

The Effect of the Flashcard-Assisted Group Investigation Type Cooperative Model on Learning Outcomes and Critical Thinking of Grade III Students in the IPAS Subject

Imas Yohani¹, Singgih Bektiarso², Rusdhiyanti Wuryaningrum³

^{1,2,3} Faculty of Teacher Training and Education, University of Jember, Indonesia

ABSTRACT: Problems faced in science learning at SDN Kutorenon 01 include suboptimal student learning outcomes, weak critical thinking skills, teachers being the center of learning, limited use of textbooks as teaching materials, and the use of less innovative learning models and media. Therefore, this study aims to examine the effect of the Cooperative Group Investigation Model accompanied by Flashcards on the learning outcomes and critical thinking of third-grade students in the subject of science. This study is an experimental study (True Experimental) using Pretest-Posttest Control Group Design with third-grade students of SDN Kutorenon 01. The measuring instrument used is a test, which is expressed in the form of scores obtained from the results of the students' pretest and posttest. Data analysis uses a t-test or independent sample test with the help of SPSS 27 for Windows software. The results of the data analysis show that the learning outcomes and critical thinking of students in the experimental class are higher than those in the control class. This is supported by the hypothesis test calculations, which state that student learning outcomes reached a significance value (2-tailed) of 0.000 and critical thinking skills reached a significance value (2-tailed) of 0.000, both less than 0.05. This proves a difference in the average learning outcomes and critical thinking skills of students in the experimental and control classes. Thus, it can be concluded that the cooperative investigation-type group model assisted by flashcards has a significant influence on the learning outcomes and critical thinking skills of third-grade science students.

KEYWORDS: Critical Thinking, Flashcards, Group Investigation, Learning Outcomes.

INTRODUCTION

Elementary education is essentially the initial stage in shaping a child's perspective on learning at school. At the elementary level, children not only transfer knowledge but also get used to thinking, behaving, and acting to form the foundation of their character in life. At the elementary level, meaningful, contextual, and enjoyable learning experiences need to be designed so that students not only understand concepts but are also able to relate them to real life. According to Rosiyani (2024), the subject of science and natural sciences is an important subject because it studies the universe and its contents and the events that occur within it, developed by experts based on scientific processes. Learning science and natural sciences is important to be learned from an early age with the hope that students can understand various things around them related to nature so that students can apply the knowledge from what they learn. The knowledge students gain through learning activities becomes a benchmark in their cognitive, affective, and psychomotor development. In other words, learning activities have a crucial role in shaping students' understanding of the material taught, with the hope that students will achieve satisfactory learning outcomes.

Learning outcomes are the results obtained by students in learning activities that include attitudes, knowledge and skills (Novita & Sundari, 2020). Internal factors that influence learning outcomes are physical or bodily conditions, intelligence or intelligence, talents, interests and motivation. While external factors include the family environment, school environment such as school facilities, teachers, teaching methods and school culture. Based on the article on low learning outcome data, it is known that Indonesia's PISA score in 2022 experienced a decline from the original science score from 396 to 383 with the 2024 RPJMN target of 402. Based on a research journal conducted by Zannah (2022), it is known that the decline in science learning outcomes is caused by difficulties in science learning 58.33%, difficulties in understanding the material presented by teachers 37.50% and the rest due to factors from within the students. Based on previous research conducted by Febriyanti and Ismatulloh (2019), it is known that low student learning outcomes can then improve after using Learning Models and learning media. Student learning outcomes in science education remain low, driven by lecture and conventional teaching methods that render students passive and less able to



explore their learning. This leads to decreased learning outcomes and impaired critical thinking, leading to students' inability to answer questions.

Critical thinking according to Nasution (2018) is the ability to think reflectively that focuses the mind on patterns in making decisions about what to believe and what to do. Critical thinking is an intellectual journey that in a process carries out conceptualization, application, synthesis and evaluation of information obtained from observation, experience, reflection, thinking, or communication in carrying out activities (Lismaya, 2019). According to Lai (2011) Critical thinking is closely related to student learning outcomes, such as metacognition, motivation, collaboration and creativity. According to Silva, et al. (2023) the development of critical thinking has the goal for students to learn to think and reason critically so that they are able to make the best decisions and find the most effective alternatives in solving problems faced. Factors that support critical thinking skills are providing simple explanations (elementary clarification), building basic skills (basic support), making conclusions (inferring), making further explanations (advanced clarification) and arranging strategies and tactics (strategies & tactics) according to Wira Suciono et al., (2020). Previous research on critical thinking has shown that students' critical thinking and oral activity skills regarding biology are still low (Agustiawan, 2021). Lestari et al. (2019) revealed that students' critical thinking skills are low, but after using learning models and learning methods, students' critical thinking skills can increase by 25.44%. One learning model that can be applied to improve students' critical thinking skills is the cooperative learning model of the group investigation type.

