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Research Article

The influence of the ricorse - PBL (*Problem Based Learning*) model on cognitive learning outcomes, creative thinking and critical thinking in ecology and biodiversity materials

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ABSTRACT

One of the competencies of educators as the key to success in learning is improving the quality of learning through selecting and using appropriate learning models to empower students' abilities. The learning model that can be used is an integrated learning model between the Ricorse model and PBL (Problem Based Learning) which can construct students' knowledge through efforts to solve problems that exist in the real world. This research aims to determine the effect of the Ricorse - PBL learning model on cognitive learning outcomes, creative thinking and critical thinking on ecology and biodiversity material in class VII junior high school students in Ambon City. The research method used was a quasi experiment with the population in this study being all students in class VII of Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon, each class consisting of 30 students so that the total sample was 180 students. The research instrument uses test instruments and LKPD. Data analysis in this study used covariance analysis (Ancova) with SPSS Version 23 software. The results of the study showed that the Ricorse learning model integrated with PBL had a joint effect on the learning outcomes, creative thinking and critical thinking of class VII students at Junior High School 13 Ambon. , Junior High School 3 Ambon and Junior High School 19 Ambon in studying ecology and biodiversity material with a significant value of 0.000<0.05.

Keywords: *Ricorse – PBL Integration, Learning Outcomes, Creative Thinking, Critical Thinking.*

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INTRODUCTION

Learning Biology Science in Era 4.0 not only requires students to understand the conceptual knowledge and legal basis of Biology Science, but also requires students to apply thinking skills in solving a problem (Astini, 2019). Empirical facts in Ambon City show that education has not achieved sufficient success in terms of the ongoing learning process and student learning outcomes, where educators have not been able to apply constructivism-oriented learning as a whole, therefore critical thinking skills and creativity must be applied to students. from an

early age (Rumahlatu and Sangur, 2019). One way to improve the quality of learning is to choose and use the right learning model to empower students' abilities. A learning model that is suitable to be applied in the era of education 4.0 to improve cognitive learning outcomes, creative thinking and critical thinking is the Ricorse learning model where this learning model can improve students' thinking skills and make the learning process more active, creative and can build a self-confident attitude in learning process . This is expected to provide a more interesting atmosphere and impress students, so that the learning process can be felt to be more enjoyable and does not make students bored (Komala et al. 2021).

The Ricorse learning model is based on a problem-solving based learning process where this learning model prioritizes the way of thinking about problems, so that it is effective in developing students' high-level thinking skills which include critical thinking skills, creative thinking skills and conventional cognitive domains (Mahanal and Zubaidah, 2022). Based on this, the learning model that can be combined with the Ricorse learning model is the PBL (*Problem Based Learning*) where the PBL model can construct students' knowledge through efforts to solve problems that exist in the real world (Darwati and Purana, 2021). Students are required to actively carry out investigations to solve problems while the role of educators is as a facilitator (Septikasari and Frasandy, 2018).

Several previous studies regarding the application of the Ricorse learning model have been examined, such as research by Azrai et al. (2022) regarding the Ricorse learning model which can improve students' problem solving abilities , research by Komala et al. (2021) where the PBL (*Problem Based Learning) model*) can improve students' problem solving abilities. And research by Muhlisin et al. (2020) regarding the integration of PBL classes with RMS classes can be utilized by educators and lecturers in biology learning to have the ability to think and solve everyday problems.

The results of the initial survey conducted at Junior High School 13 Ambon show that the application of innovative learning models has been widely applied to biology learning, but the application of a combination of the Ricorse and PBL learning models as a constructivist-based innovative learning model to empower learning outcomes, creative thinking and critical thinking has not been implemented. Meanwhile, survey results at Junior High School 3 Ambon show that the PBL learning model has been used by educators to help students think more actively, creatively and build self-confidence in the learning process, but the combination of the Ricorse and PBL learning models has not been implemented by educators. biology. The same results at Junior High School 19 Ambon show that the PBL learning model and innovative learning models have been widely applied to biology learning, but the combination of the Ricorse and PBL learning models has not been applied by biology educators.

