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The Influence of the "Mading Pintar" Group Investigation Learning Model on Primary School Student Learning Outcomes

Pengaruh Model Pembelajaran Group Investigation "Mading Pintar" Terhadap Hasil Belajar Siswa Sekolah Dasar

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Abstract
This research aims to see whether the "Mading Pintar" group investigation learning model positively impacts student learning outcomes. This research uses a quantitative approach, pre-experimental design, one-group pretest, and post-test design. Samples were taken using a purposive sampling technique. The data collection instrument was an unstructured interview sheet addressed to the homeroom teacher of class IV A with 8 questions to collect information. A test sheet with 14 questions was given to class IV A students to determine the learning outcomes of pretest and posttest students, and a Guttman scale questionnaire sheet with 15 questions, Yes (1 point)and No (0 points) was given to class IV A students to see the effectiveness of using the group investigation learning model. "Smart Mading". The validity and reliability test is an initial stage analysis with 20 questions before and 14 questions after being tested. The pretest normality test obtained a value of 0.017 < 0.05 and the posttest 0.000 < 0.05, indicating that the pretest and posttest values were not normally distributed. Apart from that, the final stage analysis of the Wilcoxon test obtained a significance value of Asymp. sig.(2-tailed) 0.001 < 0.05 that the hypothesis was accepted. Meanwhile, the one sample t-test obtained 65.71%, including the "Effective" criteria. So it can be concluded that the "Mading Pintar" group investigation learning model can improve student learning outcomes and is effective for use in the learning process.
Keywords: Group Investigation, Mading Pintar, Learning Results.

Abstrak
Penelitian ini bertujuan untuk melihat apakah model pembelajaran group investigation "Mading Pintar" berdampak positif bagi hasil belajar siswa. Penelitian ini menggunakan pendekatan kuantitatif jenis pre experimental design one group pretest posttest design. Sampel diambil dengan teknik purposive sampling. Instrumen pengumpulan data berupa lembar wawancara tidak terstruktur ditujukan kepada wali kelas IV A berjumlah 8 pertanyaan berfungsi untuk mengumpulkan informasi. Lembar tes berjumlah 14 soal diberikan kepada siswa kelas IV A berfungsi mengetahui hasil belajar siswa pretest dan posttest, serta lembar angket skala guttman berjumlah 15 soal, Ya (1 point) dan Tidak (0 point) diberikan kepada siswa kelas IV A berfungsi melihat efektivitas penggunaan model pembelajaran group investigation "Mading Pintar". Uji validitas dan reliabilitas adalah analisis tahap awal dengan jumlah 20 soal sebelum diujikan, dan 14 soal setelah diujikan. Uji normalitas pretest memperoleh nilai 0,017 < 0,05 dan posttest 0,000 < 0,05 menunjukkan bahwa nilai pretest dan posttest berdistribusi tidak normal. Selain itu, analisis tahap akhir uji wilcoxon memperoleh nilai signifikansi Asymp.sig.(2-tailed) 0,001 < 0,05 bahwa hipotesis diterima. Sedangkan uji one sample t-test memperoleh 65,71% termasuk dalam kriteria "Efektif". Maka dapat disimpulkan bahwa model pembelajaran group investigation "Mading Pintar" dapat meningkatkan hasil belajar siswa dan efektif untuk digunakan dalam proses pembelajaran.
***Kata Kunci**: Group Investigation, Mading Pintar, Hasil Belajar.*

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INTRODUCTION

The quality of education is supported by the learning process. When the learning process is interactive and inspiring, it motivates students to actively participate. The 21st century learning paradigm focuses on the ability to seek information effectively and efficiently, formulate problems, think analytically, and cooperate in solving problems actively. Therefore, the learning process must be authentically designed for students to learn in groups and create solutions to problems in the context of learning. One of them is by using a learning model collaborated with learning media to increase the effectiveness and efficiency of the learning process to achieve optimal student learning outcome (Fatikhasuri, 2018).

In the learning process, the important components in education cover several points, including concepts, skills, understanding, and values that are applied in the learning process (Pertiwi, 2023). The use of learning models and media itself is one of the factors that play an important role in the learning process in the classroom. Therefore, using models and media is very helpful and needed by teachers in delivering material to students by making them the main subject in the learning process.

