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Learning Model of Writing Scientific Papers Based on Moodle Learning Management System, Indonesian Language Education Study Program, Pancasakti University of Makassar

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: The development of information and communication technology at this time makes it easier to spread information to various regions, even information spreads quickly to all parts of the world. The latest information that occurs in an area can be obtained easily, so that the existence of information and communication technology today has helped the process of human life in carrying out daily activities. Likewise, with the world of education, the development of information technology has had an influence on the world of education, especially in the learning process.

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Methodologhy: This study aims to find out how effective the learning model of writing scientific papers is. This type of research is a development research. In this study, there are four test subjects.
Results: The results of this study show that the learning of writing scientific papers in the Education Study Program Indonesian Pancasakti University of Makassar because the effectiveness criteria have been met, namely the t-value of calculation > the t-value of the table (9, 070 > 2.04).

Keywords: Learning model; writing scientific; moodel learning; learning management system.

1. INTRODUCTION

The development of the use of information and communication technology has an effect on five shifts in the learning process, namely from training to appearance, from classroom anywhere and anytime, from paper to online, physical facilities to network facilities and from cycle time to real time (Huda, 2020). According to Raharja (2011) the learning model based on the moodle learning management system is a learning model through computer devices connected to the internet, students try to obtain learning materials that suit their needs.

The learning model based on the learning management system moodle is an internet application that can connect lecturers and students in an online learning room (Abrar & Armin, 2015; Arikunto, 2002; Batubara, 2018; Djuharie, 2001; Dulay et al., 1982). The learning model based on the learning management system of Moodle has a role to facilitate and manage learning activities, by making lecturers and students integrated in an effective, efficient, and attractive learning environment (Belawati, 2003; Brown, 2000). Learning management system moodle as a learning model that links technology with daily life problems that are familiar to students (Warsono and Hariyanto, 2012: 153). In connection with the use of the learning model of writing scientific papers, there are several studies that have been carried out before. Research conducted by Supriyadi (2015). Development of a learning model for writing scientific papers with a constructivism approach (Munir, 2009; Muslich, 2010; Nasution, 1993; Nurchasanah & Widodo, 1993; Nurdin, 2007). The results of the study show that the learning model developed is proven to improve students' ability to write scientific papers, both in the process and in the results (Byrne, 1995; Chaer, 2009; Crimmon, 1984; Curriculum Center of Research and Development, 2006).

Based on the initial observation of research on learning to write scientific papers for students of the Indonesian Language Education Study Program, Pancasakti University Makassar, there are several problems that researchers found in the field (Dahar, 2011; Dalman, 2016; Daryanto & Dwicahyono, 2014; Dick, Carey, & Carey, 2001; Supriyono, 2008). The problems faced by students in learning to write scientific papers are: (1) Students often experience difficulties in formulating research topics that are appropriate and relevant to their field of study (Hasan, 2006; Hergenhahn & Olson, 2008; Horvat, Dobrota, Krsmanovic, & Cudanov, 2015). In addition, students are also often confused in setting clear and measurable research goals. (2) Students have difficulty finding relevant and up-to-date literature and references to support their research and limited access to resources and libraries (Tompkins, 1994; Trianto, 2009; Usman, 2008). (3) Students have difficulty in understanding the data and analyzing the data correctly obtained from their research (Pranowo, 2015; Prastowo, 2012; Prayitno et al., 2001; Rusyana, 1984; Saefudin, 2008). These difficulties can be caused by a lack of data analysis skills or a lack of experience in interpreting research results (King, 2010; Kosasih, 2017; Lado, 1964; Law No. 20, 2003). (4) Students have difficulty writing in an appropriate academic style, including writing format, use of references, and grammar. This can be caused by a lack of experience in writing scientific papers or a lack of academic writing skills (Suwandi, 2009; Tanzeh, 2010; Tarigan, 1995; Thiagarajan, Semmel, & Semmel, 1974). (5) The selection of learning media used by lecturers is still ineffective. Lecturers often use the lecture method, so that students become passive in learning (Schmidt, Dickerson, & Kisling, 2010; Semi, 2009; Setyosari, 2010; Steinberg, 1993; Sudjana, 2008; Sugihartono et al., 2007). Effective and creative learning should involve students to interact in learning to write scientific papers (Ellis, 1986; Gere, 1985; Government Regulation, 2008; Hamalik, 2008).