METHODS

The research method used was *a quasi experiment* with the population in this study being all students in class VII of Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon, each class consisting of 30 students so that the total sample was 180 students. The research instrument uses test instruments and LKPD. Data collection techniques in this research used observation, documentation and test methods. Data analysis in this study used covariance analysis (Ancova). Before carrying out inferential analysis, a homogeneity test was carried out using the *Levene test* and a normality test using the *Kolmogorov – Smirnov test.* Furthermore, if the results of the inferential analysis show significant results, then a further test will be used, namely the LSD test with SPSS Version 23 *software* .

RESULTS AND DISCUSSION

Research result

This research was conducted at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon and the research objects were 2 class VIIs as a control class and an experimental class, each class had 30 students . This meeting process took place in 2 (two) meetings on the topic of discussing Ecology and Biodiversity . At the first meeting, before carrying out the learning process, the researcher conducted *a pre-test* on all classes, both control and experimental classes which had been determined as samples. This *pre-test* is carried out to determine students' initial knowledge before the learning process is carried out. From the *pre-test results* , the average value of the control class and experimental class was obtained. After carrying out *the pre-test,* the researcher continued the learning process in class, and continued with *the post-test,* to determine students' understanding of the material that had been presented by the researcher.

In the control class, the researchers took a sample of class VII with a total of 30 people from each school (Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon) with a total of 30 students from. After completing *the pre-test* in this control class, the researcher continued the learning process by delivering material to students using the previously applied learning method, namely the conventional method. In this learning process, students listen more to the material presented, answer when asked questions or ask questions when there is material that is unclear. During the learning process in the control class, it was seen that quite a lot of students were following the learning well. However, it is still seen that other students are less concentrated in the

learning process. Apart from that, when educators provide the opportunity to ask questions or have opinions regarding the material provided, there are still many students who are less enthusiastic, and students even tend to become silent, resulting in a lack of feedback from students. After the subject educators finished giving the lesson to the students, the researcher continued by conducting *a post-test* on the students to determine the students' understanding of the material that had been presented.

In the experimental class, researchers took samples from class VII from each school (Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon) with a total of 30 students from . In this experimental class the learning process is carried out using the Ricorse - PBL (*Problem Based Learning*) Learning Model . Before conducting learning, the researcher conducted *a pre-test,* after completing *the pre-test,* the learning process continued, where the researcher presented the material through infocus. With the Ricorse Learning Model - PBL (*Problem Based Learning*) students are more active in teaching and learning activities because students are required to be active in solving problems faced in class. After completing the delivery of the material, the researcher conducted *a post-test* on the students to determine the students' understanding of the material presented.

Cognitive Learning Outcomes

Data on students' cognitive learning outcomes aims to find out whether learning outcomes on ecology and biodiversity material can be improved by using the Ricorse - PBL (*Problem Based Learning*) Learning Model . Data on students' cognitive learning outcomes is obtained through administering *pre -tests* and The students' *post test is as follows:*

Table 1. Cognitive learning results in the control class and experimental class Junior High School 13 Ambon, Junior High School 3 Ambon, Junior High School 19 Ambon

