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The Effect of the Cooperative Integrated Reading and Composition (CIRC) Learning Model, with a Scientific Approach, on the Creative Thinking Skills of Students at SMK Negeri 3 Bandung

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ABSTRACT

This study aims to determine the effect of the Cooperative Integrated Reading and Composition (CIRC) learning model, which is oriented toward a scientific approach, on the creative thinking skills of students at SMK Negeri 3 Bandung. The problem addressed in this study stems from students' low levels of creative thinking, which are caused by a learning process that remains largely teacher-centered, resulting in students having few opportunities to develop ideas, engage in discussion, and discover alternative solutions to problems. This study employed a quantitative approach using a quasi-experimental method and a nonequivalent control group design. The research subjects consisted of an experimental class that used the CIRC learning model with a scientific approach and a control class that used a conventional learning model. Data were collected through creative thinking ability tests in the form of pretests and posttests. Data analysis was conducted using normality tests, homogeneity tests, t-tests, and N-Gain tests. The results of the study indicate that there was an improvement in students' creative thinking skills after implementing the CIRC learning model. This is evidenced by the experimental class's N-Gain score of 75.11%, which falls into the "high" category, while the control class achieved an N-Gain score of 16.54%, which falls into the "low" category. The results of the hypothesis test showed a significance value of 0.00 < 0.05, Thus, the use of the science-oriented CIRC learning model has a significant effect on students' creative thinking skills. Therefore, the science-oriented CIRC learning model can serve as an alternative teaching method to enhance students' creative thinking skills.

Introduction

The development of education in the 21st century requires students not only to have the ability to master knowledge but also to be able to think at a higher level, one of which is creative thinking. Creative thinking skills have become an important competency because students are expected to be able to generate new ideas, find solutions to problems, and develop ideas innovatively in facing life's changes and challenges. (Sternberg, R. J., & Karami, 2022) creativity is an individual's ability to produce ideas, solutions, or products that have elements of novelty and certain value. Creativity is not only related to the ability to create something new but also involves the thinking process, idea development, and the

ability to adapt ideas to specific needs or contexts. These four aspects are important indicators in measuring students' creative thinking abilities.

Vocational High Schools (SMK), as educational institutions that prepare students to enter the workforce, face the demand to produce graduates who are competent, adaptable, and able to solve problems creatively. However, the learning process in schools is still often oriented towards one-way delivery of material, so students tend to just receive information and are less given opportunities to develop ideas, discuss, and find alternative solutions to problems. This situation can cause students' creative thinking skills to not develop optimally. A learning environment that is still teacher-centered and dominated by memorization activities can also result in students' creative thinking abilities not being fully developed. This is evident from the still low ability of students to generate diverse ideas, find alternative problem solutions, and develop ideas independently. Based on research (Suyatmi, S., 2024) the creative thinking ability of vocational high school students before being given innovative learning treatments is still considered low, with an average creative thinking score of 35.1% and only 9% of students achieving mastery. In addition, according to the international assessment results from the Programme for International Student Assessment (OECD dan PISA, 2024) Indonesia also shows challenges in students' creative thinking skills. Data (OECD dan PISA, 2024) shows that only about 5% of Indonesian students reach the high performance category (level 5–6) in creative thinking tests, while the OECD country average is around 27%. This indicates that Indonesian students' ability to generate, evaluate, and develop creative ideas still needs improvement.

One way to improve students' creative thinking skills is by applying a learning model that actively involves students in the learning process. Cooperative learning is one approach that can create learning interaction through collaboration among students. According to (Gillies, 2022), cooperative learning is a learning approach that involves students working in small groups to cooperate, help each other, and interact in building understanding of a material to achieve shared learning goals. Cooperative learning emphasizes both individual and group responsibility, so students not only understand the material but also develop communication, collaboration, and problem-solving skills. Through group activities, students can exchange ideas, give feedback, and develop thinking skills through social interaction.