Student involvement makes them enthusiastic in learning, therefore will have a positive impact on their learning outcomes (Rohman dan Susilo, 2019). One of them is in the use of a group investigation learning model called “Mading Pintar”. Group investigation itself is a learning model where students with different abilities learn in groups (Yunita, 2018). While Mading Pintar (Educational Wall Megazines) is a learning media that involves teachers and students in creating interesting, creative, and innovative learning with the goal to attract students' attention, foster enthusiasm in learning and ease students into understand the material (Mutiara, 2023). Group investigation is one of the student-centered learning models that involves students in the learning process in order to improve learning outcomes (Amin, 2019).

Learning outcome is a measurement of whether or not the learning objectives are achieved, which are marked by changes in a person's behaviour in aspects of knowledge, attitude, and skill. Learning outcomes provide benefits for teachers and students. For teachers, it acts as a useful measurement of the level of student success in achieving learning objectives, while for students, it acts as a way to determine the level of student success in the learning process (Widyanto, 2017). Quality learning can be recognized from the teaching and learning process that goes on effectively and efficiently, where

teachers not only play a role in providing knowledge, but also build skills, behaviour, and student confidence (Dewi, 2021).

Based on an interview on Saturday, 6th January 2024, with Mrs. Sarda Feronica, S.Pd. as the homeroom teacher of 4th Grade Class A SDN 02 Taman Agung; it was revealed that educators have implemented a learning model, specifically the TPS (Think-Pair-Share) learning model conducted by two people. In addition, teachers have utilised Power Point (PPT) learning videos, fraction board learning media in the form of pizza/bread in Mathematics, as well as discussion, demonstration and role play methods. Teachers do not always use learning media, but focus more on one thing that is applied, be it the delivery of learning, techniques or teaching tools, for example Student Worksheet which teachers have often involved in the learning process. The existence of student learning outcomes below KKM because teachers do not use learning models, methods, and media. In the attached documentation, the summative assessment of IPAS subjects showed that there are still some students whose learning outcomes are below the KKM and are not fluent in reading. The results of the interview show that the teacher lacks innovation in using learning models and media. This makes students less active in the learning process with a few students in class IV A have learning outcomes that have not reached the passing grade (KKM = 70) in IPAS subjects. To overcome these problems, there needs to be variations and innovations made by teachers, one of which is by using the group investigation learning model 'Mading Pintar'.

This research draws on previous studies, including the research by Ni Luh Made Santi Utami et al. (2020), who found that student involvement in learning was not optimal, making learning less meaningful, and low student activity resulted in less than optimal knowledge competence. To overcome this, the right learning model is needed, such as group investigation with the help of semi-concrete media, which can improve students' science knowledge (Utami, 2020).

The research by Ni Km. Inten Phramesti Putri et al. (2018) shows that monotonous learning models cause students to understand the material less, learning outcomes low, and student participation minimal because they only listen to the teacher's explanation. The use of creative learning media, such as group investigation with the help of question cards, can increase students' enthusiasm and activeness, and encourage their knowledge competence, especially in science subjects (Putri, 2018).

The research by Siti Khoenun Nisa et al. (2020) found that the dominance of the teacher in learning and the lack of use of models and media made students less actively involved and difficult to understand the material, which had an impact on low learning outcomes. The use of a group investigation model with puzzle media can help students more easily understand the material, support teachers in the learning process, and make learning more creative and interesting so as to improve student learning outcomes (Nisa, 2020).

The research by Keke Citra Wahyu Avisca et al. (2018) showed that the teacher-centred learning model, with knowledge sources limited to books and teachers, made students less confident in their answers. This causes students' critical thinking and collaborative scores to be below average. To improve problem solving skills in Mathematics, a group investigation model with the help of magic ball is suggested, to train students' activeness, curiosity, and confidence in critical and collaborative thinking (Avisca, 2018).