Name School	Control Class						Experimental Class					
	Pretest			Posttest			Pretest			posttest		
	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR
Junior High School 13 Ambon	10-15	5	16%	65-70	3	10%	15-20	3	10%	74-79	6	20%
	16-21	5	16%	71-76	7	23%	21-26	2	6%	80-85	9	30%
	22-27	4	13%	77-82	7	23%	27-32	3	10%	86-91	8	26%
	28-33	5	16%	83-88	7	23%	33-38	8	26%	92-96	7	23%
	34-39	1	3%	89-96	6	20%	39-44	6	20%			
	40-45	5	16%				45-50	8	26%			
	46-50	5	16%									
Total		30	100%		30	100%		30	100%		30	100%
	Pretest			Posttest			Pretest			posttest		
	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR
Junior High School 3 Ambon	10-15	4	13%	60-65	3	10%	15-20	3	10%	70-75	1	3%
	16-21	5	16%	66-71	0	0%	21-26	0	0%	76-81	6	20%
	22-27	5	16%	72-77	14	46%	27-32	2	6%	82-87	5	16%
	28-33	6	20%	78-83	4	13%	33-38	6	20%	88-95	18	60%
	34-39	1	3%	84-90	9	30%	39-44	7	23%			
	40-45	4	13%				45-50	12	40%			
	46-50	5	16%									
Total		30	100%		30	100%		30	100%		30	100%
	Pretest			Posttest			Pretest			posttest		
	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR	Intervals	F	F
Junior High School 19 Ambon	10-15	6	20%	65-70	3	10%	10-15	5	16%	70-75	3	10%
	16-21	8	26%	71-76	9	30%	16-21	0	0%	76-81	11	36%
	22-27	3	10%	77-82	12	40%	22-27	6	20%	82-87	5	16%
	28-33	3	10%	83-86	6	20%	28-33	4	13%	88-93	5	16%
	34-39	1	3%				34-39	3	10%	94-96	6	20%
	40-45	4	13%				40-45	7	23%			
	46-50	5	16%				46-50	5	16%			

Total	30	100%		30	100%		30	100%		30	100%

The distribution of scores in the initial test was 100% in the range of 10-50 for the control and experimental classes. This shows that students have a low level of mastery of the concept of ecology and biodiversity material. Meanwhile, looking at the final test, it shows that 100% of students experienced an increase in scores in both the control and experimental classes. This means that there is an increase in scores between before and after students are taught using the Ricorse-PBL learning model and classes whose learning uses the conventional model.

Creative Thinking

The students' creative thinking data aims to find out whether creative thinking from ecological and biodiversity material can be improved by using the Ricorse Learning Model - PBL (*Problem Based Learning*) . Data on students ' creative thinking was obtained through giving *pre-tests* and *post-tests* to students.

Table 2. Creative thinking of students in the control class and experiment class Junior High School 13 Ambon, Junior High School 3 Ambon, Junior High School 19 Ambon

Name School	Control Class						Experimental Class					
	Pretest			Posttest			Pretest			Posttest		
	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR
Junior High School 13 Ambon	11-16	11	36%	35-40	6	20%	15-20	8	2%	60-65	3	10%
	17-22	11	36%	41-46	10	30%	21-22	0	0%	66-71	6	20%
	23-28	6	20%	47-52	5	16%	27-32	4	13%	72-77	7	23%
	29-34	0	0%	53-58	4	13%	33-38	5	16%	78-83	13	43%
	35-40	1	3%	59-64	0	0%	39-44	6	20%	84-86	1	3%
	41-45	1	3%	65-70	0	0%	45-50	7	23%			
				71-76	0	0%						
				77-85	5	16%						
Total		30	100%		30	100%		30	100%		30	100%

	Pretest			Posttest			Pretest			posttest		
	Intervals	F	FR	Intervals	F	FR(%)	Intervals	F	FR	Intervals	F	FR
Junior High School 3 Ambon	10-15	15	50%	18-23	4	13%	11-16	2	6%	50-55	1	3%
	16-21	13	43%	24-29	4	13%	17-22	1	3%	56-61	0	0%
	22-25	2	6%	30-35	6	20%	23-28	2	6%	62-67	5	16%
				36-41	6	20%	29-34	2	6%	68-73	4	13%
				42-47	4	13%	35-40	11	36%	74-79	5	16%
				48-55	6	20%	41-46	17	23%	80-85	15	50%
							47-55	5	16%			
Total		30	100%		30	100%		30	100%		30	100%

