

## Collaborative Learning Effect on Improving Students' Creativity and Critical Thinking in the Independent Curriculum

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### ABSTRACT

Collaborative learning is a pedagogical approach that encourages students to actively engage in discussions and cooperative work within a classroom setting. The method of learning holds significant importance in the pursuit of educational objectives. The objective of this study is to assess the impact of collaborative approaches on enhancing students' creativity and critical thinking skills. The research employed a descriptive test, a data normality test, and multiple linear regression analysis as the chosen methodological approaches. The researchers employed a data collection method by administering a questionnaire to a sample of 48 students engaged in collaborative learning. The questionnaire was distributed via a Google form. The focus of this study is on collaborative learning ( $\hat{Y}$ ) as the dependent variable, whereas the independent factors include creativity ability ( $X_1$ ) and critical thinking ( $X_2$ ). The findings of the data analysis were conducted using multiple linear regression tests. The present study uses descriptive quantitative research methods and a four-point Likert scale questionnaire. Data is analysed using linear regression, statistical, and data normality tests. Results of multiple linear regression analysis indicate that creativity ( $X_1$ ) and critical thinking ( $X_2$ ) have a linear impact on collaborative learning ( $\kappa$ ). With 77.9% influence, inventiveness ( $X_1$ ) is the most important variable. Collective learning increases creativity and critical thinking by 79.6%, according to the determination value ( $R^2$ ) of 0.796. ANOVA and T value hypothesis tests show that all independent factors impact the dependent variable simultaneously and significantly. It concludes that collaborative learning increases students' creativity and critical thinking in the autonomous curriculum by 77.9% and 27.1%, respectively.

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## 1. INTRODUCTION

Some time ago, the UNDP (United Nations Development Program) or the United Nations Agency that handles education issues released data on the ranking of world countries based on the competitiveness of the quality of human resources in 2019 or the 2019 Human Development Index. Of the 189 countries studied, Indonesia is ranked almost last, in the 111th position. This means that the quality of Indonesia's human resource competitiveness is very low in the international market (Adri Efferi, 2020). This is a big problem that we must solve together, so one of the ways we can do to improve the quality of human resources in Indonesia is to improve the quality of education. Education is a form of effort to realize a learning process so that students can develop the potential that exists in themselves. Education is becoming increasingly important for the young generation in facing various challenges in everyday life (Kamilasari et al., 2019). Education's purpose is to help students reach their full potential as human beings so that they can become democratically responsible citizens who have a deep faith in and devotion to God Almighty; who are physically fit; who are intellectually curious; who are resourceful, are able to think critically and creatively; and who are able to exercise their own initiative and creativity (Hendrawan et al., 2023).

Furthermore, during the period known as the Fourth Industrial Revolution, there has been a notable integration of many scientific discoveries pertaining to information technology within the industrial sector (Alaloul et al., 2020). This era is a challenge and necessity for universities in Indonesia to prepare graduates with 21st-century abilities, namely communication skills, collaboration, critical thinking, and creativity (Anagün, 2018), (Jufriadi et al., 2022). To continue to things such as improving facilities and infrastructure, to through the curriculum. From the Competency Based Curriculum (KBK), Education Unit Level Curriculum (KTSP), and Curriculum 2013 (Hanum et al., 2019). As of the present day, the most recent curriculum in question is referred to as the autonomous curriculum. Merdeka Belajar is a recently implemented policy programme initiated by the Ministry of Education and Culture of the Republic of Indonesia (Kemendikbud RI), under the leadership of the Indonesian Minister of Education and Culture as part of the Advanced Indonesia Cabinet. According to Hasim (2020), Nadiem asserts that the fundamental concept of freedom of thought necessitates educators' introduction before imparting it to students. According to Aisyah (2019), the initial implementation of the independent curriculum in a number of pilot schools was executed effectively in the first year, and subsequently expanded to numerous schools in the present year. Consequently, upon analysis, it is evident that the independent curriculum, in comparison to the 2013 curriculum, exhibits improvements aligned with Indonesian cultural values (Jojo & Sihotang, 2022). It may be inferred that in order to cultivate graduates equipped with such competencies in the 21st century, a viable approach for the government would involve revising the relevant curriculum, including the adoption of contemporary educational frameworks, such as the autonomous curriculum. Based on the outcomes seen from the implementation of the independent curriculum across multiple educational institutions, it is evident that this approach yields favourable results. In order to facilitate more effective improvements compared to the preceding curriculum, it is imperative that this autonomous curriculum be implemented.