Based on previous studies that focus on the competence of science knowledge, understanding of concepts/and scientific critical thinking skills, as well as critical thinking and collaborative skills. Meanwhile, this research is different from research in general, because researchers examine student learning outcomes by combining group investigation learning models and smart mading media. The main thing that researchers do is conduct interviews regarding the use of group investigation learning models with smart mading media. The results of the interview concluded that the group investigation learning model 'Mading Pintar' has never been applied at school. In addition, researchers also conducted a google search survey related to group investigation and 'Mading Pintar', the results explained that there were no previous researchers who conducted research on group investigation and 'Mading Pintar', the search results showed that group investigation with other learning media (Widyanto, 2017). This encourages researchers to conduct research on the application of the group investigation learning model 'Mading Pintar' to the learning outcomes of elementary school students.

METODE PENELITIAN

This research uses a quantitative approach. Quantitative approach is a type of research where findings are represented numerically (Prasetya, 2023). This research implemented a pre-experimental design with a pre-test and a post-test. This design is used to compare the results from before and after the experiment. From the results,

researchers can pin point which is more suitable and influential in the learning process. This research design can be seen as follows (Sugiyono, 2016):

O_1 X O_2

Description:

O1 : Pre-test Score (before experiment)

O2 : Post-test Score (after experiment)

O2-O1 : Influence of the experiment

Direct and indirect sources are the data sources used by researchers. Interview is a question and answer process carried out by researchers with the aim of obtaining information (Rusdi, 2019)**.** This interview was conducted by the researchers on Saturday, 6th January 2024 with Mrs. Sarda Feronica, S.Pd. as the homeroom teacher 4th Grade Class A. This interview was a mean to conduct a preliminary study to identify the challenges and discover in depth insight from the respondent (Sugiyono, 2016). Primary sources in this study were teachers and all students of 4th Grade Class A SDN 02 Taman Agung. While the secondary sources are guidebooks, student assessments, and other data sources (Sari, 2018).

The researchers used a type of unstructured interview producing a total of 8 questions previously used in the case study. Meanwhile, the questionnaire used in this study is a type of Guttman Scale with *Yes* and *No* answers, Yes equaling 1 point and No equaling 0 point. The questionnaire consisted of 15 questions that were analysed from the indicators of the effectiveness of the use of learning models, namely the implementation of evaluations, student activities, and student responses. The questions were adjusted by the researchers with the effectiveness indicators and made with language that was easily understood by students in answering research questionnaire (Nasrah, 2021). While the test used by researchers in the form of multiple choice consisted of 14 questions. The questions were analysed based on learning objectives and learning outcomes, and documentation was used as evidence of research both in the learning process, pretest, posttest and others needed in the study.

The interview itself aimed to collect information from teachers of 4th Grade Class A of SDN 02 Taman Agung. Questionnaires were given to the aforementioned class' students with the means of learning the effectiveness of using the group investigation

learning model 'Mading Pintar'. Written tests were given to the students with the aim of seeing whether the group investigation learning model 'Mading Pintar' had an effect on student learning outcomes based on before and after the test. All data related to the learning process and research was then used as a source of documentation.

In this study, there is a data investigation, which are the initial stage investigation and the final stage investigation. Validity and reliability test was the initial stage in the data analysis process with the aim to measure the validity and reliability of an instrument. This test was conducted to determine the validity of the test instrument that had been made by the researcher in the form of 20 test questions. In addition, the normality test was used as a prerequisite test of analysis in determining whether the data was normally distributed or not. Meanwhile, the Wilcoxon test and one sample t-test were the final stage of analysis used to determine whether the group investigation learning model 'Mading Pintar' has an effect on the learning outcomes of 4th Grade Class A students of SDN 02 Taman Agung.

The students were given the pre-test before using the group investigation learning model 'Mading Pintar' to determine the initial ability of students regarding the material to be delivered and the knowledge possessed by students. After the pre-test, the researchers carried out the learning process, and on the next day the researchers then gave the posttest to the students. In this process, researchers gave a class on Chapter 8 of *IPAS Membangun Masyarakat yang Beradab* (Building a Civilised Society) Topic B *Kini Aku Menjadi Lebih Tertib Materi Peraturan Tertulis dan Tidak Tertulis*. (I Am Now More Orderly in Written and Unwritten Rules Material). The learning process was carried out for five meetings and two data collection instances. The first data collection was on 23rd April to 25th April 2024; the pre-test on the first day, the learning process on the second day, and the post-test on the third day. The second data collection was on 17 May to 18 May 2024, on the first day giving the pre-test and post-test, and the second day giving a questionnaire on the effectiveness of using the group investigation learning model 'Mading Pintar'.