	Pretest			Posttest			Pretest			Posttest		
	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR	Intervals	F	F
Junior High School 19 Ambon	11-16	20	60%	18-23	6	20%	11-16	4	13%	50-55	1	3%
	17-20	10	30%	24-29	6	20%	17-22	5	16%	56-61	0	0%
				30-35	3	10%	23-28	3	10%	62-67	8	26%
				36-41	8	26%	29-34	3	10%	68-73	3	10%
				42-47	5	16%	35-40	7	23%	74-79	8	26%
				48-55	2	6%	41-46	6	20%	80-82	10	30%
							47-50	2	6%			
Total		30	100%		30	100%		30	100%		30	100%

The distribution of scores on the initial test was 100% in the range 11-50 for the control and experimental classes, this shows that students' creative thinking abilities are still relatively low. Meanwhile, looking at the final test, it shows that 100% of students' creative thinking abilities were successful in improving, meaning that there

was an increase in scores between before and after students were taught using the Ricorse-PBL learning model and classes where the learning used the conventional model .

Critical thinking

The students' critical thinking data aims to find out whether critical thinking from ecological and biodiversity material can be improved by using the Ricorse Learning Model - PBL (*Problem Based Learning*) . Data on students ' critical thinking is obtained through giving *pre-tests* and *post-tests* to students.

Table 3. Students' critical thinking in the control class and experimental class Junior High School 13 Ambon, Junior High School 3 Ambon, Junior High School 19 Ambon

Name School	Control Class						Experimental Class					
	Pretest			Posttest			Pretest			Posttest		
	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR
Junior High School 13 Ambon	11-16	22	73%	17-22	5	16%	11-16	20	60%	37-42	6	20%
	17-20	8	26%	23-28	4	13%	17-22	6	20%	43-48	0	0%
				29-34	1	3%	55-65	4	13%	55-60	1	3%
				35-40	7	23%				61-66	12	40%
				41-46	12	40%				67-72	8	26%
				47-50	1	3%				79-85	3	10%
Total		30	100%		30	100%		30	100%		30	100%

	Pretest			Posttest			Pretest			Posttest		
	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR
Junior High School 3 Ambon	10-15	18	60%	20-25	6	20%	10-15	14	46%	37-42	9	30%
	16-20	12	40%	26-31	2	6%	16-21	13	43%	43-48	1	3%
				32-37	5	16%	58-66	3	10%	61-66	6	20%
				38-43	10	30%				67-72	9	30%
				44-50	7	23%				79-85	4	13%
Total		30	100%		30	100%		30	100%		30	100%

Name School	Control Class						Experimental Class					
	Pretest			Posttest			Pretest			Posttest		
	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR	Intervals	F	FR
Junior High School 19 Ambon	10-15	20	60%	18-23	5	16%	11-16	23	76%	37-42	17	56%
	16-20	10	30%	24-29	6	20%	17-20	7	23%	43-50	13	43%
				30-35	1	3%						
				36-41	13	43%						
				42-47	4	13%						
				48-50	1	3%						
Total		30	100%		30	100%		0	100%		30	100%

The distribution of scores on the initial test was 100% in the range 11-65 for the control and experimental classes, this shows that students' creative thinking abilities are still relatively low. Meanwhile, looking at the final test, it shows that 100% of students' creative thinking abilities were successful in improving, meaning that there was an increase in scores between before and after students were taught using the Ricorse-PBL learning model and classes where the learning used the conventional model.

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The Influence of the Ricorse Learning Model Integrated PBL (*Problem Based Learning*) on Cognitive Learning Outcomes, Creative Thinking and Critical Thinking in Students

Based on the normality test and homogeneity test carried out, the data shows a normal and homogeneous distribution. Then hypothesis testing can be carried out. Anacova was used to test the hypothesis. The error rate used is 5% or 0.05. In this research, researchers used the SPSS 23.0 program to calculate hypothesis tests with the Anacova test.

