Implementation of a Collaborative Online Learning Model for Standardizing Adaptive PBM Class in Postgraduate MAP UNIB

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Abstract

In an effort to increase access to higher education and increase the link and match between higher education graduates and workforce absorption in the industrial era 4.0, the Ministry of Education, Culture, Research and Technology has carried out deregulation in the field of higher education. One of them is by implementing the Collaborative Online Learning model. The research carried out was entitled Implementation of Collaborative Online Learning Models for Standardization of Adaptive PBM Process Classes at MAP UNIB Postgraduate. The research methodology was carried out using the one group pre-test and post-test experimental method to see the effect of the Hybrid Class design on learning outcomes based on the N-Gain Value and T-test. This research was conducted at Bengkulu University's FKIP, with the research subjects being undergraduate students in the Educational Management Course and Master's 2 MAP FKIP UNIB students, even semester 2022/2023. The research results show that there is a difference in learning outcomes before the hybrid class design is implemented (pre-test scores) and after the hybrid class design is implemented (post-test scores) where the post-test scores are greater than the pre-test scores with the N-Gain being at Medium category. The T-test results show a significant difference where sig. 0.00 < 0.005 . The conclusion was that the Hybrid Class Design had an effect on the learning outcomes of Masters 2 MAP students even semester 2022/2023. The Collaborative Online Learning Model (Hybrid Class Design) for Adaptive Class Standardization in the UNIB S.2 MAP Postgraduate MAP even semester 2022/2023 is quite effective.

Keywords: Collaborative Online Learning, Hybrid class design, Adaptive Class.

Currently, world development is required to enter a state of adaptation to everything, both interactive and non-interactive. As is known, there has recently been a global crisis caused by the virus, resulting in restrictions on the scope of interaction and resulting in losses, both material and non-material (Aktar et al., 2021; Mora & Johnston, 2020; Naderipour et al., 2020; Siregar et al., 2021; Mora & Johnston, 2020; Naderipour et al., 2020; Siregar et al. ., 2022). However, now this has been passed and forces everything to adapt (Decker, 2021; Farrell, 2021; Valeeva &

Kalimullin, 2021). This has resulted in significant developments such as technology & science (Setiyowati, 2022; Judijanto et al., 2024). Currently, this development includes a spatial system that is not constrained by distance and time, known as an online system, namely online or online. Where learning is an important element developed for the country to create human resources that continue to develop (Bdair, 2021; Hoi et al., 2021; Maqableh & Alia, 2020; Müller & Mildenberger, 2021; Widodo et al., 2024)

In an effort to increase access to higher education and increase the link and match between higher education graduates and workforce absorption in the industrial era 4.0, the Ministry of Education, Culture, Research and Technology of the Republic of Indonesia (Kemendikbud Ristek) has carried out deregulation in the field of higher education (Medriati et al ., 2022; Purba et al., 2024). In order to support universities to pioneer and initiate distance learning programs that are in line with the "Free Learning-Free Campus" policy, various types of projects are needed, one of which is Collaborative Online Learning which is a project that involves various universities, both public and private, to create competent teaching. where each tertiary institution exchanges information with each other about teaching systems, materials and programs so that it can be a breakthrough in the future to create quality human resources in an era that currently continues to develop without the limits of space and time.

Collaborative learning is learning that places students with diverse backgrounds and abilities working together in small groups to achieve common goals (Rodriguez et al., 2018; Zhang & Cui, 2018; Ansari et al., 2023). Collaborative online learning offers broad prospects for educators because it allows the use of various patterns of interaction, discussion, exchange of opinions, peer assessment, building e-learning communities, encouraging the development of e-culture and preparing for the future to work in the professional field in new conditions in this era. industry 4.0 (Al-Samarraie & Saeed, 2018; Herrera-Pavo, 2021; Timonen & Ruokamo, 2021; Wang et al., 2020). Online learning is best done through the collaboration and participation that online learning encourages (Sastromiharjo et al., 2024).

