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## **Improving the Quality of Innovation Management Learning Through Project-Based Learning Methods**

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### **Abstract**

*In the learning process, the appropriate combination of the learning model used and the participation of the parties involved in learning were expected to be able to create an appropriate quality of learning, in this case according to the invasion management course. The method used was classroom action research and using SPSS, especially to find out any changes before the use of the method and after the use of the method. The stages of classroom action research were planning, implementing actions, making observations using various research instruments used, and reflections used as evaluations. The results of this study were an increase in learning outcomes from pre-cycle, cycle 1 and to cycle 2. From class 4A pre-cycle of 77.7 increased in cycle 2 to 91.5; class 4B pre-cycle of 73.6 increased in cycle 2 to 92.4; class 4C pre-cycle of 72.8 increased in cycle 2 to 91; and pre-cycle 4D class of 74.0 increased in cycle 2 to 92.3. Furthermore, from the results of the SPSS calculation for classes 4A, 4B, 4C, and 4D, the results obtained were partial, each with the same result, they were the value of Sig. (2-tailed)  $0.000 < 0.05$  so there was a difference before and after the use of project-based learning methods in innovation management courses*

**Keywords:** *Quality of Learning, Project Based Learning*

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## **INTRODUCTION**

In this era, education is one of the important parts that need to be taken by humans in the hope of being able to improve the quality of human resources and hoping to be able to survive in the midst of the demands of an increasingly tough era. For this reason, it is necessary to have an educational process that raises high creativity in order to make learning meaningful and able to create conducive learning atmosphere. With the occurrence of conducive learning, it can be used as an initial step to make a quality learning process so that the results obtained from the learning process could have a positive impact on students. There are various ways to be able to realize quality learning, including how teachers choose appropriate learning methods, how teachers choose appropriate media, and the participation or readiness of lecturers and students in learning that occurs inside or outside the classroom (Surindra et al., 2019). The quality of learning is a systematic linkage and there is a synergy between all components during learning in creating effective and efficient learning processes and outcomes based on the applicable curriculum (Sumarni et al., 2013). The quality of learning is a learning process that runs effectively so could create the success of a learning process (Wicaksono & Sutikno, 2019).

In this study, researchers attempted to combine the various components needed to create a high quality learning process for students. One of these components is the use of project-based learning methods which are considered very suitable to be applied in learning, especially in this era because by applying the project-based learning method, it will make it easier for students and feel challenged to develop their competencies. Project-based learning is a learning model that focuses its activities on the process, has a relative timeframe, focuses on problems, and in learning combines various components including knowledge, discipline and field practice (Kristanti et al., 2016). Project-based learning is a type of learning that directs students to carry out an activity or project where the implementation is related to daily life (Damayanti

& Surindra, 2018). Project-based learning invites students to be active and able to find alternatives in solving existing problems (Ramadhani & Santosa, 2013). Project-based learning has several objectives, including: 1) providing students with the ability to solve problems or projects; 2) providing new experiences or knowledge during the learning process; 3) make students active in solving projects by producing products; 4) improve students' abilities in managing materials or equipment used to complete projects; and 5) an increase in cooperation, especially in group activities (Wirawan, 2021).

By the use of project-based learning models, it is hoped that there will be an increase in student learning outcomes where the increase in learning outcomes it is expected to be one of the benchmarks for the successful use of project-based learning models in lectures. Learning outcomes are something that has to do with showing changes that occur in students, especially those related to cognitive aspects, affective aspects, and psychomotor aspects (Pingge & Wangid, 2022). Learning outcomes are a learning process in which there is an increase in the competencies that exist in students (Zuliana Sari et al., 2021). Furthermore, learning outcomes are a very important thing to be able to realize the achievement of an effective learning process, especially in achieving the learning objectives themselves.

Reflecting on this, the goal is to find out if there is an improvement in the quality of the learning process, especially in the innovation management course, which is implemented using a project-based learning model. For this reason, the participation of all components is needed, especially in supporting the success of the project-based learning method. Because it is undeniable that the innovation management course is a course that has just been applied as a compulsory university course, so the lecturers are also still groping and experimenting about what method is most suitable for learning.

## **RESEARCH METHODS**

The research was conducted on students, especially students of the Elementary School Teacher Education Study Program. In this case, the research was conducted in 4 different classes; they were class 4A, totaling 35 students, 4B, totaling 34 students, 4C, totaling 35 students, and 4D, totaling 27 students. Furthermore, the object was a project-based learning model used to determine the improvement in the quality of learning in the classroom, especially in the innovation management course.