The policy, popularly known as *Merdeka Belajar-Kampus Merdeka*, is intended to realize an autonomous and flexible learning process in higher education to create an innovative, non-restrictive learning culture according to student needs (Suryaman, 2020). So that one of the efforts that can be applied to achieve the goals of 21st-century education and the implementation of the independent learning curriculum by several universities in Indonesia, is creating various kinds of programs for students to be independent in learning, namely by implementing collaborative learning between universities. As one of the programs being implemented in the college where the researcher conducted the research. Because through the application of this learning, students will interact more and discuss with lecturers and with other friends, so students will be more active in the classroom.

According to Zamroni, collaborative learning theory is based on the idea that the search and development of knowledge is a process of social activity where students need to practice it. Students are not passive spectators and listeners, but they must be involved in the learning process (Kusumastuti,

Prihandono, and Supriadi 2012). Then Modjiono, 1992 suggested that the group work method can be interpreted as a teaching and learning format where members interact with each other in a group to complete learning tasks together. Thus, the group work method can be interpreted as a learning activity where students in one class are seen as a group or divided into small groups to achieve a certain learning goal (Parwati, 2018). Therefore, the collaborative learning method is one of the methods that can be applied by a lecturer to further increase student activeness, creativity, and critical thinking in the classroom.

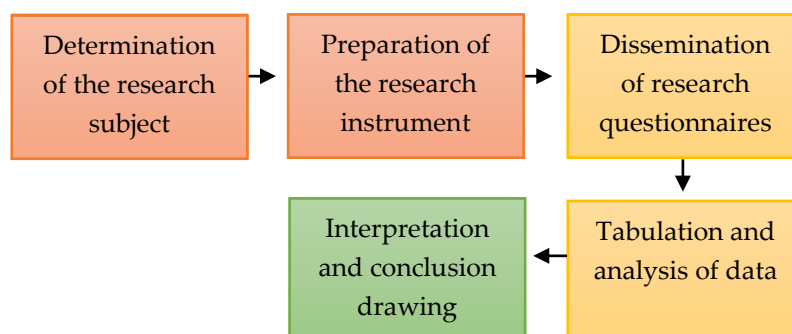
Collaborative learning techniques help students exchange knowledge from various perspectives to prevent misunderstanding of a problem through the use of multimedia and the latest technology (Junus & Andula, 2020). In creativity, there are two characteristics of creativity, namely, creative thinking characteristics and affective characteristics. Traits such as fluency, flexibility, originality, and elaboration are characteristics of creativity that relate to a person's creative thinking ability. Meanwhile, affective characteristics of creativity are needed for a person's creativity to appear in a behavior. These affective characteristics are related to a person's attitudes and feelings, such as curiosity, imaginative nature, challenge, risk-taking nature, and appreciative nature (Kau, 2017). Meanwhile, according to Rusman, creative thinking is a learning process that requires teachers to be able to motivate and bring out student creativity during learning, using several varied methods and strategies, such as group work, role-playing, and problem-solving. Creative thinking ability is an ability that is categorized as high-order thinking (HOT) (Faturohman & Afriansyah 2020).

Students need to develop both their creative and critical thinking skills in order to provide themselves with the tools necessary to succeed in the modern world. According to Putra (2015), critical thinking is the capacity to assess or investigate the facts, assumptions, and logic behind the opinions of others. Possessing strong critical thinking abilities is crucial for education because they allow pupils to learn by doing. 2015, Simbolon. According to Jufri (2013), critical thinking is a pattern of reflective thought whose primary function is to guide learners in making decisions about their actions. (Yunita et al., 2019).