The application of collaborative online learning can be done in adaptive classes. Where this adaptive class integrates distance learning (PJJ) and face-to-face learning (PTM) on one platform. Adaptive according to the Big Indonesian Dictionary (KBBI), means easily adapting (oneself) to circumstances. Adaptive classes are small communities that are part of the school community that are organized, so that they can easily adapt to situations. Adaptive learning is a learning process that adapts students' conditions, needs and environment so that knowledge, attitudes and skills are mastered (Kabudi et al., 2021; Minn, 2022; Morze et al., 2021; Simbolon, Sinurat, & Silalahi, 2023). The adaptive process is carried out by measuring students' learning modalities and considering them in the learning design process.

There are several previous studies that are relevant to the research that will be carried out, one of which is research (Umamah & Muassomah, 2020). Umamah and Muassomah conducted research on online learning through collaborative techniques on students' writing skills at Darul Koran High School, Mojokerto city. The aim of this research is to explore the implementation of online learning using collaborative techniques in students' mahārah kitābah at Darul Quran High School, Mojokerto. Other research was conducted (Mahsus & Latipah, 2021). His research aims to add to the discourse on educational innovation that is integrated with technology to bridge collaborative learning problems to increase students' social interactions with friends and the environment without eliminating students' cognitive or pedagogical learning elements. The research results show similarities between learning using the Eduinnova methodology and

online learning in terms of the use of portable technology as a learning medium. Further relevant research is (Irwanto, 2020). This research aims to describe collaboration-based online learning between parents and teachers in early childhood education. Result of This research hopes that parents will be more motivated to take a proactive role in their children's learning process through learning based on collaboration between parents and teachers. From several relevant previous studies, the researcher will create a novelty for the research to be carried out, one of which is the implementation of the Collaborative Online Learning model.

Based on the background above, the researcher is interested in conducting research with the title "Implementation of a Collaborative Online Learning Model for Standardization of Adaptive PBM Process Classes at MAP UNIB Postgraduate".

Method

This research is experimental research. The type of experiment that will be used is Pre-Experimental with a One Group Pre-test-Post-test design (Hulu et al., 2023).

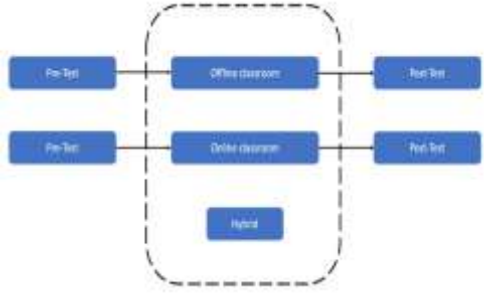

Figure 1. One Group Pre-test-Post-test Design

The research population was undergraduate students in educational management courses with a sample of Class A and B totaling 59 people (Hybrid Class I). Next, the S.2 MAP FKIP University of Bengkulu with the research sample is Classes A and B Semester 1 of the Innovation and New Paradigm Education course totaling 34 people (Hybrid Class 1) and semester 2 classes A and B of the Management Innovation course totaling 25 people (Hybrid Class 2) UNIB MAP. Data collection techniques include observation, interviews, questionnaires and tests. Research instruments include observation sheets, interview sheets, questionnaire sheets and test sheets. Data Analysis Techniques include Quantitative and Qualitative techniques.

Results and Discussion

Implementation of Hybrid Classes in S.2 MAP FKIP

Standard Hybrid Class Equipment consists of 3 laptops used by lecturers, students giving presentations and another one to be connected to a TV screen and a 360 tracking web camera mounted on a tripod so that it can fully view the offline class and online classes feel like you are in one class. Lecturers and groups presenting also have their own cameras on their laptops and use Bluetooth mics so that students receive clearer sound, especially those online.