FINDINGS AND DISCUSSION

Based on the calculations, it showed that student learning outcomes have increased after using the group investigation learning model 'Mading Pintar' compared to before. This can be seen from the student learning outcomes according to the table below:

Table 1. *Recapitulation of Pre-test and Post-test Scores Using the Group Investigation Learning Model* "Mading Pintar"

Attendance Number	**Score**	
	Pretest	***Posttest***
1.	100	100
2.	86	100
3.	100	100
4.	72	100
5.	36	100
6.	100	100
7.	50	86
8.	100	93
9.	86	100
10.	79	100
11.	86	79
12.	22	93
13.	58	100
14.	93	93
15.	65	93
16.	72	86
17.	50	79
18.	100	100
19.	100	100
20.	93	100
21.	72	93
Average	**77,14**	**95,00**

The table shows that the KKM (passing grade) for the subject is 70. With 15 students having reached the passing grade and 6 students not reaching the grade, the average pre-test score is 77.14. As for the post-test, the score reached 95.00, which means that all students in the class have met the KKM standard in the subject. The difference between pre-test and post-test scores is 14.86. The table shows that the group investigation learning model 'Mading Pintar' has an impact on student learning outcomes before and after applying it.

Before doing the Wilcoxon test, what must be done is the normality test. This test was carried out to determine whether all data is normally distributed or not. Data is said to be normal if the value of sig > 0,05, while the value of sig < 0,05 means abnormality (Kholifah, 2020). The calculations would be:

Table 2. Results of the Normality Test

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Pretest	.173	21	.101	.884	21	.017
Posttest	.332	21	.000	.728	21	.000

a. Lilliefors Significance Correction

The normality test on the pre-test and post-test shows the pre-test value of 0,017 < 0,05 meaning that the pre-test data is not normally distributed. The post-test value is 0,000 < 0,05 shows that the posttest data is not normally distributed.

With SPSS v.16, the Wilcoxon test shows the effect of the group investigation learning model 'Mading Pintar' apart from the results of the recapitulation of the scores before and after the test:

Tabel 3. Results of *Wilcoxon Test*

Test Statistics[b]

	Posttest - Pretest
Z	-3.187
Asymp. Sig. (2-tailed)	.001

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

The Wilcoxon test results in a significance value of Asymp.sig.(2-tailed) 0.001 <0.05 explaining that the pre-test and post-test variables are significantly different. This is seen from the criteria for the significance value of Asymp.sig.(2-tailed) <0.05, the hypothesis is accepted, whereas if the significance value of Asymp.sig.(2-tailed) >0.05, the hypothesis is rejected (Kholifah, 2020). The results of the Wilcoxon test showed that the hypothesis is accepted, which means that the group investigation learning model 'Mading Pintar' has an effect on student learning outcomes.

The one sample t-test shows that the group investigation learning model 'Mading Pintar' is effective for use in the learning process:

Table 4. Results of the Effectiveness of Using the Group Investigation Learning Model 'Mading Pintar'

Answer	Frequency	Percentage
Yes	207	65,71%
No	108	34,28%
Total	**315**	**100%**

Source: (Ikhsan, 2022)

The table shows that 207 answers or 65.71% gave positive responses, and 108 answers or 34.28% gave negative responses. This indicates that the use of the group investigation learning model 'Mading Pintar' has a significant impact.

Table 5. Criteria for the Effectiveness of Using the Group Investigation Learning Model 'Mading Pintar'

No.	Score	Description
1.	76-100	Very Effective
2.	51-75	Effective
3.	26-50	Enough
4.	0-25	Not Effective

Source: (Ikhsan, 2022)

The table shows that 51-75 are in the realm of 'Effective'. This can be inferred from 207 positive response answers or 65.71%, meaning that the group investigation learning model 'Mading Pintar' can be used effectively in the learning process.