According to Wiratana et al., (2013), group investigation is one of the most complex types of cooperative learning. Students are involved in planning both the topics studied and how the investigations are carried out by students. This model teaches group communication and the process of working on group assignments well. This model can develop students' abilities in cognitive, affective, and psychomotor aspects. The advantages of the cooperative learning model of the group investigation type are that students can think critically, work together between groups, solve problems, and students are more confident in expressing their opinions (Perwitasari, 2016). The cooperative learning model of the group investigation type has characteristics that are in line with the objectives of developing critical thinking such as emphasizing discussion and argumentation activities and students can develop logic, reasoning, and the ability to evaluate information. The implementation standards in the cooperative learning model of the group investigation type are student-centered learning activities, heterogeneous, freedom in choosing topics, collaborative and democratic among members, oriented towards the scientific process, encouraging critical and creative thinking and can produce real products, either in the form of presentations or reports.

In classroom learning activities, students need tools that can facilitate their understanding of the material. Learning media are tools used to convey messages from sender to recipient or from teacher to student so that they can stimulate the thoughts, feelings, attention, and interests of students in an effective and efficient learning process (Danijati, 2023). Learning media makes it easier for students to understand learning that is initially abstract and then realized or concretized in the form of learning media. One learning media that can make students' understanding from abstract to concrete is flashcard learning media. Flashcard media is a medium that helps in remembering and reviewing lessons such as definitions or terms, symbols, foreign language spelling, formulas, etc. (Maryanto, 2019). The use of flashcard media is expected to strengthen the role of cooperative learning models of the group investigation type can improve learning outcomes and students' critical thinking skills.

Several studies conducted by Febriyanti & Ismatulloh (2019) found a significant effect of the group investigation learning model on student interest and learning outcomes. Handayani & Yeni (2017) found that the flashcard-assisted group investigation (GI) learning model significantly impacted student learning outcomes. Agustiawan (2021) noted the influence of the group investigation (GI) learning model on students' critical thinking skills and oral activity skills in biology. Supriyanto & Mawardi (2020) found that the group investigation model, implemented according to the steps, can improve critical thinking skills. Based on these research results, it can be concluded that the cooperative learning model of the group investigation type has an impact on learning outcomes and critical thinking skills.

Based on this background, in order to improve the quality of science learning, a study will be conducted with the title "The Effect of the Group Investigation Type Cooperative Model Assisted by Flashcards on Learning Outcomes and Critical Thinking of Grade III Students". The formulation of the problem in this study is; 1) Is there a significant influence on the group investigation type cooperative model assisted by flashcard media on the learning outcomes of grade III students in science subjects? 2) Is there a significant influence on the group investigation type cooperative model assisted by flashcard media on the critical thinking abilities of grade III students in science subjects? The objectives of the study to be achieved are; 1) Analyze the influence of the group



investigation type cooperative model assisted by flashcard media on the learning outcomes of grade III students in science subjects. 2) Analyze the influence of the group investigation type cooperative model assisted by flashcard media on the critical thinking of grade III students in science subjects.

METHOD RESEARCH

This study uses a quantitative approach with a true experimental design and a Pretest-Posttest Control Group design. The study was conducted at Kutorenon 01 Public Elementary School in the odd semester of the 2025/2026 academic year. The subjects were all students of grades IIIA and IIIB, each totaling 28 students, so the total number of research participants was 56 students. The determination of the experimental class and the control class was done randomly using the lottery technique. Class IIIA was designated as the experimental class given treatment using the cooperative model of the Group Investigation type assisted by flashcards while Class IIIB was designated as the control class given conventional learning with lecture and assignment methods. The research instruments consisted of a learning outcome test in the form of 20 multiple-choice questions and a critical thinking test in the form of 5 essay questions. All instruments have been validated by experts before use. The research procedures include a) implementing a pretest in both classes to determine initial abilities; b) providing treatment for three meetings; c) implementing a posttest to determine differences in learning outcomes and critical thinking after the treatment. Data analysis was carried out after the research using SPSS 27 which included 1) Normality test (Shapiro-Wilk), 2) Homogeneity test (Levene's Test), and 3) Hypothesis test using Independent Samples t-test with significance at $\alpha = 0.05$.