One cooperative learning model that can be used is Cooperative Integrated Reading and Composition (CIRC). The CIRC model was developed by (Slavin, 2005) and his colleagues as a learning model that integrates reading, writing, and group work activities. In the implementation of CIRC, students work in heterogeneous groups to understand material, discuss ideas, and organize their thoughts in writing. (Slavin, 2005) explains that CIRC is designed to help students improve reading comprehension, develop language skills, and work together in groups.

Besides the learning models, the scientific approach also plays an important role in supporting the development of creative thinking skills. The scientific approach emphasizes

learning activities through stages of observing, questioning, experimenting, reasoning, and communicating. According to (Hosnan., 2021), the scientific approach is a learning approach that emphasizes active student involvement through the processes of observing, questioning, gathering information, associating, and communicating learning outcomes. This approach gives students the opportunity to build knowledge independently through scientific thinking processes, so learning is not only focused on the final result but also on the process of discovering and understanding concepts. Research conducted by (Hidayati, 2021) shows that the application of the CIRC learning model has a positive effect on improving students' creative thinking skills. The research shows that students who learn using the CIRC model experience improvements in fluency, flexibility, and originality compared to students who use conventional learning. This happens because the CIRC model gives students the chance to discuss, exchange ideas, understand information, and come up with ideas collaboratively. Furthermore, a study by (Fauziah, A., Abdullah, A. G., & Hakim, 2022) shows that the scientific approach is a learning method that gives students the opportunity to actively engage in discovering concepts through activities like observing, questioning, gathering information, associating, and communicating. Applying a scientific approach can train high-level thinking skills, including creative thinking, because students are encouraged to explore information, come up with ideas, and find solutions to problems. Research results show that there is an improvement in students' abilities to develop ideas, solve problems, and provide alternative answers after implementing learning based on a scientific approach.

Combining the CIRC learning model with a scientific approach is expected to create more active and meaningful learning. Through activities like reading, discussing, processing information, developing ideas, and communicating the results of their thinking, students get the chance to practice creative thinking skills such as generating lots of ideas, looking at problems from different perspectives, and coming up with different solutions. Research on CIRC shows that this model encourages student collaboration through activities like reading, discussions, and jointly writing in groups. Based on that explanation, applying the Cooperative Integrated Reading and Composition (CIRC) learning model with a scientific approach orientation is one of the relevant learning strategies to improve students' creative thinking skills, especially in vocational high schools. Therefore, a study entitled “The Effect of the Cooperative Integrated Reading and Composition (CIRC) Learning Model Oriented Towards a Scientific Approach on the Creative Thinking Ability of Students at SMK Negeri 3 Bandung” is important to conduct to find out how much the implementation of this model affects the development of students' creative thinking skills.

Method

According (Sugiyono, 2022) research methods are scientific ways used to obtain data for certain purposes and uses. Research methods consist of a series of systematic steps, starting from determining the research approach, collecting data, analyzing data, to drawing conclusions based on the research results. In this study, the researcher used a quantitative

approach. The quantitative approach emphasizes objective phenomena, which are then studied/analyzed using numbers, statistical processing results, models, structures, or controlled experiments. According to (Sugiyono, 2022), research methods are described as 'a process of activities in the form of data collection, analysis, and providing interpretation related to the research objectives.'

In research, methods are certainly very necessary. The research method used in this study is a quasi-experiment. According to (Sugiyono, 2022), he stated, "Quasi-experiments have a control group, but cannot fully function to control external variables that affect the implementation of the experiment." This study aims to find out whether there is an effect of the Cooperative Integrated Reading and Composition (CIRC) learning model based on a scientific approach on the creative thinking ability of students at SMK Negeri 3 Bandung.