Based on the results, it shows that the use of the group investigation learning model 'Mading Pintar' can improve the learning outcomes of 4th Grade Class A students in IPAS subjects, this is evidenced by the results of research conducted by the researchers as attached documentation. From the results of the instrument validity test, 14 valid questions were obtained from 20 questions made by the researcher. So that 6 invalid questions are not used in research. The reliability test is used to measure the level of credibility of an instrument, namely 14 questions that are declared valid. The pre-test normality test obtained a value of 0.017 < 0.05 indicating that the data was not normally distributed. While the post-test also shows that the data was not normally distributed because 0.000 <0.05. If the data was not normally distributed, the Wilcoxon test would be the test needed for the next stage. From the results of the Wilcoxon test, the significance value of Asymp.sig. (2-tailed) 0.001 <0.05 indicates that the hypothesis is accepted and the group investigation learning model 'Mading Pintar' has an effect on

student learning outcomes. In addition, from the results of the one sample t-test test obtained a value of 65.71% which is included in the 'effective' category, so this shows that the group investigation learning model 'Mading Pintar' is effective for use in the learning process.

This research is in line with researches conducted by Ni Luh Made Santi Utami, et al, Ni Km Inten Phramesti Putri, et al, Keke Citra Wahyu Avisca, et al that shows that the group investigation learning model is able to involve student activeness in the learning process, students play an active role in discussing and asking questions, thinking critically, and training students' self-confidence and curiosity in solving problems. This research also supports the results of research conducted by Siti Khoenun Nisa, et al that shows that the group investigation learning model can improve student learning outcomes.

Group investigation itself is a student-centred learning principle, developing skills, curiosity, and problem solving in groups of 4-6 people (Fatikhasuri, 2018)**.** The use of learning models and media has a very important role in improving student learning outcomes. Learning models and media help increase student motivation, students become more active, and students understand the material presented by the teacher so that it can improve their learning outcomes (Harahap dan Pradana, 2024). Learning outcomes themselves are the abilities possessed by students after receiving material in the learning process. These abilities include cognitive, affective, and psychomotor aspects. Learning outcomes are seen from evaluations that aim to obtain data in the form of grades and the level of students' ability to achieve learning objectives (Citra dan Rosy, 2020). The results of this study prove that the group investigation learning model 'Mading Pintar' can improve student learning outcomes in IPAS for 4th Grade students Class A SDN 02 Taman Agung.

The group investigation learning model can not only be done with the help of concrete media, but can also be IT or technology-based. In the digital era, technology provides benefits for students including finding various information, materials, and other learning videos needed by students in learning. One of them is the group investigation learning model which can be done with the help of technology. As researched by M. Sai (2017) who conducted internet-based group investigation model research. The results of the study showed that the learning outcomes and digital literacy skills of students were much higher than those based on literature (Sai, 2017). Another research by Rini

Umbarwati, et al. (2020) shows that the group investigation model and virtual box learning media can improve student activeness and learning outcomes. The utilisation of this technology aims to train students in understanding social problems, concepts and theories obtained accurately (Umbarwati, 2020).

Group investigation itself can increase students' confidence to use their knowledge and expertise that is useful for their group, which is one of the advantages of the group investigation learning model. In addition, this model can also foster students' ability to learn independently (Astuti dan Sutarto, 2015). Student involvement in the learning process starts from the early stages to the final stages, for students to be able to make discoveries and exchange ideas with their respective groups (Prasetyana, 2015). During the learning process, students play an active role in group discussions, exchange ideas and ask questions both to the teacher and other groups. This method is carried out in an effort to improve the quality of learning, where students must have the abilities and skills needed to face the challenges of 21st century learning, one of which is group investigation learning (Susanti, 2022).

In this study, the use of the group investigation learning model 'Mading Pintar' was only applied by researchers for three days or three times and the time tended to be short that it made students not fully understand the material of Written and Unwritten Rules. Therefore, this can be used as advice and input for further research to be able to manage time in conducting research, especially in the learning process, so that research will be achieved optimally. In addition, in the future, group investigation can also be applied in the learning process with the help of technology.

The use of the group investigation learning model 'Mading Pintar' itself has limitations that cannot be applied in the lower grades of elementary school, namely grades 1, 2, and 3, because the group investigation learning model 'Mading Pintar' is a learning process that requires high activeness and critical reasoning in solving problems, so this model can only be used in the upper grades of elementary school, namely grades 4, 5, and 6. In addition, this learning model also cannot be applied in large numbers of students, because classroom conditions are uncontrolled and less conducive, causing noise in the classroom. The use of smart mading media that cannot be used in large numbers limits this learning model only to a number of students.