RESULTS

The Effect of the Flashcard-Assisted Group Investigation Type Cooperative Model on Student Learning Outcomes

Based on learning outcome data and data processing using statistical analysis, learning outcome data were obtained for the control and experimental groups. Next, analysis was conducted using a t-test. A comparison of pretest and posttest data on student learning outcomes in the experimental and control classes was conducted. The data are as follows.

Table 1 Data on Student Learning Outcomes in the Pretest and Posttest in the Experimental Class and Control Class

Data	Pretest		Posttest	
	Eksperimen	Kontrol	Eksperimen	Kontrol
Skor Tertinggi	80	80	95	90
Skor Terendah	55	55	70	65
Rata-rata	67,7	67,32	83,39	76,6

(Source: Data processed by researchers, 2025)

Based on table 1 shows that the average pretest score of the experimental class increased from 67.7 to 83.39. While the average pretest and posttest of the control class also increased, namely 67.32 to 76.6. In the pretest scores of the experimental class and the control class both had the highest score of 80 and the lowest score of 55. This shows that the learning outcomes of the experimental class and the control class before being given treatment had the same and even initial abilities. After being given treatment, the average posttest score of the experimental class was higher, namely 83.39 compared to the average score of the control class of 76.6. The highest score of the experimental class was 95 and the lowest score was 70, higher than the highest score of the control class, namely 90 and the lowest score, namely 65. The data shows that the learning outcomes of the experimental class experienced a significant increase after being given the learning treatment of the Cooperative Group Investigation model assisted by Flashcards compared to the control class that implemented conventional learning. Thus, similar to the statement, Febriyanti & Ismatulloh (2019) stated that the Cooperative Group Investigation Type model assisted by Flashcards can improve student learning outcomes. Normality testing was conducted to determine whether the score distribution was normal or not for each variable. The data tested were the pretest and posttest scores in the experimental and control classes. The normality test was calculated using the Shapiro-Wilk formula with the help of [software/tool used]. *software SPSS 27 for windows*. Thus, the results of the normality test for the pretest and posttest values of student learning outcomes in the experimental class and control class are as follows.



Table 2. Normality Test of Student Learning Outcomes in the Experimental Class and Control Class

Shapiro-Wilk			
Class	df	Sig.	Information
Pretest Class Kontrol	26	0,146	Data berdistribusi normal
Posttest Class Kontrol	26	0,067	Data berdistribusi normal
Pretest Class Eksperimen	26	0,093	Data berdistribusi normal
Posttest Class Eksperimen	26	0,071	Data berdistribusi normal

(Source: Data processed by researchers, 2025)

Table 2 shows that the results of the normality test on the control class pretest had a significance value of 0.146 and the experimental class pretest had a significance value of 0.93. Meanwhile, the control class posttest results had a significance value of 0.67 and the experimental class posttest was 0.71. Thus, it can be concluded that all pretest and posttest data for the control and experimental classes were greater than the significance value of 0.05 (> 0.05) so that all data were proven to be normally distributed.

The homogeneity test was conducted to determine the similarity (homogeneity) of the samples. The homogeneity test was calculated using the Homogeneity of Variance test in Levene Statistics with the help of SPSS 27 software for Windows. The results of the homogeneity test from the pretest and posttest of student learning outcomes in the control and experimental classes are as follows.

**Table 3. Homogeneity Test of Student Learning Outcomes in the Experimental Class and Control Class
Test of Homogeneity of Variance**

Levene Statistic		df1	df2	Sig.	
NILAI	Based on Mean	.160	1	54	.691
	Based on Median	.105	1	54	.747
	Based on Median and with adjusted df	.105	1	53.987	.747
	Based on trimmed mean	.157	1	54	.694

(Source: Data processed by researchers, 2025)

Based on the results of the homogeneity test using the Levene Statistic test, a significance value (Sig.) of $0.691 > 0.05$ was obtained, so it can be concluded that the experimental and control class data have homogeneous variances or there is no significant difference in variance. The experimental and control class data are homogeneous so they meet the requirements for conducting a hypothesis test (t-test).

To determine whether or not there is an influence of the Cooperative Group Investigation Type model assisted by Flashcards on the learning outcomes of third grade students on the material "Living with Nature" in the Science subject, a Hypothesis test was conducted. The hypothesis test uses the T-Test formula with the Independent Sample t-Test type with SPSS 27 software for windows. The results of the hypothesis test posttest scores for the learning outcomes of students in the experimental class and the control class are as follows.