This study is a Quasi-Experimental study consisting of an experimental class that reviews lessons using the concept acquisition learning strategy, while the control class reviews lessons in the usual way. The research design used in this study is the Nonequivalent Control Group Design. In this design, there are two groups that are not randomly selected, then given a pre-test to find out whether there is any difference between the experimental group and the control group. The method in this study is the experimental method, by dividing the research groups into two groups, namely the experimental group that learns with the cooperative learning model of the inside-outside circle type, and the second group is the control group that learns using the lecture method. The research design that will be used is the pre-test post-test control group design. The design looks like this:

Tabel 1. ***Statistical Nonequivalent Control Group Design***

Kelas	***Pre-test***	**treatment**	***Post-test***
Experimental	O_1	X_1	O_2
Control	O_3	X_2	O_4

Sumber: Sugiyono (2022)

Explanation:

X_1: Given treatment using the Cooperative Integrated Reading and Composition (CIRC) model.

X_2: Given treatment using the Student Achievement Division (STAD) model.

O_1: Pretest results of the Experimental class group.

O_2: Posttest results of the Experimental class group.

O_3: Pretest results of the Control class.

O_4: Posttest results of the Control class.

The subjects of this study will be in Class XI AKL at SMK Negeri 3 Bandung for the 2025-2026 Academic Year as the experimental class, which consists of 20 students, including 6 male students and 14 female students. Meanwhile, the research conducted in Class XI AKL 2 at SMK Negeri 3 Bandung as the control class consists of 21 students, including 8 male students and 13 female students.

Results and Discussion

1. Results of the Experimental Pre-Test

In calculating the average pretest score of the experiment, a mean of 52.60 or an average score of 56 was obtained, with the highest score being 80 and the lowest score being 23. The data obtained was calculated and presented in the following table:

Tabel 2. Average Pre-Test Results of the Experimental Class

Statistics		
Pretest_Eksperimen		
N	Valid	33
	Missing	0
Mean		67.12

Tabel 3. Pre-Test Frequency Distribution for the Experiment Class

Pretest_Eksperimen					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	55	2	6.1	6.1	6.1
	60	7	21.2	21.2	27.3
	65	9	27.3	27.3	54.5
	70	9	27.3	27.3	81.8
	75	2	6.1	6.1	87.9
	80	4	12.1	12.1	100.0
	Total	33	100.0	100.0	

It is known that the average value from the table above shows that the frequency is the total of 33 students who took the pretest in the experimental class, with scores of 65 and 70, each obtained by 9 students, scores of 56 and 75 obtained by 2 students each, a score of 60 obtained by 7 students, and a score of 80 obtained by 4 students. From the pretest scores, it can be seen that some students got low scores, which is due to their lack of knowledge in their way of thinking.

2. Experiment Posttest Results

In calculating the average posttest score, the experiment obtained a mean value of 86.60 or an average of 81, 83, 91, and 93, with the highest score of 96 and the lowest score of 74. The resulting data was calculated and presented in the table as follows:

Tabel 4. Average Post-Test Results of the Experimental Class

Statistics		
Posttest_Eksperimen		
N	Valid	33
	Missing	0
Mean		91.97
Median		90.00
Mode		90

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Tabel 5. Post-Test Frequency Distribution for the Experiment Class

Posttest_Eksperimen					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	85	8	24.2	24.2	24.2
	90	10	30.3	30.3	54.5
	95	9	27.3	27.3	81.8
	100	6	18.2	18.2	100.0
	Total	33	100.0	100.0	

Sumber: SPSS versi 26

The results from Table 5 above can be broken down into average values, where frequency represents the number of students who took the posttest in the experimental class, with the details being 8 students scoring 85, 10 students scoring 90, 9 students scoring 95, and 6 students scoring 100. From the explanation above, it can be concluded that the knowledge given had an impact on increasing students' knowledge, so in terms of creative thinking ability, there was an improvement in the scores achieved compared to before.