Learning outcomes

Table 6. Anacova test results for learning outcome variables

No	School	Variable	Sig
1	Junior High School 13 Ambon	Learning outcomes	0,000
2	Junior High School 3 Ambon	Learning outcomes	0,000
3	Junior High School 19 Ambon	Learning outcomes	0,000

Independent Variable: Ricorse learning model integrated with PBL (*Problem Based Learning*).

Based on the test results in the table above, it can be explained that the student learning outcomes obtained a sig value of 0.000 < 0.05 at Junior High School 13 Ambon, a sig value of 0.000 < 0.05 at Junior High School 3 Ambon, and a sig value of 0.000 < 0.05 at Junior High School 13 Ambon. So it can be concluded that H1 is accepted, which means that there is an influence of the Ricorse learning model which is integrated PBL (*Problem Based Learning*) on the cognitive learning outcomes of class VII students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon in studying ecology and diversity material. biological.

Creative Thinking

Table 7. Anacova test results for creative thinking variables

No	School	Variable	Sig
1	Junior High School 13 Ambon	Creative Thinking	0,000
2	Junior High School 3 Ambon	Creative Thinking	0,000
3	Junior High School 19 Ambon	Creative Thinking	0,000

Independent Variable: Ricorse learning model integrated with PBL (*Problem Based Learning*).

Based on the test results in the table above, it can be explained that creative thinking obtained a sig value of 0.000 < 0.05 at Junior High School 13 Ambon, a sig value of 0.000 < 0.05 at Junior High School 3 Ambon, and a sig value of 0.000 < 0.05 at Junior High School 13 Ambon. So it can be concluded that H2 is accepted, which means that there is an influence of the Ricorse learning model which is integrated with PBL (*Problem Based Learning*) on the creative thinking of class VII students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon in studying ecology and biodiversity material.

Critical thinking

Table 8. Anacova test results for creative thinking variables

No	School	Variable	Sig
1	Junior High School 13 Ambon	Critical thinking	0.006
2	Junior High School 3 Ambon	Critical thinking	0,000
3	Junior High School 19 Ambon	Critical thinking	0,000

Independent Variable: Ricorse learning model integrated with PBL (*Problem Based Learning*).

Based on the test results in the table above, it can be explained that critical thinking obtained a sig value of 0.006 < 0.05 at Junior High School 13 Ambon, a sig value of 0.000 < 0.05 at SMPN Junior High School 3 Ambon, and a sig value of 0.000 < 0.05 at Junior High School 13 Ambon. So it can be concluded that H3 is accepted, which means that there is an influence of the Ricorse learning model which is integrated with PBL (*Problem Based Learning*) on the critical thinking of class VII students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon in studying ecology and biodiversity material. .

Learning Outcomes, Creative Thinking and Critical Thinking

Table 8. Anacova test results learning results, creative thinking and critical thinking

No	School	Variable	Sig
1	Junior High School 13 Ambon	Learning outcomes	0,000
		Creative Thinking	0,000
		Critical thinking	0.006
2	Junior High School 3 Ambon	Learning outcomes	0,000
		Creative Thinking	0,000
		Critical thinking	0,000
3	Junior High School 19 Ambon	Learning outcomes	0,000

	Creative Thinking	0,000
	Critical thinking	0,000

Independent Variable: Ricorse learning model integrated with PBL (*Problem Based Learning*).

Based on the test results in the table above, it can be explained that the sig value is 0.006 < 0.05 at Junior High School 13 Ambon, the sig value is 0.000 < 0.05 at Junior High School 3 Ambon, and the sig value is 0.000 < 0.05 at Junior High School 13 Ambon. So it can be concluded that H4 is accepted, which means that there is an influence of the Ricorse learning model which is integrated PBL (*Problem Based Learning*) on the learning outcomes, creative thinking and critical thinking of class VII students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon in study ecology and biodiversity material.