Based on the previous description, the researcher was motivated to develop a learning model for writing scientific papers based on the learning management system moodle

(Nurgiantoro, 2009; Nurhadi, 1990; Oyama, 1976; Permana, 2013; Prakoso, 2005; Pranowo, 2014). The results of the development are manifested in the form of a learning model that can be used in learning to write scientific papers (Ibrahim & Syaodih, 2003; Iskandarwassid, 2008; Ministry of Education and Culture, 2017; Kakasevski, Mihajlov, Arsenovski, & Chungurski, 2008). Through the development of a learning model for writing scientific papers based on the learning management system Moodle, it is hoped that all problems that hinder the quality of learning to write scientific papers can be overcome (Sukmadinata, 2008; Supriadi, 1997).

2. METHODS

This type of research is a development research. Sugiyono (2010: 407) states that development research is commonly referred to as Research and Development (R&D), which is a type of research used to produce a particular product and test the effectiveness of that product. Development research is a process to develop a new product or improve an existing product, which can be accounted for (Arifin, 2012).

The development research carried out in this study is to produce a new product in the form of a learning model for writing scientific papers based on the learning management system moodle which will be used in lectures at the Indonesian Language Education Study Program, Faculty of Teacher Training and Education, Pancasakti University of Makassar.

Some of the goals designed to be achieved in development research. Therefore, the focus of research and development is adjusted to the design and goals to be achieved, namely how effective the learning model of writing scientific papers. This research was carried out at Pancasakti University Makassar in the 2023/2024 academic year with the following trial subjects:

1. Experts in learning model materials and learning design in the development of a learning model for writing scientific papers based on the learning management system mödle based on the following criteria: a) Have an Indonesian education background. b) Mastering the scientific field and experience in teaching the scientific field, this scientific field is the field of Indonesian language education.
2. Learning Management System Design Expert in the development of a learning model for writing scientific papers based on the learning management system moodle, based on the following criteria: a) Have an educational background in the field of learning technology. b) Have expertise in designing or designing learning models of moodle learning management systems.

3. Course Lecturer

The determination of lecturers in writing skills development courses as trial subjects, based on the following considerations.

a. The lecturer who teaches the course will directly use the learning model of writing scientific papers based on the learning management system moodle.
b. The lecturer in charge of the course fully masters the characteristics of students, how students learn and what difficulties are faced in learning, so that the learning model of writing scientific papers based on the learning management system Moodle is developed according to the needs of students.

4. Student

Students of the Indonesian Education Study Program for the 2023/2024 academic year are the target users of the learning model for writing scientific papers based on the learning management system Moodle developed.

The data in this study are the results of validation on the validation sheet of the learning model for writing scientific papers based on the learning management system moodle, the results of student responses to the learning model for writing scientific papers based on the learning management system moodle, the results of lecturers' responses to the learning model for writing scientific papers based on the learning management system moodle, and the results of the test for writing scientific papers (papers) using the learning model of writing Scientific paper based on learning management system Moodle.

The data sources in this study are the learning model of the writing skills course, the Curriculum

of the Indonesian Education Study Program at Pancasakti University of Makassar, and the semester learning plan (RPS) of the writing skills course. In addition, the data sources in this study were also obtained from the validation sheet of the learning model for writing scientific papers based on the learning management system moodle, lecturers in charge of courses, and students.

3. RESULTS AND DISCUSSION

3.1 Results

Data on the effectiveness of the learning model for writing scientific papers based on the learning management system Moodle was obtained from the analysis of student learning outcome data in writing scientific papers in the pretest and posttest which were analyzed using descriptive and inferential statistics. The results of descriptive and inferential statistical analysis of student learning outcomes in writing scientific papers in pretest and posttest, are described as follows.

a. Descriptive Statistical Analysis

1) Analysis of Learning Outcome Data in Pretest

The distribution of the frequency and percentage of student learning outcomes in learning to write scientific papers in the pretest is shown in the Table 1.

Table 1 shows that the highest score obtained is 84 obtained by 1 student (4%) and the lowest score is 65 obtained by 1 student (4%). Furthermore, students who obtained a score of 67 amounted to 1 person (4%), students who obtained a score of 70 amounted to 3 people (12%), students who obtained a score of 71 amounted to 2 people (8%), students who obtained a score of 72 amounted to 1 person (4%), Students who obtained a score of 73 amounted to 2 people (8%), students who obtained a score of 74 amounted to 1 person (4%), students who obtained a score of 75 amounted to 5 people (20%), students who obtained a score of 76 amounted to 3 people (12%), students who obtained a score of 78 amounted to 3 people (12%), students who obtained a score of 82 amounted to 1 person (4%), students who obtained a score of 83 amounted to 1 person (4%). If the learning outcomes of students in learning to write scientific papers in the pretest are illustrated in the frequency and learning outcome graph, it looks like the following image.