3. Control class

a) Control Pretest Results

In the average pretest calculation, the control group got a mean score of 64.81, or an average of 48, 73, 74, and 79, with the highest score of 87 and the lowest score of 46. The results were calculated and presented in the table as follows:

Tabel 6. Average Pre-Test Results of the Control Class

Statistics		
Pretest_Kontrol		
N	Valid	35
	Missing	0
Mean		60.86

Tabel 7 Pre-Test Frequency Distribution for the Control Class

Pretest_Kontrol					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	40	2	5.7	5.7	5.7
	50	3	8.6	8.6	14.3
	55	3	8.6	8.6	22.9
	60	12	34.3	34.3	57.1
	65	11	31.4	31.4	88.6
	70	2	5.7	5.7	94.3
	75	1	2.9	2.9	97.1
	85	1	2.9	2.9	100.0
	Total	35	100.0	100.0	

The results from the table above can be detailed with the average values where frequency refers to the number of students taking the Pre-Test in the control class, with the details being: 1 student scored 46, 4 students scored 48, 1 student scored 49, 1 student scored 57, 1 student scored 58, 1 student scored 59, 1 student scored 63, 1 student scored 65, 2 students scored 73, 2 students scored 74, 1 student scored 75, 1 student scored 78, 2 students scored 79, 1 student scored 80, and 1 student scored 87. From the pretest scores, it can be seen that some students scored low, likely due to a lack of knowledge in their way of thinking.

b) Posttest control results

In calculating the average posttest scores, the control group obtained a mean score, with the highest and lowest values. The results obtained were calculated and presented in the table as follows:

Tabel 7. Average Post-Test Results of the Control Class

Statistics		
Posttest_Kontrol		
N	Valid	35
	Missing	0
Mean		68.57

Tabel 8. Pre-Test Frequency Distribution for the Control Class

Posttest_Kontrol					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	55	3	8.6	8.6	8.6
	60	5	14.3	14.3	22.9
	65	11	31.4	31.4	54.3
	70	5	14.3	14.3	68.6
	75	4	11.4	11.4	80.0
	80	5	14.3	14.3	94.3
	85	2	5.7	5.7	100.0
	Total	35	100.0	100.0	

The results from the table above can be broken down into average scores where frequency represents the students who took the Post Test in the control class, with details as follows: 3 students scored 55, 5 students scored 60, 11 students scored 65, 5 students scored 70, 4 students scored 75, 5 students scored 80, and 2 students scored 85. From the description above, it can be concluded that the knowledge given had an impact on increasing knowledge, so in terms of students' critical thinking skills, there was an improvement in the scores obtained, which were higher than the Control Post-Test scores.

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4. Standard Deviation

After calculating the average (mean), the standard deviation was calculated to determine the number of data points in each class based on the students' thinking abilities. The results obtained are presented in the table as follows:

Tabel 9. Standard Deviation Result

Statistics					
		Pretest_ Eksperimen	Posttest_ Eksperimen	Pretest_ Kontrol	Posttest_ Kontrol
N	Valid	33	33	35	35
	Missing	2	2	0	0
Std. Deviation		5.683	7.210	8.501	6.456

Sumber: SPSS versi 26

Based on the results of the standard deviation on the pretest and posttest scores in the experimental and control classes, the standard values of the attitude test are 5.683 for the Experimental Pre-Test, 7.210 for the Experimental Post-Test, 8.501 for the Control Pre-Test, and 6.456 for the Control Post-Test. So, looking at the posttest scores and standard deviation of the experimental class, it can be concluded that the average Pre-Test score is higher than the average Post-Test score, while in the control class, it can be concluded that the average Pre-Test score is higher than the average Post-Test score as well.