The type of research in this study was classroom action research. This is one form of research that is often used, especially in observing all forms of learning activities in the classroom to observe learning methods, learning media, and learning outcomes. In this case, classroom action research is an activity carried out by the teacher through actions to obtain alternative solutions to problems in the learning process from the research process, an appropriate observation and reporting (Yusantika, 2020). The cycle in this study can be seen in this picture:

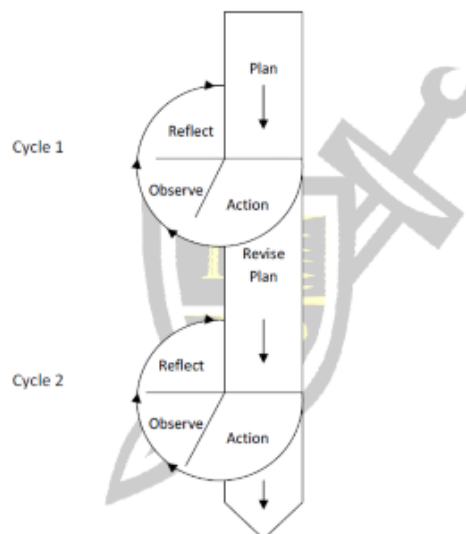


Figure 1. Action Research Classroom Cycle  
(Young, Rapp, and Murphy, 2008) in (Widyaningrum, Bakti; Surindra, 2018)

In the cycle above, it can be explained that it consisted of four stages, they were 1) the plan or planning stage, which at this stage the lecturer prepares what tools used in classroom action research; 2) the action stage or the implementation of the action, where at this stage the lecturer carried out class actions, especially for students of the Elementary School Teacher Education Study Program in grades 4A, 4B, 4C, and 4D; 3) the observation stage, where at this stage the lecturer conducted field observations using previously prepared instruments; and 4) the reflection stage, where at this stage the lecturer carried out reflection purposed to evaluate the research activities carried out in class. In this case, it was carried out to find out something that needs to be evaluated or things that need to be improved at the next meeting until the planned learning objectives achieved.

Furthermore, to determine the level of difference before and after the implementation of the project-based learning model, comparative test analysis was used, especially using SPSS because it was considered easier to analyze.

## RESULTS AND DISCUSSION

From the research, it is known that data regarding student learning outcomes in innovation management courses using project-based learning, the data are as follows:

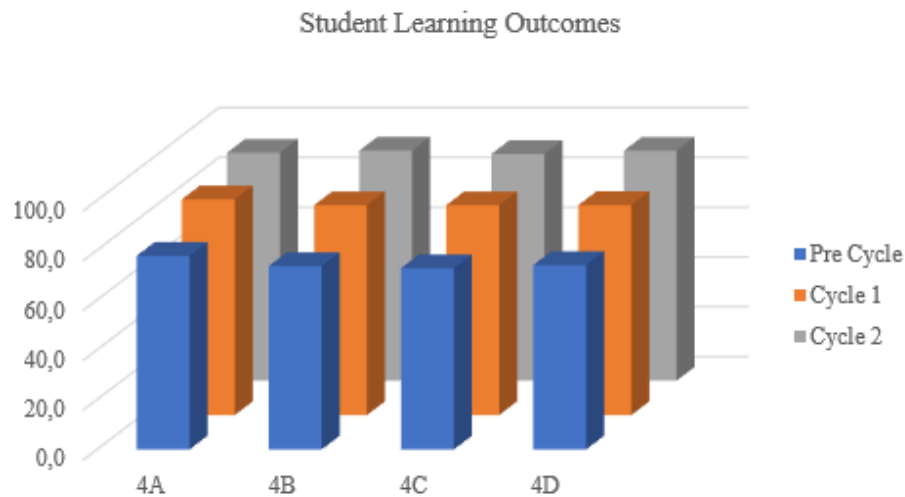


Figure 2. Student Learning Outcomes

From the picture, it can be explained that student learning outcomes with the application of project-based learning models in each cycle, including: 1) in class 4A pre-cycle stage, it is known that the average student score is 77.7, there is an increase in cycle 1 which the average student score to 86.6, and in cycle 2 the average score of students increased again to 91.5; 2) in class 4B in the pre-cycle stage, it is known that the average student score was 73.6, there is an increase in cycle 1 the average value of students became 84.3, and in cycle 2 the average value of students increased again to 92.4; 3) in class 4C in the pre-cycle stage, it is known that the average student score is 72.8, there is an increase in cycle 1 the average student score became 84.3, and in cycle 2 the average student score increases again to 91; and 4) in class 4D in the pre-cycle stage, it is known that the average student score is 74, there is an increase in cycle 1 the average student score became 84.3, and in cycle 2 the average student score increased again to 92.3.

The next data analysis is using comparative data analysis which is aimed know the comparison or improvement of student learning outcomes between pre-cycle, cycle 1 and cycle 2. The following is a comparative test of learning outcomes before and after using project-based learning methods in innovation management courses for students.