Table 4. Hypothesis Test of Student Learning Outcomes

KELAS		N	Mean	Std. Deviation	Std. Error Mean
NILAI	POSTEST KELAS KONTROL	28	76.61	5.620	1.062
	POSTEST KELAS EKSPERIMEN	28	83.39	5.940	1.123

Group Statistics

Independent Samples Test

F		Levene's Test for Equality of Variances		t-test for Equality of Means						
		Sig.		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
NILAI	Equal variances assumed	.160	.691	-4.391	54	.000	-6.786	1.545	-9.884	-3.688
	Equal variances not assumed			-4.391	53.835	.000	-6.786	1.545	-9.884	-3.687

(Source: Researcher's Processed Data, 2025)

Based on table 4, the hypothesis test calculation obtained a significance value (2-tailed) of 0.000 less than 0.05, which means H0 is rejected and H1 is accepted. The average learning outcomes of control class students were lower, namely 76.61 compared to the average experimental class, namely 83.39. So it can be concluded that there is a significant influence of the Cooperative Group Investigation Type model assisted by Flashcards on the learning outcomes of third- grade students in the subject of Science.

The Influence of the Flashcard-Assisted Group Investigation Cooperative Model on Students' Critical Thinking

Based on the results of data collection on students' critical thinking skills, a hypothesis test was conducted on the effect of the Cooperative Investigation Group PBL model on students' critical thinking skills. The test results are presented in the following table.

Table 5. Hypothesis Test of Students' Critical Thinking Ability

	Kelas	N	Mean	Std. Deviation	Std. Error Mean
Kemampuan Berpikir Kritis	Kontrol	28	77,86	6,445	1,218
	Eksperimen	28	87,86	5,169	977

(Source: Researcher's Processed Data, 2025)



		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	
NILAI	Equal variances assumed	1.724	.195	-6.405	54	.000	-10.000	1.561	- 13.130	-6.870
	Equal variances not assumed			-6.405	51.570	.000	-10.000	1.561	- 13.134	-6.866

Based on the results of the t-test in the table, a sig. (2-tailed) value of 0.000 was obtained, which means it is smaller than 0.05 ($0.000 < 0.05$). The average critical thinking results of the experimental class students were higher, namely 87.86 compared to the control class, namely 77.86. Thus, it can be concluded that there is a significant influence on the cooperative learning model of the Flashcard-assisted group investigation type on the critical thinking abilities of third-grade students in the science subject.

DISCUSSION

The Influence of the Group Investigation Cooperative Learning Model Assisted by Flashcard Media on Student Learning Outcomes A significant improvement in learning outcomes in third-grade students at Kutorenono 01 Elementary School in the experimental class occurred because they were given treatment using a cooperative learning model of the group investigation type. The cooperative learning model of the group investigation type can encourage students to be actively involved in learning activities such as discussions, solving problems together, seeking information and learning resources together. The cooperative learning model of the group investigation type has characteristics that are in line with the objectives of developing critical thinking such as emphasizing discussion and argumentation activities and students can develop logic, reasoning, and the ability to evaluate information. The implementation standards in the cooperative learning model of the group investigation type are student-centered learning activities, heterogeneous, freedom in choosing topics, collaborative and democratic between members, oriented to the scientific process, encouraging critical and creative thinking and can produce real products, either in the form of presentations or reports. This is in line with the opinion of Perwitasari (2016) that the advantages of the cooperative learning model of the group investigation type are students can think critically, work together between groups, solve problems, and students are more confident in expressing their opinions. Collaborative activities and interactions between students in a group during learning activities can have a positive influence on student motivation and learning outcomes.

The use of Flashcard learning media in learning activities in the experimental class makes students enthusiastic and passionate in learning. Flashcard media can help students in the process of understanding abstract concepts into concrete ones through images and writing. Flashcard media is a learning media in the form of images and can be interesting so that it can help students to remember the lesson material presented by the teacher. This is in line with Gusti et al., (2017) who stated that Flashcard media is a learning media developed to improve memory and train student independence. The combination of the cooperative learning model of the group investigation type with Flashcard learning media provides good things, one of which is to increase student activity and participation during learning, develop critical thinking skills, foster social skills, increase motivation and interest in learning, provide meaningful learning for students and can improve student learning outcomes.