Some of the research results that have been conducted by (Dewi, 2016), (Hajar et al, 2017), (Sanabria et al., 2017), (Ahmed Younis, 2018), (Saputra et al., 2019), (Sudiyanto, 2020), (Wawan & Setiawan, 2021), (Wong et al., 2021), (Warsah et al., 2021), which showed a significant effect on students' creativity and critical thinking skills. Based on some of the research results that have been conducted by previous researchers, so far no researcher has examined the effect of collaborative learning in improving the creativity and critical thinking of students implemented in an independent curriculum. Such as research conducted by Dewi, 2016 on the Effect of Lesson Study-Based Collaborative Learning on Students' Critical Thinking Skills, with a literature study method or literature study. Then the research was conducted by Wawan & Setiawan, 2021 on the Effectiveness of Collaborative Learning Based on Online Integrated E-Academic on Critical Thinking Ability and Attitude Towards Mathematics, with a pseudo-experimental research method. So, researchers in this study want to combine the two variables into one research title and examine more deeply the relationship between the two variables on the effect of applying collaborative learning methods. The purpose of this study is to measure the extent of the effect of the application of collaborative learning on increasing the creativity and critical thinking of students with descriptive quantitative research methods. Next is the question about the effect of collaborative learning in improving students' creativity and critical thinking: (1) How big is the influence of the application of collaborative learning?; (2) Of the two variables, which variable is more influential on the application of collaborative learning?

## 2. METHODS

In this study, researchers used a descriptive quantitative research method. According to Sugiyono (2018), quantitative research is research based on data collection using research instruments with the aim of testing predetermined hypotheses (Yunita et al., 2019). The stages in the implementation of this research are shown in Figure 1.



**Figure 1.** Research procedure

### 2.1. Determination of Research Subjects

The subjects of this study were students who participated in collaborative learning programs from three different universities. College A with 21 students, college B with 16 students, and college C with 11 students. Therefore the total number of students who became subjects in this study was 48 people.

### 2.2. Preparation of Research Instruments

The assessment indicators made in the research questionnaire through the development of the indicators of each variable, then made into several forms of statements. Indicators for each independent variable and the dependent variable are in Table 1.

**Table 1.** Research instrument indicators

Variable	Indicator
Collaborative method	Contribute actively Work productively Demonstrate flexibility and compromise Demonstrate responsibility Showing respect Willing to work in heterogeneous groups Responsible for doing group tasks that are part of it And able to make decisions by considering the common interest.
Creativity	Fluency of speech Fluency of thought Spontaneity Originality The number of responses made to a stimulus Ability to respond to a stimulus in different ways Providing responses that are statistically rare, relevant, and able to produce appropriate responses Ideas that are added in response to a stimulus so that the response becomes meaningful, meaningful and relevant
Critical thinking	Question formulation activity Limiting the problem Examining data Analyzing various opinions Avoiding highly emotional considerations Avoiding oversimplification Considers multiple interpretations Tolerating ambiguity Question formulation activity

### 2.3. Questionnaire Distribution

The questionnaire was distributed using a Google form, and then filled in by students who participated in collaborative learning. As for taking data, researchers use two types of assessment, namely self-assessment with a total of 28 statements and peer assessment with a total of 22 statements that will support the results of student self-assessment.

### 2.4. Data Tabulation and Analysis

The data analysis used is the multiple regression analysis methods. Multiple regression analysis is a linear relationship between two or more independent variables ( $X_1, X_2 \dots X_n$ ) and the dependent variable ( $\hat{Y}$ ). In this study, there are three variables to be studied, namely collaborative learning as the dependent variable ( $\hat{Y}$ ), creativity ability as the first independent variable ( $X_1$ ), and critical thinking ability as the second independent variable ( $X_2$ ). This analysis aims to determine the direction of the relationship between the independent variable and the dependent variable, whether each independent variable has a positive or negative relationship and to predict the value of the dependent variable if the independent value increases or decreases. Then the equation used is:

$$\hat{Y} = a + bX_1 + bX_2 \dots bX_n \quad (1)$$

Description:  $\hat{Y}$  (dependent variable),  $a$  (constant),  $bX_1$  (first independent variable),  $bX_2$  (second independent variable).

### 2.5. Interpretation and Conclusion

The first stage carried out in this research is determining the research subject, which in this research subject students who take part in collaborative learning. This research approach uses descriptive quantitative research methods. Then the preparation of research instruments based on the indicators of each variable, this study uses a research instrument for distributing questionnaires with two types of assessments, namely self-assessment and peer assessment. Furthermore, in the distribution of questionnaires to students who participated in collaborative learning, data samples were taken from four different classes with a total of eighty-eight respondents in three different universities. Then analyze the data using the JASP application with linear regression test, descriptive test, and data normality test. Until the final stage is concluding. If the  $H_0$  result is greater than the significant value, namely, 0.001, the hypothesis is rejected. However, if the output results state that the  $H_1$  result is greater than the significant value, namely 0.001, it can be stated that the hypothesis can be accepted.

