The Difference of Learning Outcomes of Mandatory Courses of Indonesian Curriculum with Moodle Application and Discussion Method Students of Joint Preparation Stage Sumatera Institute of Technology

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Abstract:

Background: The policy for implementing online-based learning has finally become the official direction of the Ministry of Education and Culture (Kemendikbud) of the Republic of Indonesia, which recommends that all education units in Indonesia try to prevent the spread of Covid-19 by eliminating direct learning. In accordance with the joint decree of the four ministers number 01/KB/2020 dated June 15, 2020 concerning Guidelines for the Implementation of Learning in the 2020/2021 Academic Year during the Covid-19 Pandemic, it was agreed that the learning process in particular began in the odd Semester of the 2020/2021 Academic Year in all zones must holding theoretical courses by online.

Meanwhile, the practicum and research activities in the laboratory were held online or postponed at the end of the semester or the next semester while still complying with health protocols. On that basis, the learning process at ITERA, especially for students at the joint preparation stage (TPB) was carried out online. With the online learning system, it was hoped that students would not cluster around and not stay close together when they were on campus. The online learning system was a learning system without direct face to face between teachers and students, which was carried out by utilizing the internet network. The implementation of this online learning requires all teaching and learning process to be carried out from home and of course the learning system in schools and campuses was forced to change from face-to-face meetings to online.

The results of observations in the form of interviews with several lecturers who taught Indonesian at ITERA stated that before the Covid-19 pandemic, Indonesian language learning was carried out in various learning models and were face-to-face. One of them was the discussion method. It was believed that because the exitance of the Covid-19 pandemic, the learning system at ITERA had to implement online learning which would certainly affect student learning outcomes.

In this study, the researcher used the Moodle application. Moodle is an application program that can convert a learning media into a web form (Suartama, I Kadek and I Dewa Kade Tastra, 2014:43). Moodle-based e-learning products allowed students to enter the "digital classroom" to access learning materials. The reason the researcher uses Moodle was because Moodle was considered a software or application that was easy and simple to operate in online Indonesian language learning by lecturers and students.

Materials and Methods: The method of the research was experimental. The design of this study was to see the differences in pretest and posttest between the experimental class and the control class. The population in this study were all TPB ITERA students in the odd semester of the 2021-2020 academic year. There were 2 TPB classes that were used as samples, namely TPB 44 and 45 from a total population of 28 classes. The data collecting techniques in this study were implemented by doing observation, documentation, and test techniques. The data analysis technique used in this study used the N-Gain formula and 2 Sample T-Test.

Results: Student learning outcomes using the Moodle application in the experimental class have increased. This was based on the results of the experimental class pretest obtained an average score of 42.13. After being taught using Moodle, the average score became 68.17. So that the N-Gain from the first hypothesis was 0.45. If it was categorized into a gain score, it was moderate value. The learning outcomes of the students who used discussion method had increased. This was shown by data during pretest and posttest in the control class. There was an increase that occurred after being taught by the discussion method from the average pretest score of 40.5 to 77.61 in the posttest score. So, the N-Gain of the second hypothesis was 0.62. If it was categorized into a gain score, it was high value. The learning outcomes of Indonesian of TPB students using the Moodle application were lower than those using the discussion method. This was obtained by testing the T-Test Two Independent Samples with a score of t count (1.52) < t table (2.01). So that there was a difference in the average learning outcomes of Indonesian students in the experimental class and the control class. It was known that the

learning outcomes of Indonesian using the Moodle application were lower than those using the discussion method, namely the experimental class and the control class with the results of 68.17 < 77.62.
Conclusion: *Student learning outcomes using the Moodle application in the experimental class have increased. Then, the learning outcomes of the students who used discussion method had increased and the learning outcomes of Indonesian of TPB students using the Moodle application were lower than those using the discussion method.*
Key Word*: Learning outcomes; Moodle; Discussion methods.*

I. Introduction

Indonesia is currently still facing the outbreak of the Coronavirus Disease 2019 (Covid-19). Covid-19 is an infectious disease caused by the server acute respiratory syndrome coronavirus 2 (Sars-CoV-2) which was first confirmed to have occurred in Wuhan, China in December 2019. This virus is transmitted from human to human through close contact and droplets (splashes of liquid when sneezing and coughing) so that sufferers experience acute respiratory infections. The symptoms that appear are fever above 38°C, cough, and shortness of breath (Center for Determinant Analysis, Health Ministry of Health, 2019).

