



HYBRID LEARNING STRATEGY FOR FACILITATING LEARNING AND IMPROVING PERFORMANCE

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Author's Biography



Heni Jusuf is currently undergoing doctoral education at Universitas Negeri Jakarta in the field of educational technology, she is also a lecturer in the electrical engineering department, Faculty of Engineering and Science, Universitas Nasional. The research that has been done so far is research in Social Sciences, Arts and Humanities, Software Engineering and Educational Technology.

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Research Highlights

Researchers make observations, thoughts, experiences, and insights in the virtual learning environment at each learning. Qualitative and quantitative results show that students respond to hybrid learning strategy and they had increased their engagement and communication when compared to the traditional class. The results of the study found that $\text{sig.t} = 0.03 < \alpha = 0.05$, it was concluded that H_0 was rejected and resulted in the acceptance H_a : $\mu_A > \mu_B$, this indicates that the average student learning outcomes that take hybrid learning are higher than students who take part in learning activities using traditional learning. The Students recognize the quality improvement in learning and using the class with hybrid learning strategy. Regarding academic performance, there have been significant changes shown between hybrid learning strategy class and the traditional learning class.

Graphical Abstract

The study's results of eighty-one respondents of Informatics students in the OOP course are as shown in table 1 below:

Table 1. Results of the questionnaire on current OOP learning based on Percentage

No	Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Like Programming courses	26,8	31,7	32,9	4,9	3,7
2	Programming courses are too difficult	9,8	19,5	45,1	18,3	7,3
3	Programming courses are not interesting	31,7	7,3	30,5	28	2,4
4	Programming courses are boring	30,5	13,4	30,5	24,4	1,2
5	Teaching Lecturers are not proactive	13,4	17,1	35,4	30,5	3,7
6	The teaching method is not interesting	28	11	36,6	6,1	18,3
7	The lecturer does not evaluate the achievement of a material at each meeting session	32,9	13,4	7,3	22	24,4

Modifications and variations in learning at the higher education level are developed by developing computer and internet technology-based learning models (Heni Jusuf, 2018). In the world of higher education, the background of the learners is very heterogeneous, meaning that the learners do not only come from secondary school graduates but also those who have worked so that with a background of very varied learners, the learning needs and styles of learners also vary. Hybrid Learning is now a trend (Bernard, Borokhovski, Schmid, Tamim, & Abrami, 2014) which has been developed as a learning model in universities, and this model can be in the form of learning using the web, games, videos and more (McGloin, McGillicuddy, & Christensen, 2017) This model makes students engage with learning materials that depend on how they are designed and delivered (IUCCEL, 2018).

Research Objectives

Programmer is someone who can solve problems using a programming language. They have many abilities consisting of various levels, they are good at writing code, understanding algorithms and often working alone (Permana, 2016) The need for programmers every year is increasing, along with technological advances, but this is not accompanied by graduates from the Informatics Department who intend to become programmers (Capgemini Digital Transformation Institute survey, 2017) The Informatics department is a department that attracts many students, but their enthusiasm decreases rapidly in the second year because they have





difficulty in learning Programming, programming courses have a huge portion, so if they have problems in this course, students will fail.

Methodology

Collecting qualitative and quantitative data, this research uses the Action Science Research Design (Kevin R. Clark, 2015) to assess the impact of the learning process that uses Hybrid Learning class and traditional class. The qualitative data comes from interviews with students, observations, and discussion group sessions. The quantitative data comes from pre-test and post-test. According to (Creswell, 2012) the mix method approach is useful for getting a deeper understanding of research.

Results

Quantitative Results

The quantitative analysis result is to test whether hybrid-based learning is better than traditional learning. To do the analysis, the researchers tested the hypothesis as follows:

Mathematical hypothesis

Ha1: $\mu_A \neq \mu_B$

Ha2: $\mu_A > \mu_B$

A: Hybrid learning

B: Traditional learning

This research used thirty-five of samples to test the hypothesis above that had been taken randomly and had followed the learning activities carried out in the experiment.

Independent Samples Test

		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	
Value									Lower	Upper
	Equal variances assumed	.180	.673	-2.205	68	.031	-6.39714	2.90136	-12.18671	-.60757
	Equal variances not assumed			-2.205	66.550	.031	-6.39714	2.90136	-12.18899	-.60529

Fig. 1. Independent Samples Test

Testing the hypothesis that was used Table t in figure 1 is Ha2: $\mu_A > \mu_B$, the common value learning outcomes of students who take hybrid learning are higher than students who take traditional learning activities. Table t shown, it is obtained a significant value of t of 0.031, using the criteria of a Significant Level of Error that is $\alpha = 0.05$, then it can be concluded that the Significant Value t is smaller than the limit value of error $\alpha = 0.05$.

Qualitative Results

The statements of results, this was indicative of a satisfactory student perception with hybrid learning in compared the traditional learning

The following keywords found repeatedly in interviews and FGDs: the class is different from other class, actively engaged in learning, better learning in class, the content is easier, direct learning, helpful, interesting, learn to be independent, learning individually.

Findings

According to this research, the hypothesis is valid based on analysis results at the table above where the mean value of the Hybrid class is higher than the mean value of the traditional class, which is $74.19 \neq 67.79$





The hypothesis acceptance criteria in this research are H_0 accepted if $\text{sig.} > \alpha = 0.05$. From the results of the research, it found that $\text{sig.} = 0.03 < \alpha = 0.05$, it was concluded that H_0 was rejected and resulted in acceptance H_a : $\mu_A > \mu_B$ means that the average value student learning outcomes following hybrid learning were higher than students who followed traditional learning.

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