## 3. FINDINGS AND DISCUSSION

### 3.1. Sample and Data Collection

In this study, researchers sampled data from students in semester III (three) and semester VI (five) in four different classes. Data collection was carried out at the end of collaborative learning, namely after the implementation of the final semester exam. Where in one class there are students from two different universities who take part in collaborative learning. The data was obtained through the answers to a 4 Likert scale questionnaire filled out by each student who was participating in collaborative learning.

In the self-assessment questionnaire, students can assess themselves regarding their collaboration and cooperation skills, creativity skills with methods that are easily applied by each student, and logical thinking skills, so that the opinions that have been conveyed can be easily accepted by other friends. Then the results of the peer questionnaire assessment can further prove the ability in terms of collaboration, creativity, and critical thinking of students based on the answers to the student self-assessment questionnaire. The results of respondents' answers to the self-assessment questionnaire and peer assessment can be seen in Figures 2 and 3

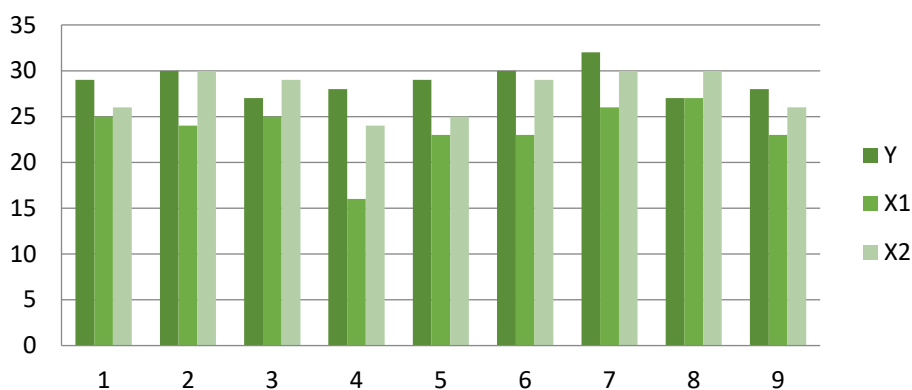


Figure 2. Student self-assessment questionnaire data

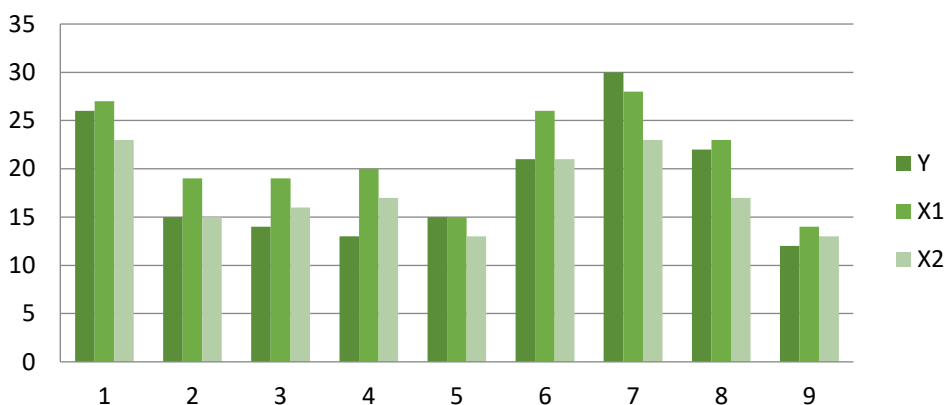


Figure 3. Student peer assessment questionnaire data

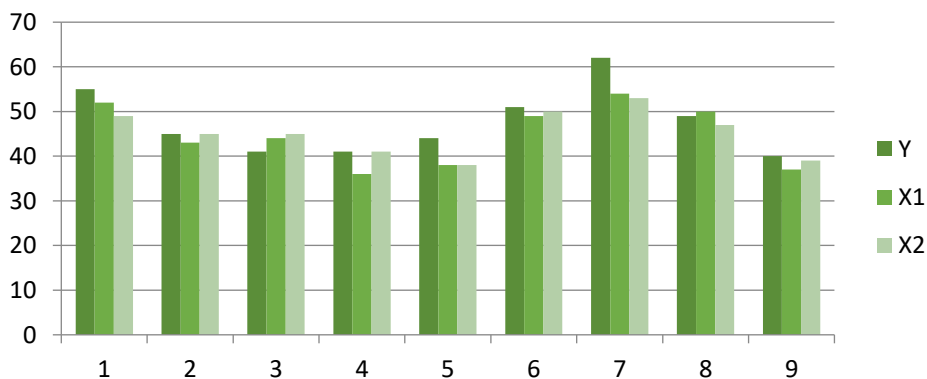


Figure 4. Student self- and peer-assessment questionnaire data  
 (1) Collaborative(Y), (2) Creativity(X1), (3) Critical thinking(X2)

3.2. Descriptive Data Analysis

After collecting the data, the researchers then conducted descriptive statistical tests. The results of the descriptive statistical test are in table 2.

**Table 2.** Results of statistical descriptive test

	Y	X1	X2
Mode	<sup>a</sup> 41.000	36.000	45.000
Median	45.000	44.000	45.000
Mean	47.556	44.778	45.222
Std. Deviation	7.418	6.797	5.118
Variance	55.028	46.194	26.194
Skewness	0.950	-0.044	-0.064
Std. Error of Skewness	0.717	0.717	0.717
Kurtosis	0.197	-1.718	-1.085
Std. Error of Kurtosis	1.400	1.400	1.400
Shapiro-Wilk	0.904	0.917	0.959
P-value of Shapiro-Wilk	0.275	0.368	0.783
Range	22.000	18.000	15.000
Minimum	40.000	36.000	38.000
Maximum	62.000	54.000	53.000