Based on the latest data published by the Ministry of Health of the Republic of Indonesia until June 16, 2021 at 23.59 WIB, published on the official website https://www.covid19.go.id/ it was recorded that there were at least 1,531,005 people who were positively infected with Covid-19 in Indonesia. The data is still increasing, both those who were confirmed positive and those who died from Covid-19.

The data made Indonesia ranked 18th out of a total of 192 countries affected by Covid-19 in the world. The data were based on the statistical data from Johns Hopkins University Medicine (Suara.com, 2021). The worsening of the Covid-19 outbreak has finally made the government take an action by completely closing the entry and exit access to some areas (lockdown) and maintaining social distancing in all sectors, including education.

The policy for implementing online-based learning has finally become the official direction of the Ministry of Education and Culture (Kemendikbud) of the Republic of Indonesia, which recommends that all education units in Indonesia try to prevent the spread of Covid-19 by eliminating direct learning. In accordance with the joint decree of the four ministers number 01/KB/2020 dated June 15, 2020 concerning Guidelines for the Implementation of Learning in the 2020/2021 Academic Year during the Covid-19 Pandemic, it was agreed that the learning process in particular began in the odd Semester of the 2020/2021 Academic Year in all zones must holding theoretical courses by online.

Meanwhile, the practicum and research activities in the laboratory were held online or postponed at the end of the semester or the next semester while still complying with health protocols. On that basis, the learning process at ITERA, especially for students at the joint preparation stage (TPB) was carried out online. With the online learning system, it was hoped that students would not cluster around and not stay close together when they were on campus. The online learning system was a learning system without direct face to face between teachers and students, which was carried out by utilizing the internet network.
The implementation of this online learning requires all teaching and learning process to be carried out from home and of course the learning system in schools and campuses was forced to change from face-to-face meetings to online.

The results of observations in the form of interviews with several lecturers who taught Indonesian at ITERA stated that before the Covid-19 pandemic, Indonesian language learning was carried out in various learning models and were face-to-face. One of them was the discussion method. It was believed that because the exitance of the Covid-19 pandemic, the learning system at ITERA had to implement online learning which would certainly affect student learning outcomes.

In this study, the researcher used the Moodle application. Moodle is an application program that can convert a learning media into a web form (Suartama, I Kadek and I Dewa Kade Tastra, 2014:43). Moodle-based e-learning products allowed students to enter the "digital classroom" to access learning materials. The reason the researcher uses Moodle was because Moodle was considered a software or application that was easy and simple to operate in online Indonesian language learning by lecturers and students.

Agreeing with this, Suartama (2014:42) stated that Moodle was flexible because it made it easier for students, especially to access learning materials repeatedly. Moodle that was compiled contained the materials, quizzes, and assignments, which were done online. In addition, with the support of a learning model in the form of e-learning, the limitations of space and time between lecturers and students in the teaching learning process at ITERA could be done properly.

The selection of the object of this research was the use of spelling in the Indonesian Language Course, because it is suitable with the scientific field of the researcher. Meanwhile, the allocation of Indonesian language learning time for TPB students was 2 hours per week. Lecturers need to understand online learning strategies that distinguish them from learning in general that occurs in the classroom.

A lecturer should understand the characteristics of students in making decisions in carrying out online learning. Based on the background presented, the researcher was interested in examining the differences of student learning outcomes by applying moodle and discussion in learning Indonesian to the learning outcomes of TPB ITERA students.

II. Material and Methods

The method of the research was experimental. The design of this study was to see the differences in pretest and posttest between the experimental class and the control class. The population in this study were all TPB ITERA students in the odd semester of the 2021-2020 academic year. There were 2 TPB classes that were used as samples, namely TPB 44 and 45 from a total population of 28 classes. The data collecting techniques in this study were implemented by doing observation, documentation, and test techniques.