5. N-Gain

The N-Gain test was conducted to find out the average normalized gain value. This test was also carried out to determine the difference in the application of the cooperative integrated reading and composition (CIRC) learning model in the experimental class and the Student Achievement Division (STAD) learning model in the control class on students' creative thinking abilities. This is shown in the N-Gain results in the table as follows:

Tabel 10. N-Gain Results for the Experimental Class and the Control Class

Descriptives					
	Kelas			Statistic	Std. Error
NGain_Persen	Eksperimen	Mean		**75.1130**	2.84540
		95% Confidence Interval for Mean	Lower Bound	69.3172	
			Upper Bound	80.9089	
	Kontrol	Mean		**16.5465**	4.85783
		95% Confidence Interval for Mean	Lower Bound	6.6742	
			Upper Bound	26.4188	

Based on the N-Gain Score test results, the average score for the experimental class (using the cooperative learning model type Cooperative Integrated Reading and

Composition (CIRC)) is 75.11 or 75.11%. This result falls into the High N-Gain criteria, with a minimum N-Gain Score of 40.00% and a maximum of 100.00%. Meanwhile, the average N-Gain Score for the control class (using the STAD model) is 16.54 or 16.54%, which falls into the Low N-Gain criteria, with a minimum N-Gain Score of -100.00% and a maximum of 66.67%. It can be concluded that using the cooperative learning model, specifically the cooperative integrated reading and composition type, is highly effective for improving students' creative thinking skills in Economics, particularly on the topic of National Income, for class XI AKL 1 students at SMK Negeri 3 Bandung in the 2025/2026 school year. Meanwhile, using the STAD model is less effective or not effective in improving students' creative thinking skills in Economics on the same topic for class XI AKL 2 students at SMK Negeri 3 Bandung in the 2025/2026 school year.

Data Processing Results

a. Prerequisite test

1) Normality Test

After calculating the Mean, Standard Deviation, and N-Gain, the next step is to perform a normality test on the sample. This is done to find out whether the distributed data is normally distributed or not. The results of the normality test that has been conducted are shown in the table as follows:

Tabel 11. Normality Test Results

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Kemampuan Berpikir Kreatif	Pre-test Eksperimen (CIRC)	.165	33	.023	.924	33	.230
	Post-test Eksperimen (CIRC)	.150	33	.059	.949	33	.122
	Pre-test Kontrol (STAD)	.176	35	.008	.958	35	.199
	Post-test Kontrol (STAD)	.170	35	.012	.942	35	.066

Sumber: SPSS versi 26

Based on the results of the normality test above, it can be seen that the Kolmogorov-Smirnov and Shapiro-Wilk for the experimental pretest Sig 0.23 ≥ α (0.05) are normally distributed, the experimental post-test Sig 0.59 ≥ α (0.05) is normally distributed, the control pretest Sig 0.08 ≥ α (0.05) is normally distributed, and the control post-test Sig 0.12 ≥ α (0.05) is normally distributed. From the explanation above, it can be concluded that all pretests and post-tests in this normality test are normally distributed.

2) Homogeneity Test

After obtaining normally distributed results in the normality test, the next step is to conduct a homogeneity test to find out the similarity in the variance of each group that has been studied. The results of this homogeneity test can be seen in the group data in the table as follows:

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Tabel 12. Homogeneity Test Results

Test of Homogeneity of Variance					
		Levene Statistic	df1	df2	Sig.
Kemampuan Berpikir Kreatif	Based on Mean	1.002	1	134	.319
	Based on Median	1.039	1	134	.310
	Based on Median and with adjusted df	1.039	1	128.910	.310
	Based on trimmed mean	.997	1	134	.320

Based on the homogeneity test results, it can be seen that the significance value based on the mean is 0.319 > 0.05, so it can be concluded that the posttest data variance in the experimental class and the posttest data in the control class are homogeneous.

b. Hypothesis Test

The hypothesis test was processed using SPSS Version 26, with the results as follows:

Tabel 13. Experimental Class Sample Test Results

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre-Test Eksperimen - Post-Test Eksperimen	-15.758	14.149	2.463	-20.775	-10.741	-6.398	32	.000