Test LSD

The LSD test or difference test was carried out to find out whether the control class and experimental class had significant differences in students' learning outcomes, creative thinking and critical thinking. LSD Test Results can be seen in the following table:

Learning outcomes

Table 9. LSD test results learning results

No	School	Variable	Class	Sig	Information
1	Junior High School 13 Ambon	Learning outcomes	Control	0,000	Really Different
			Experiment	0,000	Really Different
2	Junior High School 3 Ambon	Learning outcomes	Control	0,000	Really Different
			Experiment	0,000	Really Different
3	Junior High School 19 Ambon	Learning outcomes	Control	0,000	Really Different
			Experiment	0,000	Really Different

The results of the LSD further test showed that at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon the learning outcome variables were significantly different in the control group and the experimental group, the thinking variables were significantly different in the control group and the experimental group.

Creative Thinking

Table 10. LSD creative thinking test results

No	School	Variable	Class	Sig	Information
1	Junior High School 13 Ambon	Creative Thinking	Control	0,000	Really Different
			Experiment	0,000	Really Different
2	Junior High School 3 Ambon	Creative Thinking	Control	0,000	Really Different
			Experiment	0,000	Really Different
3	Junior High School 19 Ambon	Creative Thinking	Control	0,000	Really Different
			Experiment	0,000	Really Different

The results of the LSD further test showed that at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon the creative thinking variable was significantly different in the control group from the experimental group, the thinking variable was significantly different in the control group and the experimental group.

Critical thinking

Table 10. Critical Thinking LSD test results

No	School	Variable	Class	Sig	Information
1	Junior High School 13 Ambon	Critical thinking	Control	0,000	Really Different
			Experiment	0,000	Really Different
2	Junior High School 3 Ambon	Critical thinking	Control	0,000	Really Different
			Experiment	0,000	Really Different
3		Critical thinking	Control	0,000	Really Different

	Junior High School 19 Ambon	Experiment	0,000	Really Different

Source: SPSS Version 23 Results, (2024)

The results of the LSD further test showed that at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon the critical thinking variable was significantly different in the control group and the experimental group, the thinking variable was significantly different in the control group and the experimental group.

Discussion

The influence of the Ricorse learning model which is integrated with PBL (*Problem Based Learning*) on students' cognitive learning outcomes

Based on the results of the final stage of data analysis found in the *pre-test* and *post- test results* . The results obtained from Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon showed that the average *pre-test* and *post-test scores* for the Ricorse integrated PBL class were higher than the average score for the PBL class . This was further strengthened by statistical analysis using ANCOVA analysis at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon which is presented in table 10. It shows that there is an influence on the Ricorse integrated PBL (*Problem Based Learning*) learning model on students' cognitive learning outcomes. . This was further strengthened by an LSD test on the data obtained in the LSD test. "The LSD (*Least Significant Difference*) test is a test used as a further procedure to determine which treatments are significantly different based on the mean value obtained if the null hypothesis is rejected .

It can be seen in Table 11. LSD's further test on the cognitive learning outcomes of students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon, the average value of the class using the PBL (*Problem Based Learning*) integrated Ricorse learning model is higher compared to the class with using conventional learning models. Increasing the cognitive learning outcomes of students in the experimental class provides an illustration of the potential that students have when carrying out activities in the learning process with educators so that they are able to place students in a position that is based on. On the talents and interests as well as the ability of students to condition and control themselves in overcoming obstacles experienced during the learning process (Khotimah, 2021; Afriani, 2022).

There were differences in learning outcomes between the two classes due to several things, first, students in the experimental class had higher learning motivation. Because in the experimental class students discuss and can exchange ideas in achieving the desired goals and targets with the Ricorse learning model which is integrated with PBL (Fiteriani and Baharudin, 2018), so it can attract the attention of students in other groups. In the learning process in the experimental class, students are seen to be very serious about combining opinions, looking for material sources and summarizing them, as well as expressing their ideas. This condition is in accordance with the opinion of Mahanal et al. (2022) who stated that "students who have motivation will be seen through actively asking questions, expressing opinions, concluding learning, taking notes, making resumes, practicing things, doing exercises and evaluating in accordance with the guidance. learning".