2) Analysis of Learning Outcome Data in Posttests.

The distribution of frequency and percentage of student learning outcomes in learning to write scientific papers in posttests is shown in the Table 2.

Table 2 Distribution of Frequency and Percentage of Student Learning Outcomes in Writing Scientific Papers on Posttest.

Table 1. Analysis of learning outcome data in pretest

Value	Frekuensi	Percentace	Persenatase kebenaran	Persentase komulatif
65	1	4,0	4,0	4,0
67	1	4,0	4,0	8,0
70	3	12,0	12,0	20,0
71	2	8,0	8,0	28,0
72	1	4,0	4,0	32,0
73	2	8,0	8,0	40,0
74	1	4,0	4,0	44,0
75	5	20,0	20,0	64,0
76	3	12,0	12,0	76,0
78	3	12,0	12,0	88,0
82	1	4,0	4,0	92,0
83	1	4,0	4,0	96,0
84	1	4,0	4,0	100,0
Total	25	100,0	100,0	

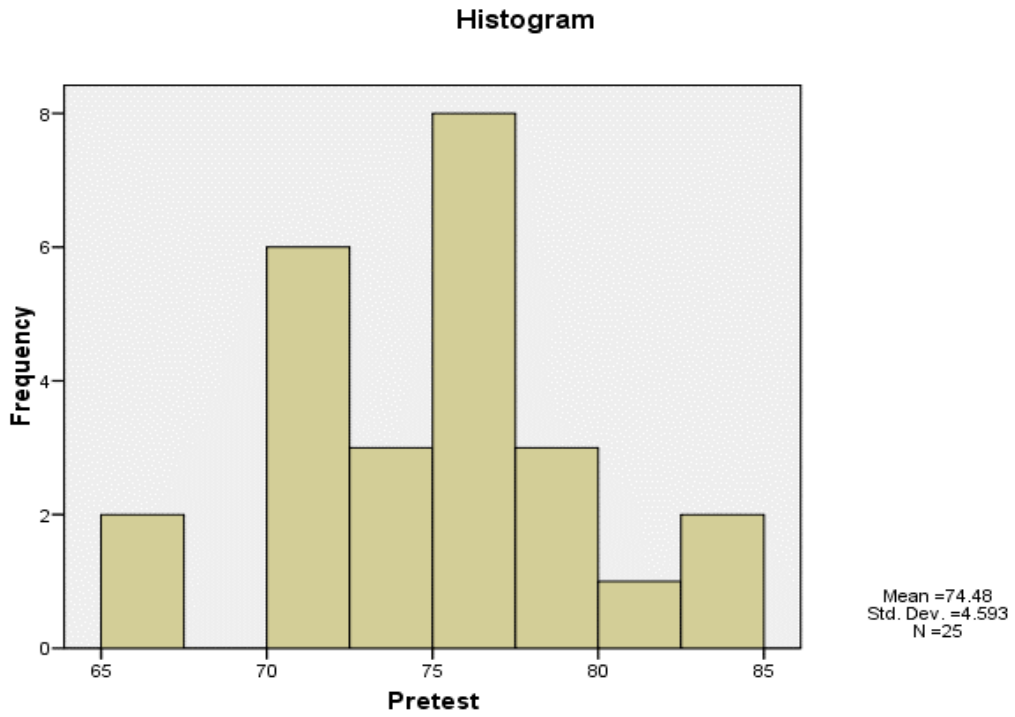

Fig. 1. Frequency and learning outcomes of students in learning to write scientific papers in pretest

Table 2 shows that the highest score obtained is 96 obtained by 2 people (8%) and the lowest score is 78 obtained by 1 person (4%). Furthermore, students who obtained a score of 82 amounted to 4 people (16%), students who obtained a score of 83 amounted to 1 person (4%), students who obtained a score of 84 amounted to 5 people (20%), students who obtained a score of 85 amounted to 3 people (12%), students who obtained a score of 86 amounted to 1 person (4%), students who obtained a score of 87 amounted to 3 people (12%), students who obtained a score of 88 amounted to 1 person (4%), Students who obtained a score of 91 amounted to 2 people (8%), students who obtained a score of 92 amounted to 1 person (4%), students who obtained a score of 95 amounted to 1 person (4%). If the learning outcomes of students in learning to write scientific papers on the posttests are illustrated in the frequency and learning outcome graphs, it looks like the following figure.

1) Normality Test.

