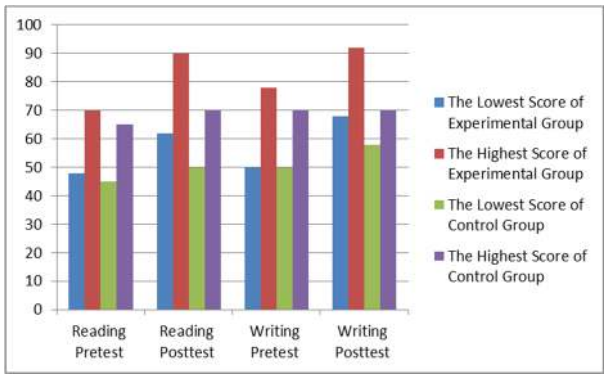

Fig. 4 . Students' reading and writing achievement in control and experimental group

In this study, SPSS program was used to test the hypothesis. Before testing the hypothesis, proof of normality and homogeneity would be done. After that, independent sample t-test was administered to test the research hypothesis.

3.2.1 Normality Test

Data gained through the test before and after Moodle implementation were tested to determine if the data follows the normal distribution pattern. Normality test in this study using Kolmogorov-Smirnov formula. The data was categorized as being normal because the Asymp Sig value was greater than or equal to 0.05, but if the Asymp Sig value was less than 0.05 then the data distribution is not normal. Reading pretest of experimental class had Sig value 0.12, while in control class, it was 0.10 as shown in table 2. Sig value for writing pretest in experimental group was 0.27 and in control group was 0.062 as shown in table 3. Sig value for reading posttest in experimental group was 0.200 and in control group was 0.07 as shown in table 4. Sig value for reading pretest in experimental group was 0.165 and in control group was 0.200 as shown in table 5. It can be concluded that all of the data gathered from two classes, both before treatment and after treatment was normal.

Table 2. Normality of Reading Pretest

Group		Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
Pretest Reading	Experimental	.182	30	.12	.952	30	.189
	Control	.185	30	.10	.927	30	.052

Table 3. Normality of Writing Pretest

Group		Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	f	Sig.
PretestWriting	Experimental	.142	30	.127	.951	0	.180
	Control	.155	30	.062	.917	30	.022

Table 4. Normality of Reading Posttest

Group		Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
PosttestReading	Experimental	.117	30	.200(*)	.965	30	.406
	Control	.153	30	.070		30	.074

Table 5. Normality of Writing Posttest

Group		Kolmogorov-Smirnov(a)			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
Posttest Writing	Experimental	.136	30	.165	.967	30	.470
	Control	.096	30	.200(*)	.975	30	.686

3.2.2 Homogeneity Test

Homogeneity test was administered to know the data obtained have the same variance. Homogeneity test was conducted by the homogeneity of variance test using SPSS 20. If the score of significance is greater than or equal to 0.05 then the data can be said to be homogeneous. The result of homogeneity test using levene statistic showed that data distribution for reading and writing were homogeneous in which significance for Reading was 0.866 (> 0.05) and significance for writing was 0.185 (> 0.05). In meant that both experimental and control groups had same ability before they were taught by using Moodle. Homogeneity test results can be seen in Table 6:

Table 6. Homogeneity Test

	Levene Statistic	df1	df2	Sig.
Reading	.029	1	58	.866
Writing	1.801	1	58	.185

3.2.3 Hypothetical Test

The output of normality test and homogeneity check that has been done before showed that all of the data obtained was homogeneous and normally distributed. Therefore, the hypothesis test could be done. The next hypothesis test was by independent t-test sample. The data tested is data of students' final score in the Moodle treatment class and the non-Moodle treatment class. This test had an objective to find out whether significant distinction found between students' reading and writing achievement in treatment class and non Moodle treatment class. In the calculation, sometimes the results found do not match the researchers' expectations and beyond prediction. Most researchers in the world ended like that, of which they applied a model and test it, but it turned out finally, the model has no effect whatsoever. Moodle is considered successful in working up students' accomplishment in reading and writing if sig value is not higher than 0.005. It was stated that the significant effect of using Moodle on students' achievement in reading and writing English for multimedia was proven. T-test at a significance level of 5 percent with 60 students as the sample, could be seen in table 8 and 9.

Table 7. Independent Sample Test of Reading

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	Df	Sig. (2-tailed)
Reading	Equal variances assumed	4.073	.048	9.128	58	.000
	Equal variances not assumed			9.128	50.382	.000

Table 8. Independent Sample Test of Writing

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	Df	Sig. (2-tailed)
Writing	Equal variances assumed	5.760	.020	12.812	58	.000
	Equal variances not assumed			12.812	45.947	.000

In the calculations shown in table 8, the value of t-test in Reading was 9.128 and sig. (2-tailed) was 0.000. The sig value 0.000 was lower than 0.05, it meant that there was a significant effect of using Moodle in teaching English for Multimedia on students' achievement in Reading. The reality gives a definite answer in term of the hypothesis that students who learn using Moodle have higher achievement in reading than students who learn using conventional learning. Therefore, this result is expected to convince teachers and other institutions to utilize Moodle as an alternative learning in a sophisticated age like today. This finding was similar with the statement ---The design and implementation of the English reading examination system based on the WEB platform will not only improve the efficiency of the examination management, but also drive students to actively learn English reading, with certain application value--- [14] In the calculations shown in table 9, t-test value in writing was 12.812 and sig. (2-tailed) was 0.000. The sig value was lower than 0.05, it meant that there was a significant effect of using Moodle in teaching English for Multimedia on students' achievement in Writing. Students who learn using Moodle have higher achievement in writing than students who learn using conventional learning. Field findings also explain that they preferred to do writing tests in Moodle instead of having to work on paper. Typing on a computer is considered faster and easier than on paper.