The results of the JASP output show that the median value of collaborative learning is 45,000, while the median value of creative ability is 44,000 and the value of critical thinking ability is 45,000. The mean value can also be seen in the table. The mean value of collaborative learning is 47.556, the mean value of creative ability is 44.778 and the mean value of critical thinking ability is 45.222. Then the most frequently occurring value or mode value in collaborative learning is 41,000, the mode value of creative ability is 36,000 and the mode value of critical thinking ability is 45,000.

The variance value can also be seen in collaborative learning at 55.028, while the variance value in creative ability is 46.194 and the variance value in critical thinking ability is 26.194. The highest value and the lowest value can also be seen from each variable. Where the highest value of collaborative learning is 62,000 and the lowest value is 40,000, while the highest value for creativity ability is 54,000 and the lowest value is 36,000, the highest value of critical thinking ability is 53,000 and the lowest value is 38,000. After the descriptive test is carried out, the next researcher conducts a data normality test. The results of the data normality test.

### 3.3. Test of Data Normality

The results of the data normality test can be seen in Table 3.

**Table 3.** Normality test

Variable	Skewness	Kurtosis	P-Value Of Shapiro	Ket
Y	0.950	0.197	0.275	Normal
X1	-0.044	-1.718	0.368	Normal
X2	-0.064	-1.085	0.783	Normal

Data is said to be normal if the skewness and kurtosis values are  $< \pm 1.96$  with a significance value of 0.05 and  $< \pm 2.58$  with a significance value of 0.01. In addition, data normality can be known if the P-value of Shapiro  $> 0.05$ . Table 3. Can be seen the P-Value Of Shapiro on the dependent variable and the independent variable. Based on table 3. It can be seen that the P-Value Of Shapiro in collaborative learning is 0.275. Then the P-Value Of Shapiro on creativity ability is 0.368 and the P-Value Of Shapiro on critical thinking ability is 0.783. Then the P-Value Of Shapiro on Y ( $0.275 > 0.05$ ), the P-Value Of Shapiro from X1 ( $0.368 > 0.05$ ), P-Value Of Shapiro from X2 ( $0.783 > 0.05$ ). It can be concluded that the values owned by Y, X1, and X2 are normal so that all data obtained can also be said to be normal. After testing the normality of the data, then the researchers conducted a linear regression test. The results of the linear regression test.