Source: SPSS versi 26

Based on the results of the first paired test on the experimental class data, it can be seen that the pretest and posttest in the experimental class obtained a significant value of 0.00 < 0.05, so the hypothesis is accepted. This means that there is a difference in students' creative thinking abilities between the pretest and posttest in the experimental class. Next, a measurement was conducted to assess the effect of applying the Cooperative Learning model using the cooperative integrated reading and composition (CIRC) type in the experimental class. Based on the calculation of the pretest and posttest, the average increase in students' critical thinking skills in the experimental class is shown in the following table:

Tabel 14. Improving the Creative Thinking Skills of Students in the Experimental Class

Data	Average	Increase	N-Gain	Indeks N-Gain	Interpretasi
Pre- Test Experimental Post- Test Experimental	69.31 80.90	75.46	75.11	g > 0.70 0.3 < g ≤ 0.7 g ≤ 0.3	High Medium Low

Source: SPSS versi 26

Table 14 shows that there was an increase in creative thinking ability in the experimental class between before and after the treatment. This can be seen from the N-Gain result of 75.11 with an increase in the use of the Cooperative Learning model using the cooperative integrated reading and composition (CIRC) type of 75.46. From the explanation above, it can be seen that there was an improvement in students' creative thinking ability before and after the treatment, but the increase is categorized as high ($0.3 < g \leq 0.7$ or $75.11 \leq 0.7$), meaning there is a difference in students' creative thinking ability before and after learning using the Cooperative Learning model with the cooperative integrated reading and composition (CIRC) type in the experimental class, with the increase categorized as high.

Testing the difference in average posttest results using a t-test at a significance level (2-tailed sig) $\alpha = 0.05$ with a paired sample T-Test analysis. The hypothesis testing was processed using SPSS Version 26, with the following results:

Tabel 15. Control Class Sample Test Results

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Test Kontrol - Post- Test Kontrol	-10.143	9.114	1.541	-13.274	-7.012	-6.584	34	.000

Source: SPSS versi 26

Based on the results of the first paired test on the control class data, it can be seen that the pretest and posttest in the control class obtained a significant value of $0.00 < 0.05$. This can be concluded that there is a difference in critical thinking ability between the pretest and

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posttest of the control class. Based on the calculations, the average value for the pretest-posttest critical thinking ability in the control class can be found in the following table:

Tabel 16. Improving the Creative Thinking Skills of Students in the Experimental Class

Data	average	increase	N-Gain	Indeks N-Gain	Interpretasi
Pre- Test Kontrol	6.67	18.69	16.54	g > 0.70	high
Post- Test Kontrol	26.41			0,3 < g ≤ 0,7	medium
				g ≤ 0,3	low

Source: SPSS versi 26

Table 16 shows that there was an increase in creative thinking ability in the experimental class between before and after the treatment was given. This is seen from the N-Gain result of 16.54 with an increase in the use of the Student Achievement Division (STAD) method by 18.69. So it can be concluded that there is an improvement in students' critical thinking ability between before and after the treatment, but the improvement is categorized as low (g ≤ 0.3 or 16.54 ≤ 0.3), meaning that there is a difference in students' creative thinking ability before and after learning using the Student Achievement Division (STAD) method in the Control class with the increase categorized as low.

At this stage, a two-sample mean test was carried out using an independent sample t-test based on a significance rate of α = 0.05. This can be seen from the output results obtained from the data processed in SPSS Version 26.