The data analysis technique used in this study used the N-Gain formula and 2 Sample T-Test. The hypothesis testing in this study is as follows.

1. There was an increase in the learning outcomes of Indonesian TPB students by using the Moodle application.
2. There was an increase in the learning outcomes of Indonesian TPB students by using the application of the discussion method.
3. The result of learning Indonesian by TPB students with Moodle application was higher than discussion.

III. Result

Moodle, while the control class used the discussion method. Researchers conducted a pretest in the experimental and control classes to determine the students' initial abilities before being given treatment. The study results obtained information on an increase in student learning outcomes in the experimental class and control class after being given treatment and given a posttest which will be shown through the following data exposure.

1. Description of Pretest Result Data
a) Experiment Class Pretest
Based on the pretest data processing results in the experimental class, the lowest known value is 23, and the highest value is 63. So that in the frequency distribution, the score range is (r) 40, the number of classes (bk) is six, and the class length is an interval (p) 7. Students who scored between 23 – 29 totalled six people (19%), a score of 30 – 36 amounted to 2 people (9%). Students who scored between 37 – 43 were 5 (31%) people, while those who scored between 44 – 50 were 4 (1%). The scores between 51 – 57 were five people (16%) and three people (9%). This class has a pretest mean of 42.1 with a standard deviation of 11.42.

b) Control Class Pretest
The results of the control class pretest obtained the lowest score of 23 and the highest score of 67. So that in the frequency distribution, the score range (R) 44, the number of classes (BK) 6 and the class length interval (P) 8. Students who scored between 23-30 were seven people (33.33%), a score of 31-38 was five people (23.81%), a score of 39-46 was two people (9.52%), a score of 47-55 was four people (19.05%), a score of 56 – 63 amounted to 2 people (9.52%), and a score of 64 – 67 amounted to 1 person (4.76%). This class has a pretest mean of 40.6 with a standard deviation of 12.58.

2. Description of Posttest Result Data
a) Experiment Class Posttest
The results of the posttest experimental class obtained the lowest score of 23 and the highest score of 100. So in the frequency distribution, a score range (R) of 77 was obtained, the number of classes (BK) 6, and the class interval length (P) 13. Students who scored between 23-35 were one people (3%), a score of 36 – 48 was four people (14%), a score of 49 – 61 was ten people (34%), a score of 62 – 74 was four people (14 %), a score of 75 – 87 was absent (0 %), while the score of 88 – 100 was ten people (34%). This experimental class has a posttest average of 68.17 with a standard deviation of 24.01.

b) Control Class Posttest
The results of the posttest control class obtained the lowest score of 50 and the highest score of 100. So that in the frequency distribution, a score range of (R) 50, number of classes (BK) 6 and class length interval (P) 9. Students who scored between 50 – 58 were two people (9.52%), then a score of 59 – 67 totalling seven people

(33.33%), a score of 68 – 76 total one person (4.76%), a score of 77 – 85 total three people (14.29%), a score of 86-94 amounted to 3 people (14.29%), while a score of 95-100 amounted to 5 people (23.81%).

$$\text{Normalized Gain (g)} = \frac{77,61- 40,5}{100 - 40,5}$$
$$= \frac{37,11}{59,5}$$
$$= 0,62$$

This class has an average posttest of 77.61 with a standard deviation of 16.52.

3. Before testing the hypothesis, the data analysis requirements were tested, namely normality and homogeneity tests.
a) Normality Test

Tabel 4.5 Hasil Uji Normalitas Sampel Kelas Eksperimen dan Kelas Kontrol

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Eksperimen	.191	29	.008	.872	29	.002

a. Lilliefors Significance Correction

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Kontrol	.201	21	.027	.897	21	.031

a. Lilliefors Significance Correction

Based on the picture above, it can be seen from the Lcount for the experimental class (0.191) and the control class (0.201) that it is greater than the L table of 0.126. So it can be said that the experimental class and control class data are normally distributed.