### 3.4. Test Linear Regression

The results of the linear regression test can be seen in Table 4.

**Table 4.** Model summary results

Model Summary - Y				
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	RMSE
H <sub>0</sub>	0.000	0.000	0.000	7.418
H <sub>1</sub>	0.892	0.796	0.728	3.866

In the display of JASP output results Table 4. The summary model shows a value of R<sup>2</sup> 0.796, this shows the effect of collaborative learning in this study is 79.6% with a moderate category. This proves that H<sub>1</sub> can be accepted and H<sub>0</sub> is rejected. In other words, the hypothesis in this study can be accepted. Based on the value of H<sub>1</sub> in this study, it shows that the application of collaborative learning is quite good because it has a significant effect on the results of its application. After that, researchers conducted ANOVA statistical test to find out how well this collaborative learning model can be applied. The results of the ANOVA statistical test are in Table 5.

**Table 5.** Anova statistical test results

ANOVA						
Model		Sum of Squares	df	Mean Square	F	p
H <sub>1</sub>	Regression	350.557	2	175.278	11.729	0.008
	Residual	89.666	6	14.944		
	Total	440.222	8			

Based on the results of the ANOVA statistical test in Table 5. It can be seen that the F value is 11.729, with a probability of 0.008. Because the probability value is greater than 0.001, it can be concluded that the increase in creativity and critical thinking is not equal to zero, or the two independent variables directly have an increase in the application of collaborative learning. This can also be seen in the R<sup>2</sup> value whose value is not equal to zero or has a significant effect. Furthermore, researchers conducted a coefficients test to determine the magnitude of the effect of collaborative learning. The results of the coefficients test are in Table 6.

**Table 6.** Coefficients test results

Coefficients						
Model		Unstandardized	Standard Error	Standardized	t	p
H <sub>0</sub>	(Intercept)	47.556	2.473		19.232	< .001
H <sub>1</sub>	(Intercept)	0.442	14.293		0.031	0.976
	X1	0.779	0.624	0.713	1.248	0.259
	X2	0.271	0.829	0.187	0.327	0.755

It can be concluded that the assumed hypothesis can be accepted because there is an increase in creativity and critical thinking from the application of collaborative learning in this study. Of the two independent variables, it can be seen that the increase in creativity has a greater value of 77.9% compared to the increase in critical thinking which has a value of 27.1%. This shows that the application of collaborative learning is more influential in increasing student creativity because the value of the influence of creative ability is a greater percentage than the ability to think critically (X1 > X2). So that the equation can be used:

$$\hat{Y} = 0.442 + 0.779 X1 + 0.271 X2 \quad (2)$$

1. The constant value (a) can be seen in equation (1) is positive because assuming the absence of the creativity variable (X1) and critical thinking variable (X2), the effect of collaborative learning ( $\hat{Y}$ ) increases.
2. The value of the creativity ability variable (X1) is positive because, assuming the absence of other independent variables, if the value of the creativity ability variable (X1) increases, the collaborative learning variable ( $\hat{Y}$ ) also tends to increase.
3. The value of the critical thinking ability variable (X2) is positive because assuming the absence of other independent variables, if the value of the critical thinking ability variable (X2) increases, the collaborative learning variable ( $\hat{Y}$ ) also tends to increase.

Based on the results of the research that has been carried out, the application of collaborative learning is one of the effective learning methods applied in a class. This is one of the programs included in the implementation of the independent curriculum at the institution where the researchers conducted the research, so it can be seen that through the application of one of the independent curriculum programs, it can certainly improve students' creativity and critical thinking skills based on the results of the multiple linear regression test that has been carried out.

From the results of data analysis that has been carried out, there is a significant effect on the application of collaborative learning, namely an increase in creativity by 77.9% and critical thinking by 27.1%. In addition, the results of previous studies that both discuss the effect of collaborative learning, such as (Wawan & Setiawan, 2021) which discuss the effectiveness of collaborative learning so that it can improve students' critical thinking skills, the results of research corroborated by (Sudiyanto, 2020) with the same discussion. The results of the research (Zakiah & Kusmanto, 2017) also discuss the effect of collaborative learning that can increase student creativity. From the three studies that have been conducted, the average effect of collaborative learning on increasing creativity and critical thinking is above 50%, so the application of collaborative learning can be used as a feasible method to be applied by a teacher if he wants to increase the creativity and critical thinking of his students.