On the other hand, in the learning process in control classes, students tend to get bored quickly in the learning process, sometimes educators have to be more careful in supervising students in the learning process (Putri, 2018). This happens because these students work when there is someone supervising them, if there is no one they tend to be lazy, some even do not do the tasks ordered by the teacher. Apart from that, there are also some students who often excuse themselves from leaving because they need to, and there are also those who take advantage of their group friends' work, so that when asked about the learning material they don't master it. This explanation is also in accordance with the opinion of Ilma et al. (2023) that "students who lack motivation to learn are generally less able to persist in studying longer, less serious about doing their assignments". Several problems in the experimental class and control class had an impact on student learning outcomes, resulting in the experimental class learning outcomes being higher than the control class.

So it is concluded that there are differences in the learning outcomes of students who are taught using the Ricorse learning model which is integrated with PBL (*Problem Based Learning)* . Ecology and biodiversity material . Developing learning outcomes for learning is basically helping students see the relationship between the material being studied and themselves and if students see that the results of their learning experience will bring progress to them, they will most likely be motivated in learning so that the results of their learning efforts can increase.

The influence of the Ricorse learning model which is integrated with PBL (*Problem Based Learning*) on students' creative thinking

Based on the research results, pre-test and post-test in the control class and experimental class show that there is an influence of the Ricorse learning model which is integrated PBL (*Problem Based Learning*) on the creative thinking of class VII students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon in studying ecology and biodiversity material with Ancova test results, namely sig 0.000 < 0.05. What we need to know is that the control class is a class that learns without using a learning model and the experimental class is a class that uses the Ricorse learning model which is integrated with PBL (*Problem Based Learning*). This proves that the Ricorse learning model with PBL (*Problem Based Learning*) can improve students' creative thinking.

Creative thinking skills or also called divergent thinking skills are thinking skills that can produce answers that are varied and different from those that have existed before (Mutia et al. 2022). Creative thinking skills are a type of thinking that leads to new insights, new approaches, different points of view, various ways to understand and make sense of something. Creative thinking skills are important in academics and in everyday life. Creative thinking skills can be improved through creative means (Ilma et al. 2023).

So it is concluded that there are differences in the creative thinking of students who are taught using the Ricorse learning model which is integrated with PBL (*Problem Based Learning).* Ecology and biodiversity material. Developing students' creative thinking regarding learning by providing stimuli or exercises that can be done every day. Apart from that, creative thinking skills can also be developed by asking questions and inviting students to actively participate in problem-solving based learning.

The influence of the Ricorse learning model which is integrated with PBL (*Problem Based Learning*) on students' critical thinking.

Based on the research results, pre-test and post-test in the control class and experimental class show that there is an influence of the Ricorse learning model which is integrated PBL (*Problem Based Learning*) on the critical thinking of class VII students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon in studying ecology and biodiversity material with the LSD test results showing significant differences in scores in the control and experimental classes at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon and the results of the Ancova test, namely sig 0.000 < 0.05 . What we need to know is that the control class is a class that learns without using a learning model and the experimental class is a class that uses the Ricorse learning model which is integrated with PBL (*Problem Based Learning*).

The difference in the average pre-test and post-test scores has different learning outcomes, both in the control class and the experimental class . Students who have the highest critical thinking are from Junior High School 3 Ambon. The difference in critical thinking of students in the control class and the experimental class occurred due to the integration of the Ricorse learning model with PBL which was followed by many students who completed the post test results well in the experimental class. This proves that the Ricorse learning model with PBL (*Problem Based Learning*) can improve students' critical thinking.

The low KKM achievement can be achieved occurs because educators have not implemented the learning model well and Students who are not trained enough in critical thinking can cause low levels KKM achievement thinking ability critical. According to (Putri et al. 2020) curiosity high will support the critical thinking process well, and how good it would be if curiosity can be maintained using problem solving using appropriate learning models.