The Effect of the Flashcard-Assisted Group Investigation Type Cooperative Model on Students' Critical Thinking

A significant increase in students' critical thinking skills occurred due to the treatment of the Cooperative Learning Model Type of Group Investigation assisted by Flashcards in the experimental class. In the implementation of learning in the experimental class, learning activities were given a problem in a group. Students collaborated with their group mates to solve the problem by discussing and conducting investigations in learning activities. In discussion activities and conducting investigations between groups, students learned to develop social skills, collaborate and work together. These activities can foster independence, self-confidence and the ability of students to exchange opinions and think critically so that students learn to make the best decisions in solving problems or tasks given. This is in line with the opinion of Rachmanto (2019) that critical thinking is reasonable and reflective thinking that focuses on making decisions about what is believed and based on facts to produce the best decisions.

Several factors support the improvement of students' critical thinking skills in the cooperative learning model of group investigation using flashcards.

- a. Students work in groups to discover and analyze information through group investigation activities.
- b. Discussion activities among students in a group build confidence in expressing opinions, exchanging ideas, and asking questions, thus fostering critical thinking skills.
- c. Flashcard learning media helps students understand the material and serves as a stimulus for developing critical thinking skills.
- d. The use of flashcards in group investigation activities motivates and excites students in carrying out learning activities and solving assigned problems.

The combination of the cooperative learning model of group investigation and flashcard learning media improves students' critical thinking. This is in line with the results of research conducted by Lestari & Awaluddin (2019), which found that the Group Investigation learning method can improve students' critical thinking skills by 25.44%.

CONCLUSION

Based on the results of data processing and analysis, the following conclusions can be drawn.

1. The cooperative learning model, Group Investigation Type, Assisted by Flashcards, has a significant influence on the learning outcomes of third-grade students at Kutorenon 01 Public Elementary School in science.
2. The cooperative learning model, Group Investigation Type, Assisted by Flashcards, has a significant influence on the critical thinking skills of third-grade students at Kutorenon 01 Public Elementary School in science.

SUGGESTIONS

Based on the research conclusions, the suggestions that can be conveyed by researchers are: For teachers it is hoped that they will use a cooperative model of group investigation type assisted by Flashcards to improve learning outcomes and students' critical thinking skills so that learning activities in the classroom become more meaningful and quality. In the process of dividing groups, teachers determine students heterogeneously so that the division of groups becomes more orderly. The use of flashcard media should use a larger size so that it can be read by all students. For other researchers, this research can be used as a reference to conduct more relevant research and develop better innovations in learning models and media.

REFERENCES

1. Arikunto, S. (2020). *Prosedur Penelitian Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta
2. Darmawan, I.P.A., & Sujoko, E. (2013). Revisi taksonomi pembelajaran benyamin s. bloom. *Satya Widya*, 29(1), 30-39.
3. Dimiyati dan Mudjiono. (2009). *Belajar dan Pembelajaran*. Jakarta: Rineka Cipta.
4. Facione, P.A. (2011). Critical Thinking: What it is and why it counts. *Insight assessment*, 1(1), 1-23
5. INDONESIA, P. R. (2006). Undang-undang Republik Indonesia nomor 20 tahun 2003 tentang sistem pendidikan nasional.
6. Iskandar, S., Rosmana, P. S., Farhatunnisa, G., Mayanti, I., Apriliya, M., & Gustavisiana, T. S. (2023). Implementasi Kurikulum Merdeka Di Sekolah Dasar. *INNOVATIVE: Journal Of Social Science Research*, 3(2), 2322-2336.
7. Lismaya, L. (2019). *Berpikir Kritis & PBL: (Problem Based Learning)*. Media Sahabat Cendekia.
8. Lai, E. R. (2011) Critical thinking: A literature review. *Person's Research Reports*, 6(1), 40-41.