There are 2 hybrid classes that we researched, where each hybrid class consists of classes A and B who will take lectures offline or face to face and online or via zoom meeting simultaneously. Each group of students from both classes A and B prepare presentations on the same theme or material in turn so that there is collaboration that complements each other on the material presented. Next, the classical question and answer and discussion session opens where the group presenting will provide answers to their friends' questions in class. After 2 minutes of discussion and questions and answers and all questions have been answered, the lecturer will complete the existing questions and globally will deepen and expand the material discussed at that time. Lectures are carried out innovatively by applying 21st century skills, namely collaboration, creativity, critical and communication (4c) based on ICT, training 6

literacies and strengthening character education (Herman et al., 2022).

The hybrid class of even semester Masters students consists of 59 people from a combination of the education management innovation class (34 students) and the new educational paradigm innovation class (25 students). The results of the interview in this hybrid class stated that they preferred to take lectures offline (12%), online (40%) and liked both offline and online (48%).

Table 1. Pre-test and Post-test Hybrid Class Scores

	Nilai Pre- test	Nilai Pos- test	No	Nilai Pre- test	Nilai Pos- test	No	Nilai Pre- test	Nilai Pos- test
1	75	78	**21**	73	78	**41**	68	76
2	70	76	**22**	76	80	**42**	60	72
3	73	77	**23**	74	78	**43**	70	79
4	80	80	**24**	72	77	**44**	62	75
5	70	77	**25**	77	79	**45**	70	78
6	75	81	**26**	74	82	**46**	74	77
7	70	77	**27**	74	79	**47**	60	75
8	76	78	**28**	62	75	**48**	64	77
9	70	76	**29**	72	79	**49**	62	75
10	76	80	**30**	62	77	**50**	70	78
11	72	77	**31**	72	81	**51**	66	77
12	76	80	**32**	62	78	**52**	62	74
13	75	78	**33**	60	74	**53**	62	73
14	80	81	**34**	64	78	**54**	64	76
15	80	80	**35**	62	75	**55**	60	76
16	76	80	**36**	70	78	**56**	60	74
17	73	77	**37**	72	81	**57**	72	82
18	76	79	**38**	62	77	**58**	60	75
19	77	79	**39**	64	76	**59**	62	75
20	75	78	**40**	60	75			

Research using hybrid classes began after the UTS on April 3 2023 with 6 meetings ending on May 15 2023 with material (1) Innovation in the Substance of Education Management, (2) Innovation in independent curriculum management, (3) Innovation in driving school management, (4) Innovation management of driving school principals, (5) Innovation in managing driving teachers, (6) Innovation in field assessments and Educational Reports for Educational Management Innovation material.

Meanwhile, the material on Innovation and New Educational Paradigms (1) Basic Concepts of Educational Innovation, (2) Relationship between educational Innovation and other aspects, (3) Process of educational Innovation, (4) Analysis of Educational Innovation in Indonesia, (5) Education System and National Policy, (6) The role of educators and education personnel in educational innovation. Before the Hybrid Class started, a pre-test was carried out on students and after attending 6 meetings in the hybrid class, students carried out a post-test with the results in Table 1.

A. Description of Result Data

1. Pretest Results

The following pretest results data can be seen in table 2.

Table 2. Pretest Result Data

Information	Learning outcomes
Mean	69,27
Standard Deviation	6,300
Variant	39,684
Max	80
Min	60
N	59

The results data observed were student learning results in the initial test in the form of a pretest in the management and paradigm

innovation class, which obtained an average of 69.27 and the standard deviation data for the pretest score was obtained at 6.300. There were 59 students who took the test.

2. Posttest results

The following posttest results data can be seen in table 3.

Table 3. Posttest Result Data

Information	Learning outcomes
Mean	77,46
Standard Deviation	2,262
Variant	5,115
Max	82
Min	72
N	59

The results data observed were student learning results in the final test in the form of a posttest in the management innovation and paradigm class, which obtained an average of 77.46 and the standard deviation data for the posttest score was obtained at 2.262. There were 59 students who took the test.

B. Data Analysis

Inferential tests in this study were used to test sample class learning outcome data and test hypotheses. Before testing the hypothesis, first analyze the data from the pretest and posttest results of the normality test and the N-Gain test.