b) Homogeneity Test

Tabel 4.6 Hasil Uji Homogenitas Varians Kelas Eksperimen dan Kontrol

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Prettest	.415	1	51	.523
Posttest	4.382	1	48	.042

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Prettest	Between Groups	33.727	1	33.727	.231	.633
	Within Groups	7438.952	51	145.862		
	Total	7472.679	52			
Posttest	Between Groups	1086.930	1	1086.930	2.320	.134
	Within Groups	22489.090	48	468.523		
	Total	23576.020	49			

Sumber: Pengolahan Data Hasil Tes

Based on the results of the calculation test the homogeneity of variances above, it can be seen that the statistical level at pretest is 0.415 and at the posttest is 4.382 with a significance of 0.523 > 0.042, so it can be concluded that data in this study is homogeneous.

5. Hypothesis Test

Hypothesis testing in this study was carried out using the N-Gain formula and Two-Sample T-Test.

First Hypothesis Test Results

$$\text{Normalized } Gain \ (g) = \frac{58{,}17 - 42{,}13}{100 - 42{,}13}$$

$$= \frac{26{,}04}{57{,}87}$$

$$= 0{,}45$$

Based on the calculation results, it can be seen that the N-Gain of the first hypothesis is 0.45. If it is categorized into a gain score, it is of moderate value.

Second Hypothesis Test Results

Based on the calculation results, it can be seen that the N-Gain of the second hypothesis is 0.62. If it is categorized into a gain score, it is of high value.

The results of the third hypothesis test were obtained with a Two-Sample Independent T-Test which was supported by the average learning outcomes of the two classes.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
							Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)			Lower	Upper
Hasil Belajar	Equal variances assumed	4.382	.042	1.523	48	.134	-9.4466	6.2021	-21.9169	3.0236
	Equal variances not assumed			1.613	47.931	.113	-9.4466	5.8552	-21.2197	2.3264

Independent Samples Test

$t_{count} = 1{,}523$

$t_{tabel} = t\ \alpha/2\ (df) = t0{,}05/2\ (48) = t0{,}025\ (48)$

$\quad = 2{,}01$

$\alpha = 0.1$	0.05	0.025	0.01	0.005	0.0025	0.001
dk						
40	1.303077	1.683851	2.021075	2.423257	2.704459	2.971171	3.306878
41	1.302543	1.682878	2.019541	2.420803	2.701181	2.966961	3.301273
42	1.302035	1.681952	2.018082	2.418470	2.698066	2.962962	3.295951
43	1.301552	1.681071	2.016692	2.416250	2.695102	2.959157	3.290890
44	1.301090	1.680230	2.015368	2.414134	2.692278	2.955534	3.286072
45	1.300649	1.679427	2.014103	2.412116	2.689585	2.952079	3.281480
46	1.300228	1.678660	2.012896	2.410188	2.687013	2.948781	3.277098
47	1.299825	1.677927	2.011741	2.408345	2.684556	2.945630	3.272912
48	1.299439	1.677224	2.010635	2.406581	2.682204	2.942616	3.268910
49	1.299069	1.676551	2.009575	2.404892	2.679952	2.939730	3.266079
50	1.298714	1.675905	2.008559	2.403272	2.677793	2.936964	3.261409

Based on the test criteria, conclusions can be drawn, because tcount (1.52) < ttable (2.01) then Ho is accepted and Hi is rejected so that there is a difference in the average learning outcomes of Indonesian students in the experimental class and the control class where the average learning outcomes of Indonesian students who learn using the Moodle application are lower than students whose learning uses the discussion method.

IV. Discussion

A. Learning Using Moodle (Experiment Class)

This research was conducted in three meetings. There researchers conducted a pretest at the initial meeting to determine the students' initial abilities before being given treatment. Students access the pretests given via Moodle at the link http://www.duniaitera.com.

Pretest in the form of multiple-choice questions as many as 30 questions with four answer choices. Pretest in the form of multiple-choice questions as many as 30 questions with four answer choices. The steps taken in learning Indonesian with Moodle are as follows.