4 Conclusions

The results of this study provide support for transforming conventional learning into an e-learning environment at Politeknik Negeri Media Kreatif. Based on the findings, using Moodle in teaching English for Multimedia had significant effect on students' achievement in reading and writing. It can be concluded that using Moodle in learning can develop students' reading and writing achievement. The acquisition of gain scores owned by the experimental group and control group verified the superiority of Moodle application than conventional learning in increasing reading and writing English accession. However, it was very surprising to know that Moodle more improved writing than reading in which t-test of writing was

12.812, greater than reading (9.128). It is recommended for educational institutions, to begin designing alternative forms of learning in addition to conventional forms of learning. One of them is a form of learning that utilizes technology such as online learning. Therefore, to provide supportive infrastructure, training is also required for teachers to be more open and accustomed to utilize internet technology in learning. In addition, it is also suggested that online learning, in this case Moodle application, should not be understood only as an activity of transferring teaching materials from books to internet servers for accessible learners. In developing online learning, beside good planning and sufficient internet knowledge, teachers need more patience in guiding and directing learners to get them accustomed in an online learning environment that demands independence.

Acknowledgements

The researchers would like to extend their heartfelt thanks to those who contributed to the research. Next, sincere appreciation to Politeknik Negeri Media Kreatif, multimedia lecturers' and students' which has supported the research on the effect of Moodle on the students' reading and writing achievement. Then, great gratitude to Kemristekdikti, the reviewers for supporting and providing valuable inputs for the research. As the expression gives 'close to perfection' would seem a bit difficult to achieve, but they had done to fulfil the standard requirements. It is hoped that this article would be constructive and contibutive in English language teaching.

References

[1] T. T. H. Nguyen and T. T. M. Pham, "Difficulties in teaching English for specific purposes: Empirical Study at Vietnam Universities.," *High. Educ. Stud.*, vol. 6, no. 2, pp. 154–161, 2016.

[2] N. T. Nguyen and N. D. Ngo, "Understanding Teacher Efficacy to Teach English for Specific Purposes," *Asian EFL J.*, no. 102, pp. 4–16, 2017.

[3] H. D. Surjono, *Membangun Course E-Learning Berbasis Moodle Edisi Kedua*. Yogyakarta: UNY Press, 2013.

[4] O. Sadeck and J. Cronjé, "A Continuum of Teachers' e-Learning Practices," *Electron. J. e-Learning*, vol. 15, no. 5, 2017.

[5] L. Solano, P. Cabrera, E. Ulehlova, and V. Espinoza, "Exploring the use of educational technology in EFL teaching: A case study of primary education in the south region of ecuador," *Teach. English with Technol.*, vol. 17, no. 2, pp. 77–86, 2017.

[6] A. Chigona, "Western Cape Subject Advisors' Perception of Their Preparedness for Connected Classrooms e," *Electron. J. e-Learning*, vol. 15, no. 5, 2017.

[7] C. . Nedelman, "Exploring Organizational and cultural barriers to developing Distance Learning Programs in Higher Education," North Central University, 2013.

[8] M. R. Ismail, "A Model for e-learning Systems Success: Systems, Determinant, and Performance," *Int. J. Emerg. Technol. Learn.*, vol. vol 12, no. 10, pp. 4–20, 2017.

[9] N. I. Alhothli, "Investigating the Impact of Using Moodle As an E-Learning Tool for Students in an English Language," University of Montana, 2015.

[10] K. Lenka, P. Kučera, and H. V. Vydrová, "English for Specific Purposes E-learning Experimental Research," *Resour. Books Teach.*, vol. 7, no. 3, p. 170, 2007.

[11] E. Suwandi, Refnaldi, and H. Ardi, "The Effectiveness of Using E-learning Moodle for Homework in Improving Reading Ability of Grade X Students of SMAN 4 Padang," *J. English Lang. Teach.*, vol. Vol 1 no 3, no. juni, pp. 10–17, 2013.

[12] J. Larson-Hall, *A guide to doing statistics in second language research using SPSS*. New York: Routledge, 2010.
[13] Sukardjo and P. Lis, *Metodologi Penelitian Pendidikan Kimia*. Yogyakarta: FMIPA UNY, 2009.
[14] L. Guo, Z. Zhao, L. Bai, and X. Zhao, "Design and Implementation of English Reading Examination System Based on WEB Platform Introduction to Relevant Computer Technologies and System," *Int. J. Emerg. Technol. Learn.*, vol. 12, no. 12, pp. 45–56, 2017.