From all the explanations and results of the research that has been done, it can be seen that the application of collaborative learning has a positive impact on increasing student creativity and critical thinking which is implemented in an independent curriculum.

#### 4. CONCLUSION

Based on the findings derived from the data analysis conducted in this study, it can be inferred that collaborative learning exhibits the potential to enhance students' creativity and critical thinking abilities. Specifically, the observed outcomes indicate a substantial improvement in creativity by 77.9% and a notable enhancement in critical thinking by 27.1%. The findings of the analysis test demonstrate that collaborative learning can serve as an efficacious pedagogical approach for educators seeking to enhance students' creative and critical thinking abilities. Based on the existing body of research, it is evident that the findings of this study remain constrained in their scope. The researcher expresses the aspiration for future investigations that are characterised by increased depth and breadth, aiming to yield more pertinent and comprehensive study outcomes. Furthermore, it is suggested by scholars that future investigations should incorporate the inclusion of research instruments employed and the augmentation of sample size in data collection, hence facilitating the acquisition of a more comprehensive dataset in subsequent studies.

## REFERENCES

- Adri Efferi. (2020). *Manajemen Pendidikan*. Depok: PT RAJAGRAFINDO PERSADA.
- Ahmed Younis, R. A. (2018). Cognitive Diversity and Creativity: The Moderating Effect of Collaborative Climate. *International Journal of Business and Management*, 14(1), 159. <https://doi.org/10.5539/ijbm.v14n1p159>
- Alaloul, Liew, Z. (2020). Industri revolution 4.0 in the construction industry. *Ain Shams Engineering Journal*, 11(1), 225–230.
- Anagün. (2018). Teacher's perceptions about the relationship between 21st century skills and managing constructivist learning environments. *International Journal of Instruction*, 11(4825–840).
- Dewi, et al. (2016). Pengaruh Model Pembelajaran Kolaboratif Berbasis Lesson Study terhadap Kemampuan Berpikir Kritis Siswa. The Effect of Collaborative Learning Model with Lesson Study on Student Critical Thingking. *Jurnal Edukasi UNEJ*, III(2), 29–33.
- Evi Hasim. (2020). Penerapan Kurikulum Merdeka Belajar Perguruan Tinggi Di Masa Pandemi Covid-19. *Prosiding Webinar Magister Pendidikan Dasar Pascasarjana Universitas Negeri Gorontalo "Pengembangan Profesionalisme Guru Melalui Penulisan Karya Ilmiah Menuju Anak Merdeka Belajar,"* 68–74.
- Faturohman, I., & Afriansyah, E. A. (2020). Peningkatan Kemampuan Berpikir Kreatif Matematis Siswa melalui Creative Problem Solving. *Mosharafa: Jurnal Pendidikan Matematika*, 9(1), 107–118. <https://doi.org/10.31980/mosharafa.v9i1.562>
- Hendrawan, J. H., Halimah, L., & Amini, S. (2023). *Efforts to Improve National Insights for Junior High School Civics Teachers and Students in the Era of Disruption 4 . 0*. 15, 171–182. <https://doi.org/10.35445/alishlah.v15i1.2231>
- Jojor, A., & Sihotang, H. (2022). Analisis Kurikulum Merdeka dalam Mengatasi Learning Loss di Masa Pandemi Covid-19 (Analisis Studi Kasus Kebijakan Pendidikan). *Edukatif: Jurnal Ilmu Pendidikan*, 4(4), 5150–5161. <https://doi.org/10.31004/edukatif.v4i4.3106>
- Jufriadi, A., Huda, C., Aji, S. D., Pratiwi, H. Y., & Ayu, H. D. (2022). Analisis Keterampilan Abad 21 Melalui Implementasi Kurikulum Merdeka Belajar Kampus Merdeka. *Jurnal Pendidikan Dan Kebudayaan*, 7(1), 39–53. <https://doi.org/10.24832/jpnk.v7i1.2482>
- Junus, F. B., & Andula, N. (2020). Pengaruh Implementasi Moodle dan Model Pembelajaran Kolaboratif pada Lingkungan Blended Learning terhadap Peningkatan Pemahaman Belajar Mahasiswa. *Jurnal Teknologi Informasi Dan Ilmu Komputer*, 7(4), 797. <https://doi.org/10.25126/jtiik.2020743289>
- Kamilasari, N. W., Astutik, S., & Nuraini, L. (2019). Model pembelajaran collaborative creativity (CC) berbasis SETS seminar nasional pendidikan fisika. *Prosiding Seminar Nasional Pendidikan Fisika 2019*, 4(1), 207–213.
- Kau, M. A. (2017). Peran Guru Dalam Mengembangkan Kreativitas Anak Sekolah Dasar. *Proceeding Seminar Dan Lokakarya Nasional Bimbingan Dan Konseling 2017*, 0(0), 157–166. Retrieved from <http://journal2.um.ac.id/index.php/sembk/article/view/1281>
- Kusumastuti, E. C., Prihandono, T., & Supriadi, B. (2012). Penerapan Model Pembelajaran Kolaboratif Dengan Media Sederhana Pada Pembelajaran Fisika Di Smp. *Jurnal Pembelajaran Fisika*, 1(2), 200–205.
- Maya Umi Hajar et al. (2017). Influence of Collaborative Learning Type Analytic Team by Lesson Study to Influence of Collaborative Learning Type Analytic Team by Lesson Study to. *Jurnal Edukasi Unej*, II(October), 1–4.
- Ni Nyoman Parwati. (2018). *Belajar dan Pembelajaran* (Cetakan ke). Depok: Rajawali Pers, 2018.
- Sanabria, J. C., & Arámburo-Lizárraga, J. (2017). Enhancing 21st century skills with AR: Using the gradual immersion method to develop collaborative creativity. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(2), 487–501. <https://doi.org/10.12973/eurasia.2017.00627a>
- Saputra, M. D., Joyoatmojo, S., Wardani, D. K., & Sangka, K. B. (2019). Developing critical-thinking skills through the collaboration of Jigsaw model with problem-based learning model. *International Journal of Instruction*, 12(1), 1077–1094. <https://doi.org/10.29333/iji.2019.12169a>