1. Test learning outcomes

a. Normality test

The data used for the normality test is test data on student learning outcomes before learning (pretest) and after learning (posttest) from class. The normality test for learning outcomes is calculated using the Kolmogorov-Smirnov normality test or using the SPSS Statistics 25 application. The normality test data for student pretest and posttest results can be seen in table 4

Table 4. Normality Test Data Pretest and Posttest Results

	Class	Kolmogorov-Smirnov		
		Statistic	Df	Sig.
learning outcomes	Pretest	0,164	59	0,000
	Posttets	0,100	59	0,200

Based on the results seen in table 4, the data on learning outcomes for the Management Innovation and Paradigm class posttest for the Hybrid class obtained a sig of 0.200, so the data can be said to be normally distributed because the sig value is > 0.05.

b. N-Gain Test

Improved learning outcomes are obtained from the average of the N-Gain score results, namely by calculating the difference between the posttest score minus the pretest score and then dividing the result by the difference from the ideal score minus the pretest score. The results of the experimental class N-Gain can be seen in table 5.

Table 5. N-Gain Criteria Table

The experimental class	N	59	Currently (Medium)
	Skor N-Gain	0,60	
	N-Gain %	60,48%	

Table 5 shows the N-Gain scores in the Management Innovation and Paradigm class, which are obtained by averaging the N-Gain scores. Obtaining an N-Gain score in the class of 0.60 indicates that student learning outcomes are in the medium category.

2. Hypothesis Testing

a. T-test (Wilcoxon)

Table 6. Rank data

Ranks				
		N	Mean Rank	Sum of Ranks
Posttest Class Hybrid - Pretest Class Hybrid	Negative Ranks	0[a]	0,00	00,00
	Positive Ranks	57[b]	29,00	1653,00
	Ties	2[c]		
	Total	59		
a. Posttest Class Hybrid < Pretest Class Hybrid				

b. Posttest Class Hybrid > Pretest Class Hybrid
c. Posttest Class Hybrid = Pretest Class Hybrid

Hypothesis testing is sought using the t test using the Wilcoxon test using SPSS, because one of the data, namely the pretest data, is not normally distributed, so a non-parametric test is used. In this case it is used to compare one variable. This test technique is used to determine whether the student's pretest score is significantly different or not from the average posttest score from the experimental class which has been given learning treatment using the hybrid method in management and paradigm innovation classes. Statistical hypothesis testing can be seen in table 6.

Based on table 6, we can see that the negative difference between the pretest results from the management and paradigm hybrid class and the posttest results is 0, which means there are no students whose pretest scores are greater than their posttest scores. In the positive difference data between the learning results of the educational management hybrid class for the pretest and posttest, there were 59 students with positive data, which means that 59 students experienced an increase in their pretest results to their posttest scores. In ties data or the similarity of pretest and posttest scores, here the ties score is 2 students.

Table 7. Statistical Data

Test Statistics[a]	
	Posttest ClassHybrid - Pretest Class Hybrid
Z	-6,572[b]
Asymp. Sig. (2-tailed)	0,000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

Based on statistical data, it is known that Asymp.Sig (2-tailed) has a value of 0.000. Because the value 0.000 < 0.05, it can be concluded that there is a significant difference between the learning outcomes of the management hybrid class and the paradigm for the pretest and posttest. This means that it can be concluded that Hybrid Class Design or Collaborative Online Class Design has an influence on the learning outcomes of S.2 MAP FKIP UNIB students in the even semester 2022/2023. Thus, the collaborative online class design is quite effective for standardizing adaptive classes in the MAP FKIP study program at Bengkulu University.

Figure 2. Documentation of the Implementation of the Collaborative Online Learning Model

Conclusion

From this research, it was concluded that the Hybrid Class Design had an effect on the learning outcomes of S.2 MAP students even semester 2022/2023. The Collaborative Online Learning Model (Hybrid Class Design) for Adaptive Class Standardization in the UNIB S.2 MAP Postgraduate MAP even semester 2022/2023 is quite effective.

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