So it is concluded that there are differences in the critical thinking of students who are taught using the Ricorse learning model which is integrated with PBL (*Problem Based Learning)* . Ecology and biodiversity material . Critical thinking skills are the nature of students' high curiosity, with logical thinking deciding what to believe and vice versa (Yacoubian and Khisfe, 2018; Ratnasari, 2024). Critical thinking is needed when learning takes place because it can encourage students to demonstrate knowledge of material by conveying opinions in front of the class . Critical thinking skills are very necessary in facing various life challenges. Critical thinking skills are needed in making decisions because the information received can be analyzed and evaluated first before making a decision (Yuliskurniawati et al. 2019).

The influence of the Ricorse learning model which is integrated PBL (*Problem Based Learning*) on students' cognitive learning outcomes, creative thinking and critical thinking

Based on the research results, pre-test and post-test in the control class and experimental class show that there is an influence of the Ricorse learning model which is integrated with PBL on the cognitive, creative thinking and critical thinking learning outcomes of class VII students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon in studying ecology and biodiversity material with Ancova test results, namely sig 0.000 < 0.05 . In line with the results of the LSD further test, it shows that at Junior High School 13, Junior High School 3 Ambon and Junior High School 19 Ambon the learning outcome variables are significantly

different in the control group and the experimental group, the thinking variable is significantly different in the control group and the experimental group, the critical thinking variable is significantly different in control group and treatment group.

Based on the analysis that has been carried out on research data that has been carried out obtained, can concluded that with implemented it Ricorse's integrated PBL learning model can help students in improving learning outcomes, creative thinking and critical thinking which is characterized by increasing scores from pre-test results to post-test results. Application Ricorse's integrated PBL (*Problem Based Learning*) learning model is capable push learners For more active in learning, so deep solving process problems may persist with Good. Afriani, (2022) shows that student learning outcomes increase along with the use of discovery learning models and learning experiences. Student learning outcomes begin with understanding a concept (Nurhayanti et all. 2021). Through this understanding, students train basic thinking skills. Students who have good basic ways of thinking can empower higher level thinking, one of which is creative thinking and critical thinking.

An effective learning model will be easy for students to understand and master participant educate in process learning. Learning Which effective here occurs when students are actively involved in the learning process. Not only that, Students can also solve problems that exist during the processlearning taking place. At the end process his learning researcher asked participants educate For do question *post-test* . Using the right learning model can have a good impact on students and help learners For develop skills n thinking critical And Skills finish problem (Ilma et al. 2023).

This research is in line with research by Azrai et al. (2022) on the correlation of students' scientific argumentation skills with cognitive achievement of PBL and Ricorse learning models in biology classes and research by Muhlisin et al. (2020) on models learning PBL Enough effective in develop students' abilities and students can also participate actively active in put forward opinion. Apart from that, research.

With explanation in on so can concluded that although material Which will taught classified complicated However still Can delivered with Good use Ricorse learning model which is integrated with PBL (*Problem Based Learning*). Ricorse learning model which is integrated PBL (*Problem Based Learning*) can made Wrong One solution in use learning model. Ricorse learning model integrated PBL (*Problem Based Learning*) can influence cognitive learning outcomes and abilities think critical learners (Azrai et al. 2022).

CONCLUSION

The conclusion in this research is that the Ricorse learning model which is integrated with PBL (*Problem Based Learning*) has a significant effect on the cognitive learning outcomes of class VII students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon in studying ecology and biodiversity material. Ricorse which is integrated with PBL (*Problem Based Learning*) has a significant effect on the creative thinking of class VII students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon in studying ecology and biodiversity material, the Ricorse learning model is integrated with PBL (*Problem Based Learning).*) has a significant effect on the critical thinking of class VII students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon in studying ecology and biodiversity material, and the Ricorse learning model which is integrated PBL (*Problem Based Learning*) has a joint effect on on the learning outcomes, creative thinking and critical thinking of class VII students at Junior High School 13 Ambon, Junior High School 3 Ambon and Junior High School 19 Ambon in studying ecology and biodiversity material.

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