- Sudiyanto, Y. (2020). Pembelajaran Kolaboratif Sebagai Platform Pendukung Untuk Mengembangkan Karakteristik Berpikir Kritis, Empati, Dan Praktik Terbaik Dalam Pendidikan. *Prosiding Temu Profesi Tahunan Perhapi*, (December), 221–232.
- Suryaman, M. (2020). Orientasi Pengembangan Kurikulum Merdeka Belajar. *Seminar Nasional Pendidikan Bahasa Dan Sastra*, 10(2), 13–28.
- Warsah, I., Morganna, R., Uyun, M., Hamengkubuwono, H., & Afandi, M. (2021). The Impact of Collaborative Learning on Learners' Critical Thinking Skills. *International Journal of Instruction*, 14(2), 443–460. <https://doi.org/10.29333/iji.2021.14225a>
- Wawan, W., & Setiawan, A. (2021). Efektifitas Pembelajaran Kolaboratif Berbasis Online Terintegrasi E-Akademik Terhadap Kemampuan Berpikir Kritis dan Sikap Terhadap Matematika. *Jurnal Teknologi Pembelajaran*, 1(02), 29–34. <https://doi.org/10.25217/jtep.v1i02.1760>
- Wong, C. C., Kumpulainen, K., & Kajamaa, A. (2021). Collaborative creativity among education professionals in a co-design workshop: A multidimensional analysis. *Thinking Skills and Creativity*, 42(October), 100971. <https://doi.org/10.1016/j.tsc.2021.100971>
- Yunita, H., Meilanie, S. M., & Fahrurrozi, F. (2019). Meningkatkan Kemampuan Berpikir Kritis melalui Pendekatan Saintifik. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 3(2), 425. <https://doi.org/10.31004/obsesi.v3i2.228>
- Zakiah, I., & Kusmanto, H. (2017). Pengaruh Penerapan Model Pembelajaran Kooperatif Tipe Make a Match Terhadap Kreativitas Siswa Dalam Pembelajaran Matematika. *Eduma: Mathematics Education Learning and Teaching*, 6(1), 32. <https://doi.org/10.24235/eduma.v6i1.1660>