• Moodle admin records and inputs TPB Itera student emails and teacher emails.
• Students and researchers access Moodle by entering their registered username and password via the following link http://www.duniaitera.com
• After successfully logging in, students can choose the TPB 45 class.
• Students can carry out learning activities that the researcher has previously provided. At the first meeting, students were asked to work on the pretest questions prepared through the google form by clicking on the pretest question link.
• If the pretest questions have been completed, students can log out of the Moodle.

B. Learning by Discussion (Control Class)

Starting from 2021-202, Itera implements a hybrid learning system. The hybrid system is a lecture system with a learning model that integrates or combines offline lectures and online lectures simultaneously with a maximum number of 25 students per room.

This research was conducted in 3 meetings. At the beginning of the study (first meeting), a pretest was conducted to determine the students' initial abilities before being given treatment. The pretest was given in multiple-choice questions as many as 30 questions with four answer choices. Students are required to be able to work on their own and be supervised by researchers. In the next meeting, namely the second meeting, students in the control class (TPB 44) were taught to use the discussion method.

Lecture activities begin with student attendance, providing an overview of the spelling material and explaining the learning process. Researchers began to apply a discussion model according to the material presented and grouped students into small groups that had been determined to discuss

Then the researcher gave the activity sheet to the group; each group will discuss the activity sheet, which contains questions and must be answered by students by working together and discussing with each other in groups. When the discussion ended, the researcher asked the student representatives to present the discussion results, while the others responded.

After the presentation is complete, the teacher gives a quiz. During the quiz, students must work independently in answering questions, then the researcher and the students conclude and close the lecture at the third meeting, namely the last meeting. Students are given 30 posttest questions in the form of multiple choice. The posttest questions between the experimental and control classes are of the same form.

C. Learning Outcomes of Spelling in Experiment Class and Control Class

The results of the posttest conducted in the experimental class and control class showed an increase in the average score. The following data were obtained from the results of the pretest and posttest calculations in the experimental class. The average pretest score is 42.13 with a standard deviation of 11.42, and the posttest average score is 68.17 with a standard deviation of 24.01. While in the control class, the average pretest score was 40.6 with a standard deviation of 12.58, and the posttest average score was 77.61 with a standard deviation of 16.52. The results of the experimental class pretest obtained an average score of 42.13.

After being taught using Moodle, the average score became 68.17. The same thing happened to students in the control class. An increase occurred being taught by the discussion method from the average pretest score of 40.5 to 77.61 in the posttest score. Referring to the hypothesis that had been tested, the N-Gain result of the first hypothesis was 0.45. If it is categorized into a gain score, it is of moderate value, while the calculation results show that the N-Gain of the second hypothesis is 0.62.

If it is categorized into a gain score, it is of high value. In the third hypothesis, the results obtained are tcount (1.52) < ttable (2.01), then Ho is accepted and Hi is rejected. So that there is a difference in the average learning outcomes of Indonesian students in the experimental class and the control class.

Based on the results of learning Indonesian language learning using the Moodle application is lower than students whose learning uses the discussion method, namely the experimental class and the control class with the results of 68.17 < 77.62.

V. Conclusion

Based on the explanation in the previous chapter, it can be concluded as follows.

1. Student learning outcomes using the Moodle application in the experimental class have increased. This was based on the results of the experimental class pretest obtained an average score of 42.13. After being taught using Moodle, the average score became 68.17. So that the N-Gain from the first hypothesis was 0.45. If it was categorized into a gain score, it was moderate value.

2. The learning outcomes of the students who used discussion method had increased. This was shown by data during pretest and posttest in the control class. There was an increase that occurred after being taught by the discussion method from the average pretest score of 40.5 to 77.61 in the posttest score. So, the N-Gain of the second hypothesis was 0.62. If it was categorized into a gain score, it was high value.

3. The learning outcomes of Indonesian of TPB students using the Moodle application were lower than those using the discussion method. This was obtained by testing the T-Test Two Independent Samples with a score of t count (1.52) < t table (2.01). So that there was a difference in the average learning outcomes of Indonesian students in the experimental class and the control class. It was known that the learning outcomes of Indonesian using the Moodle application were lower than those using the discussion method, namely the experimental class and the control class with the results of 68.17 < 77.62.

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