The normality test of student learning outcomes in learning to write scientific papers in the pretest and posttest was carried out by the lilliefors statistical test (Kolmogorov-Smirnov) with the provision that if $p > 0.05$, then the data was declared normally distributed, but if $p < 0.05$, the learning outcomes were declared not normally distributed. The results of the normality test of student learning outcomes in writing scientific papers in the pretest and posttest, are shown in the Table 3.

Table 3 shows that the value of $p = 0.130$ with significance = 0.200 for pretest and $p = 0.177$ with significance of 0.052 for postest. This shows that $p > \alpha = 0.05$. This means that the learning outcomes of students in learning to write scientific papers in the pretest and posttest come from a normally distributed population.

2) Homogeneity Test.

The homogeneity test of student learning outcomes in learning to write scientific papers in the pretest and posttest was carried out with the statistical test of homogeneity of variances with the provision that if the significance $p > 0.05$, the data was declared homogeneous, but if the significance $p < 0.05$, the learning outcomes were declared non-homogeneous. The results of the homogeneity test of student learning outcomes in learning to write scientific papers in the pretest and posttest, are shown in the Table 4.

Table 4 shows that the value of p = 0.071 with significance = 0.790. This, in turn, shows that p > α = 0.05. This means that the learning outcomes of students in learning to write scientific papers in the pretest and posttest are stated to be homogeneous.

Table 2. Analysis of learning outcome data in posttests

Nilai	Frekuensi	Persentase	Persenatase kebenaran	Persentase komulatif
78	1	4,0	4,0	4,0
82	4	16,0	16,0	20,0
83	1	4,0	4,0	24,0
84	5	20,0	20,0	44,0
85	3	12,0	12,0	56,0
86	1	4,0	4,0	60,0
87	3	12,0	12,0	72,0
88	1	4,0	4,0	76,0
91	2	8,0	8,0	84,0
92	1	4,0	4,0	88,0
95	1	4,0	4,0	92,0
96	2	8,0	8,0	100,0
Total	25	100,0	100,0	

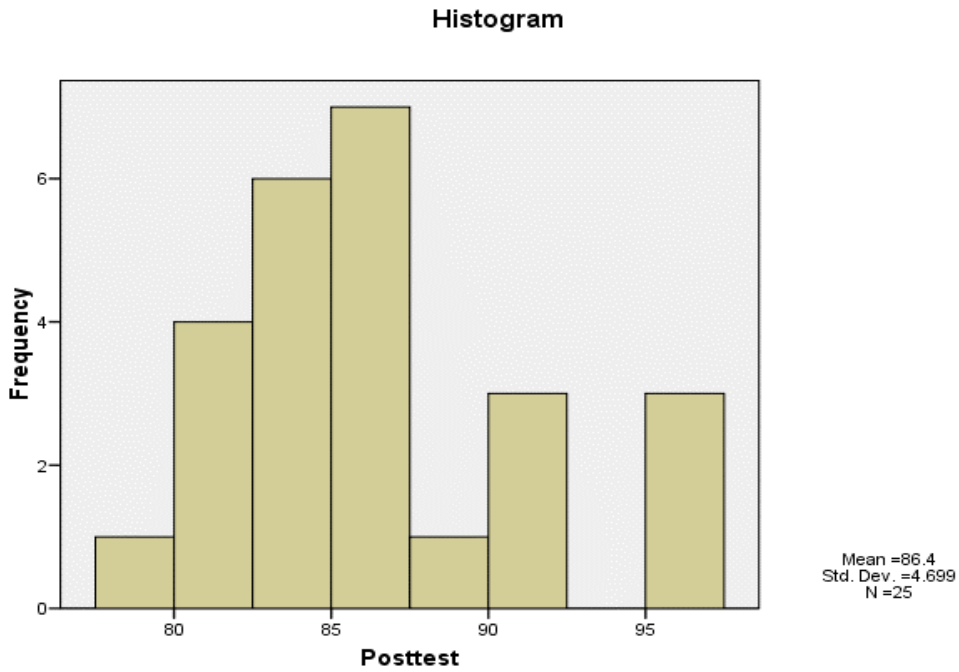

Fig. 2. Inferential diagnostic analysis

Table 3. Normality test results of student learning outcomes in writing scientific papers in pretest and posttest

	Kolmogorov-Smirnov(a)			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretes	,130	25	,200(*)	,969	25	,631
Postest	,177	25	,052	,912	25	,033

Table 4. Results of the homogeneity test of student learning outcomes in learning to write scientific papers in pretest and posttest