Tabel 17. Independent Samples Test Results

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Kemampuan Berpikir Kreatif	Equal variances assumed	3.845	.054	5.117	66	.000	11.879	2.321	7.244	16.514
	Equal variances not assumed			5.073	59.025	.000	11.879	2.341	7.194	16.564

From table 17 above, it can be seen that by obtaining a significance value of 0.00 < 0.05, this result allows us to conclude that the hypothesis is accepted, which means there is

an effect on the improvement of students' creative thinking skills before and after applying the Cooperative Learning method using the cooperative integrated reading and composition (CIRC) type in the experimental class and the Student Achievement Division (STAD) method in the control class. After obtaining the results from the t-test on the posttest scores of students' creative thinking skills, the next step was to measure the increase in creative thinking skills in both the experimental and control classes. The results of the calculations were obtained with normalized average values in the table as follows:

Tabel 18. Improving the Creative Thinking Skills of Students in the Experimental Class and the Control Class

Data	increase	N-Gain	Indeks N-Gain	Interpretasi
Experimental	7.46	75.11	$g > 0.70$	high
Control	18.69	16.54	$0,3 < g \leq 0,7$	medium
			$g \leq 0,3$	low

Table 18 shows that there is an effect on students' creative thinking skills in both the experimental and control classes. The table provides information that there was an increase in students' creative thinking skills, with the experimental class showing an increase of 75.46, while the control class increased by 18.69. Looking at the N-Gain index, the experimental class falls into the high category, while the control class is in the low category. It can be concluded that there is an effect on students' creative thinking skills before and after learning in the experimental class using the Cooperative Learning model, specifically the cooperative integrated reading and composition (CIRC) type, compared to the control class using the Student Achievement Division (STAD) method.

Research Discussion

a. The difference in students' creative thinking abilities before and after being given the Cooperative Learning model using the cooperative integrated reading and composition (CIRC) type in the experimental class.

Based on the results of the research conducted, there is a difference in students' creative thinking abilities after using the Cooperative Learning model with the cooperative integrated reading and composition (CIRC) type during learning activities. This can be seen from the posttest scores, which were higher compared to the pretest scores conducted before using the Cooperative Learning model with the cooperative integrated reading and composition (CIRC) type, so it can be concluded that the treatment in learning significantly impacts the improvement of students' creative thinking abilities by using the media or model applied.

This research result is also in line with previous studies, namely the research conducted by (Servinta et al., 2025) which showed that applying the Cooperative Integrated Reading and Composition (CIRC) learning model can boost students' creativity. The CIRC model

gives students the chance to work collaboratively, develop ideas, and integrate reading and writing activities, which can help improve their creative abilities.

In this study, the results showed that Cooperative Learning of the cooperative integrated reading and composition (CIRC) type can improve students' creative thinking skills. This is seen in the average scores of the pretest and posttest in the experimental class. In the pretest, the average score of the experimental class was 69.31, which is in the low category, while in the posttest, the average score of the experimental class was 80.90, which is in the high category. Therefore, it can be concluded that the difference in students' creative thinking skills before and after being given the Cooperative Learning model using the cooperative integrated reading and composition (CIRC) type in the experimental class showed an improvement of 60%.

The improvement in this ability is a result of applying the Cooperative Learning model, specifically the cooperative integrated reading and composition (CIRC) type, in learning. This learning model was implemented in class XI AKL 1. This happened because of the cooperation among students during the learning process, where information can be fully understood and remembered in a way that connects to everyday life.

b. The difference in students' critical thinking skills before and after being given the Student Achievement Division (STAD) method in the control class.

Based on the results of the research that has been conducted, there is a difference in students' critical thinking skills in learning activities after using the Student Achievement Division (STAD) method. This can be seen from the average scores in the mean, which show a difference before and after the treatment was applied, as well as from the pretest and posttest in the control class. In the research results above, the control class's pretest average score was 6.67, and the posttest average score was 26.41. So it can be concluded that the difference in students' critical thinking skills before and after being given the Student Achievement Division (STAD) method in the control class showed an increase of 30%, meaning that this approach in learning Economics has quite a significant impact on improving students' creative thinking skills.