9. Nasution, I. S. (2018). Pengaruh Pembelajaran Kooperatif Tipe Think Pair Share Terhadap Kemampuan Berpikir Kritis Dan Hasil Belajar Matematika Siswa Kelas Vi Di Sd Muhammadiyah 12 Medan. *Paedagogia | FKIP UMMat*, 8(2), 42. <https://doi.org/10.31764/paedagogia.v8i2.66>
10. Masyhud, M. S. (2016) *Metode Penelitian Pendidikan. Jember: Lembaga Pengembangan Manajemen dan Profesi Kependidikan.*
11. Munawwarah, M., Laili, N & Tohir, M. (2020) Ketrampilan berpikir kritis mahasiswa dalam memecahkan masalah matematika berdasarkan ketrampilan abad 21. *Alifmatika: Jurnal Pendidikan dan pembelajaran Matematika*, 2 (1), 37-58.
12. Novita, L., & Sundari, F. S. (2020). Peningkatan hasil belajar siswa menggunakan media game ular tangga digital. *Jurnal Basicedu*, 4(3), 716-724.
13. Rachmanto, A. R. D. I. A. N. (2019). Proses berpikir kritis siswa dalam pemecahan masalah pola bilangan berdasarkan kerangka kerja Norris dan Ennis. *Skripsi Universitas Islam Negeri Sunan Ampel Surabaya Fakultas Tarbiyah: tidak diterbitkan.*
14. Rifa'i, R., & Sartika, N. S. (2018). Penerapan Pembelajaran Investigasi Kelompok terhadap Hasil Belajar Matematis Siswa Sekolah Menengah Pertama. *Jurnal Analisa*, 4(1), 43–50. <https://doi.org/10.15575/ja.v4i1.1960>
16. Siti, Abdul. 2022. *Model-model Pembelajaran. Malang: CV Literasi Nusantara Abadi.*
17. Silva, H., Lopes, J., Morais, E., & Dominguez, C. (2023). Fostering critical and creative thinking through the cooperative learning jigsaw and group investigation. *International Journal of Instruction*, 16(3), 261-282.
18. Salam, A., & Kaharuddin, K. (2022). PENGEMBANGAN PERANGKAT PEMBELAJARAN BERBASIS KOOPERATIF TIPE GROUP INVESTIGATION. *Kreatif: Jurnal Pemikiran Pendidikan Agama Islam*, 20(2), 101-112.
19. Suciono, W., Rasto, R., & Ahman, E. (2020). Analisis Faktor-Faktor yang Mempengaruhi Keterampilan Berpikir Kritis Siswa dalam Pembelajaran Ekonomi Era Revolusi 4.0. *SOCIA: Jurnal Ilmu-Ilmu Sosial*, 17(1), 48-56.
20. Viqri, D., Gesta, L., Rozi, M. F., Syafitri, A., Falah, A. M., Khoirunnisa, K., & Risdalina, R. (2024). Problematika Pembelajaran IPAS dalam Kurikulum Merdeka. *Jurnal Inovasi, Evaluasi Dan Pengembangan Pembelajaran (JIEPP)*, 4(2), 310-315.
21. Wiratana, I. K., Sadia, W., & Suma, K. (2013). Pengaruh Model Pembelajaran Kooperatif Tipe Investigasi Kelompok (Group Investigation) Terhadap Keterampilan Proses dan Hasil Belajar Sains Siswa SMP. *Journal Program Pascasarjana Universitas Pendidikan Ganesha Program Studi IPA*, 3(1), 1–12.a
22. Perwitasari, V.R.S., Sumarmi, & Amirudin, A. 2016. Pengaruh Group Investigation Berbasis Outdoor Study Terhadap Kemampuan Berpikir Analitis Siswa. *Jurnal Pendidikan* 1(3), 87-93. Dari <http://journal.um.ac.id/-index.php/jptpp/article/view/6107>.
23. Maryanto, R. I. P. dan I. A. W. C. (2019). Penggunaan Media Flascard untuk Meningkatkan Pengenalan Bentuk Huruf Siswa Kelas I pada Mata Pelajaran Bahasa Indonesia di Sekolah ABC Manado. *Jurnal Ilmu Pendidikan*
24. Rosiyani, A. I., Salamah dan Anggraini, S. (2024). Penerapan Pembelajaran Berdiferensiasi dalam Kurikulum Merdeka pada Pembelajaran Ipas Sekolah Dasar. *Jurnal Pendidikan Guru Sekolah Dasar*, 1(3), 10-10.
25. Wulandari, Trisna., Skor PISA Indonesia ditarget setara negara OECD, Diaspora RI Usul belajar ini. *detikEdu*. Jumat, 20 desember 2024 09.00 wib.

Cite this Article: Yohani, I., Bektiarso, S., Wuryaningrum, R. (2025). The Effect of the Flashcard-Assisted Group Investigation Type Cooperative Model on Learning Outcomes and Critical Thinking of Grade III Students in the IPAS Subject. International Journal of Current Science Research and Review, 8(12), pp. 6260-6267. DOI: <https://doi.org/10.47191/ijcsrr/V8-i12-37>