Levene Statistic	df1	df2	Sig.
,071	1	48	,790

Table 5. Results of t-test student learning outcomes in learning to write scientific papers in pretest and posttest

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Upper	Lower
Nilai	Equal variances assumed	,071	,790	9,070	48	,000	11,920	1,314	14,562	9,278
	Equal variances not assumed			9,070	47,975	,000	11,920	1,314	14,562	9,278

3) T-test

After the prerequisite tests were carried out, namely the normality test and the homogeneity test. Next, a T-test will be carried out to test the hypothesis. The t-test of student learning outcomes in learning to write scientific papers in the pretest and posttest was carried out by an independent samples test with the provision that if the p value > 0.05, the hypothesis was accepted, but if the p < 0.05, the hypothesis was rejected. The results of the test are shown in the Table 5.

Table 5 shows that the calculated t-value obtained is = 9.790 while the t-table with a significance level of 0.05 is = 2.04. Based on the results of the hypothesis test with inferential statistics (t-test) independent samples test, it is stated that the research hypothesis is accepted because the value of t_{hitung} > nilai t_{tabel} (9,790 > 2,04).

3.2 Discussion

Data on the effectiveness of the learning model for writing scientific papers based on the learning management system of Moodle was obtained from the learning outcomes of students in writing scientific papers in the pretest and posttest in large-scale field trials. In the large-scale field trial stage, the trial of a learning model for writing scientific papers based on the learning management system moodle, was carried out using an experimental design of one group pretest posttest design (Lenneberg, 1967; Lestari, 2013; Majid, 2005; Merriam, 2001; Mudhofir, 1987). In this experimental design, before the treatment is given, the sample is given a preliminary test (pretest) to write a scientific paper and at the end of the lecture the sample is given a final test (posttest) to write a scientific paper (Sugiyono, 2010).

Furthermore, the learning outcomes of students in writing scientific papers in pretest and posttest in large-scale field trials were analyzed using descriptive and inferential statistics. The results of descriptive statistical analysis of student learning outcomes in writing scientific papers in the pretest showed that 16 students (64%) obtained learning outcomes (≥75 - ≤100) and students who obtained learning outcomes (0 - <75) amounted to 9 people (36%).

The results of inferential statistical analysis of student learning outcomes in writing scientific papers in pretest and posttest can be found that the results of the normality test show that the learning outcomes of writing scientific papers in the pretest and posttest come from a normally distributed population because the value of p = 0.130 with significance = 0.200 for the pretest and p = 0.177 with a significance of 0.052 for the posttest, This shows that, p > α = 0.05. The results of the homogeneity test of learning outcomes in the pretest and posttest were declared homogeneous because the value of p = 0.071 with significance = 0.790. This, in turn, shows that p > α = 0.05. The results of the t-test that the calculated t-value obtained is = 9.070 while the t-table with a significance level of 0.05 is = 2.04. That is, the calculated t-value > the t-value of the table (9.070 > 2.04).

Based on the results of the t-test, it was stated that the learning model of writing scientific papers based on the learning management system moodle was effective in learning to write scientific papers in the Indonesian Language Education Study Program, Pancasakti University, Makassar. This is in line with the hypothesis formulated in this study, namely: The learning model of writing scientific papers based on the learning management system melle is effectively used in learning to write scientific papers for students of the Indonesian Language Education Study Program, Pancasakti University, Makassar. The hypothesis formulation is tested using the following hypothesis testing criteria: The alternative hypothesis (H1) is accepted if the calculated t value > the t-value of the table. On the other hand, H1 is rejected if the calculated t value < the table's t value. In other words, the hypothesis is accepted if the t-value calculated ≤t the table is at a significant level of 0.05% (Widodo, & Jasmadi, 2008).

4. CONCLUSION

The learning model of writing scientific papers based on the learning management system Moodle developed has been effectively used in learning to write scientific papers in the Education Study Program Indonesian Language Pancasakti University of Makassar because the effectiveness criteria have been met, namely the t-value calculated > the t-value of the table (9, 070 > 2.04).

5. SUGGESTIONS

Based on the results of this study, several suggestions were put forward, namely:

1. Development of a learning model for writing scientific papers based on the learning management system moodle produced through field trials. The trial is only the basis for consideration in revising the Therefore, to obtain perfect results, it is recommended to conduct further trials.

2. For researchers who are interested in further developing this research, it is hoped that they will pay attention to the limitations of this research that has been developed, so that further research can improve the results of this research.

3. The development of a learning model for writing scientific papers based on the learning management system of Moodle should be carried out on other scientific writing materials to make students interested, happy, and active in learning to write scientific papers.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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