**Table 1. Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before	77.74	35	2.536	.429
	After	91.54	35	4.895	.827
Pair 2	Before	73.65	34	9.263	1.589
	After	92.35	34	8.413	1.443
Pair 3	Before	72.77	35	6.748	1.141
	After	91.03	35	6.528	1.103
Pair 4	Before	74.00	27	5.771	1.111
	After	92.26	27	5.020	.966

From the table above, it is known that there is an increase in student learning outcomes, where before the use of project-based learning methods in innovation management courses, including: 1) class 4A the average value of students is 77.74, but after using project-based

learning methods in the innovation management course there was an increase in the average score of students to 91.54; 2) class 4B the average score of students is 73.65, but after the use of project-based learning methods in innovation management courses there is an increase in the average value of students to 92.35; 3) Class 4C the average score of students is 72.77, but after using project-based learning methods in innovation management courses, the average score of students increases to 91.03; and 4) Class 4D the average student score is 74.00, but after using the project-based learning method in the innovation management course there is an increase in the average student score to 92.26.

**Table 2. Paired Samples Correlations**

		N	Correlation	Sig.
Pair 1	Before & Afters	35	-.059	.734
Pair 2	Before & Afters	34	.777	.000
Pair 3	Before & Afters	35	.748	.000
Pair 4	Before & Afters	27	.814	.000

From the table above, it can be seen that the level of correlation between the variables, the correlation before and after the use of project-based learning methods in innovation management courses are: 1) Class 4A is -0.059 or -5.9%; 2) Class 4B of 0.777 or 77.7%; 3) Class 4C of 0.748 or 74.8%; and 4) 4D class is 0.814 or 81.4%.

**Table 3. Paired Samples Test**

		Paired Differences			95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error	Lower	Upper			
Pair 1	Before - After	-13.800	5.645	.954	-15.739	-11.861	-14.462	34	.000
Pair 2	Before - After	-18.706	5.957	1.022	-20.784	-16.627	-18.310	33	.000
Pair 3	Before - After	-18.257	4.718	.797	-19.878	-16.637	-22.895	34	.000
Pair 4	Before - After	-18.259	3.369	.648	-19.592	-16.926	-28.158	26	.000

From the table above, it can be seen that the level of significance between before and after the use of project-based learning methods in innovation management courses, if the value of Sig. (2-tailed) < 0.05 then the result is significant. The significance level of each class, among others: 1) Class 4A is known that the value of Sig. (2-tailed) 0.000 < 0.05, so there are differences before and after the use of project-based learning methods in innovation management courses; 2) Class 4B is known that the value of Sig. (2-tailed) 0.000 < 0.05, so there are differences before and after the use of project-based learning methods in innovation management courses; 3) Class 4C is known that the value of Sig. (2-tailed) 0.000 < 0.05, so there are differences before and after the use of project-based learning methods in innovation management courses; and 4) Class 4D is known that the value of Sig. (2-tailed) 0.000 < 0.05, so there is a difference before and after the use of project-based learning methods in innovation management courses. This is in line with research (Fahadah et al., 2021) which states that project-based learning is successful and shows effectiveness in learning.

Form the four classes that became the object of research, the average student said that the project-based learning method gave rise to several impressions, including: 1) learning innovation management became more interesting because learning innovation management students were invited to work on projects directly; 2) learning innovation management is more meaningful because students are required to be able to think independently and in groups in solving problems in the projects they are working on; 3) innovation learning makes students

able to appreciate the opinions or projects carried out by other students or other groups; and 4) students feel that learning innovation management is easier to understand because it is supported by projects that are suitable for everyday life.

## CONCLUSION

From this study, there are several conclusions related to student learning outcomes, including: 1) the learning outcomes of class 4A of 35 students have increased starting from the pre-cycle of 77.7, increased in cycle 1 of 86.6, and increased again in cycle 2 of 91.5. From the results of the comparative test for class 4A, it can be seen that the value of Sig. (2-tailed)  $0.000 < 0.05$ , so there are differences before and after the use of project-based learning methods in innovation management courses; 2) the learning outcomes of class 4B of 34 students have increased starting from the pre-cycle of 73.6, increasing in the first cycle of 84.3, and increasing again in the second cycle of 92.4. From the results of the comparative test for class 4B, it can be seen that the value of Sig. (2-tailed)  $0.000 < 0.05$ , so there are differences before and after the use of project-based learning methods in innovation management courses. 3) the learning outcomes of class 4C of 35 students have increased starting from the pre-cycle of 72.8, increasing in the first cycle of 84.3, and increasing again in the second cycle of 91.0. From the calculation results of the 4C class comparative test, it can be seen that the value of Sig. (2-tailed)  $0.000 < 0.05$ , so there are differences before and after the use of project-based learning methods in innovation management courses; and 4) the learning outcomes of class 4C of 27 students have increased starting from the pre-cycle of 74.0, increasing in the first cycle of 84.3, and increasing again in the second cycle of 92.3. From the calculation results of the 4C class comparative test, it can be seen that the value of Sig. (2-tailed)  $0.000 < 0.05$ , so there is a difference before and after the use of project-based learning methods in innovation management courses.

With significant results from each class, it can be understood that the use of project-based learning methods in innovation management courses can improve the quality of learning in the classroom. This is also supported by the existence of project-based learning methods that enable students to express their own thoughts accompanied by the references they have obtained. Learning using project-based learning methods can run effectively and is able to provide high efficiency, especially in innovation management courses so that what is the initial learning goal can be achieved.

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