In its implementation in the control class using the Student Achievement Division (STAD) Method, it is quite different from the experimental class that uses the Cooperative Learning model with the cooperative integrated reading and composition (CIRC) type. As a result, the learning process carried out after a special treatment shows an improvement in students' creative thinking skills. This can be seen from the N-Gain scores, which, although lower than the experimental class, show that using the Student Achievement Division (STAD) Method can still enhance students' creative thinking abilities in understanding the economic learning material compared to before the treatment in this control class.

c. The effect on students' critical thinking skills before and after applying the Cooperative Learning method using the Cooperative Integrated Reading and Composition (CIRC) type in the experimental class and the Student Achievement Division (STAD) method in the control class.

From this research, there is an effect of a greater improvement when using the Cooperative Learning model of the cooperative integrated reading and composition (CIRC) type in the experimental class compared to using the Student Achievement Division (STAD) Method in the control class. This can be proven by the N-Gain results of each class, with the experimental class having an N-Gain value of 75.11 and the control class having an N-Gain value of 16.54. This situation shows that the experimental class had a 60% improvement in creative thinking skills compared to the control class, which had a 30% improvement, and this aligns with the expectations in using the Cooperative Learning model of the cooperative integrated reading and composition (CIRC) type.

The results of this study provide information that students' creative thinking skills are influenced by the teaching methods used in both classes. In this case, the most effective method for improving students' critical thinking skills is the Cooperative Learning model type called Cooperative Integrated Reading and Composition (CIRC). This model is a learning approach that can fully engage students in the learning process. Student involvement in the learning process can help them stay more focused, which aligns with (Imaroh et al., 2022)'s view that creative thinking skills are students' abilities to generate new ideas or concepts to solve a problem. Creative thinking skills can be measured through several indicators, namely fluency, flexibility, originality, and elaboration. These four indicators show a student's ability to generate various alternative ideas, develop concepts, and come up with innovative solutions.

Similarly, according to (Rufaidah, F. K., & Ekayanti, 2022), the Cooperative Integrated Reading and Composition (CIRC) learning model is a cooperative learning model that can actively involve students through activities like reading, discussing, generating ideas, and collectively organizing their thoughts. Applying the CIRC model gives students the chance to understand problems, exchange ideas, and find solutions through group collaboration, which can support their problem-solving skills. This concept has been proven in research results using the CIRC model in an experimental class and comparing it with a control class that used the F Student Achievement Division (STAD) learning method.

Research results show that using the Cooperative Integrated Reading and Composition (CIRC) research method can improve students' creative thinking skills, by applying pretests and posttests as measures of student success. Thus, it can be concluded that the use of the Cooperative Integrated Reading and Composition (CIRC) model has an effect on enhancing students' creative thinking abilities, and the research results are significant.

Conclusion

Based on the research and data analysis conducted by the researchers on the effect of the cooperative integrated reading and composition (CIRC) learning model on students' creative thinking skills in economics, the following conclusions can be drawn:

1. Based on the pre-test and post-test data from the experimental class, it can be concluded that there is a difference in students' creative thinking skills before being taught using the cooperative integrated reading and composition (CIRC) learning model in class XI AKL 1 at SMK Negeri 3 Bandung. This can be seen from the Paired Sample Test results, which showed an increase of 15.75 points or 15%. Since the probability value is greater than 0.05, H0 is accepted. In other words, there is a significant effect before and after using the cooperative integrated reading and composition (CIRC) learning model on students' creative thinking skills regarding petty cash fund documents and bank cash fund documents.
2. From the analysis and hypothesis testing using the N-Gain Test, the result was 0.00. Since the probability value is less than 0.05 ($0.000 < \alpha = 0.05$), H0 is accepted, and it can be concluded that there is an increase in the influence of the cooperative integrated reading and composition (CIRC) learning model on students' creative thinking skills in the XI AKL 1 economics class at SMK Negeri 3 Bandung. Additionally, the N-Gain calculation data shows that the influence of the CIRC learning model on students' creative thinking skills in the XI AKL 1 economics class at SMK Negeri 3 Bandung is 75.11%.

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