CONCLUSION

The research showed that the group investigation learning model with "Mading Pintar" succeeded in improving the learning outcomes of grade IV A students at SDN 02 Taman Agung in IPAS subjects, based on pre-test and post-test scores. This model was also effective as proven by the one sample t-test. In addition to enriching teaching methods, this model offers creative and innovative options for teachers. However, there are limitations, such as long duration, inconvenience in groups, and limited number of magazines that cause commotion. For future research, it is recommended to apply this model in all subjects, use technology, and add mading per group for learning effectiveness and comfort.

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REFERENCES

Amin, S. (2019). The Effect of Group Investigation and Learning Style on Geography Learning Outcomes of Social Studies Students. [in Bahasa] *JPIPS : Jurnal Pendidikan Ilmu Pengetahuan Sosial* 5: 1–12. https://doi.org/10.18860/jpips.v5i2.6976

Astuti, E. Y., and Sutarto, H. (2015). Comparison of Critical Thinking Ability in Group Investigation and Guided Discovery Learning Based on Portfolio for Students in Seventh Grade. [in Bahasa] *Kreano : Jurnal Matematika Kreatif-Inovatif* 6 (1): 84–92. https://doi.org/10.15294/kreano.v6i1.5115

Avisca. K.C.W., et. al. (2018). Efforts to Improve Critical Thinking and Collaborative Skills in Mathematics through the Application of Group Investigation Model Assisted by Magic Ball. [in Bahasa] *Jurnal Pendidikan* 3: 97–103. https://doi.org/10.26740/jp.v3n2.p97-103

Citra, C. A., and Rosy, B. (2020). The Effectiveness of the Use of Educational Game-based Learning Media Quizizz on Office Technology Learning Outcomes of Grade X Students of SMK Ketintang Surabaya. [in Bahasa] *Jurnal Pendidikan Administrasi Perkantoran (JPAP)* 8: 261–272. https://doi.org/10.26740/jpap.v8n2.p261-272

Dewi, S.E.K., et. al. (2021). Thematic Learning Management During The New Normal Era At State Islamic Elementary School." *JIP (Jurnal Ilmiah PGMI)* 7 (2): 19–26. https://doi.org/10.19109/jip.v7i2.9632

Fatikhasuri, A., et. al. (2018). Implementation of Group Investigation Co-operative Learning with Gadget Media on the Activeness of Eleventh Grade Students MIPA 4 SMA Negeri 4 Surakarta in Year 2017/2018. [in Bahasa] *Proceeding Biology*

Education Cenference 15 (2016): 335–341. https://doi.org/ISSN%202528-259X

Harahap, K. G., and Pradana, H. (2024). The Effect of Using Learning Media on Student Learning Outcomes. [in Bahasa] *Journal on Education* 06 (03): 17218–17223. https://doi.org/10.31004/joe.v6i3.5604

Ikhsan, M. (2022). Measuring the Effectiveness of Online Learning Using E-Learning Canvas and Google Classroom for Students of the Tarbiyah and Teacher Training Faculty of UIN Ar-Raniry Banda Aceh. *Skripsi*. Banda Aceh: Universitas Islam Negeri Ar-Raniry Darussalam-Banda Aceh.

Kholifah, N. (2020). The Effect of Using Snakes and Ladders Prop on Mathematics Learning Outcomes of Fourth Grade MIN 3 Metro Pusat. [in Bahasa] *Skripsi*. Metro Lampung: Institut Agama Islam Negeri (IAIN) Metro Lampung.

Mutiara, T., et. al. (2023). Utilisation of Mading to Improve Students' Reading Literacy at SDIT Masjid Raya Batu Floor. [in Bahasa] *Paramacitra : Jurnal Pengabdian Masyarakat* 01 (01): 1–8.

Nasrah, et. al. (2021). Effectiveness of STEAM (Science, Technology, Engineering, ART, And Mathematics) Learning Model for Sixth Grade Elementary Students. [in Bahasa] *JKPD (Jurnal Kajian Pendidikan Dasar)* 6: 1–13. https://doi.org/10.26618/jkpd.v6i1.4166

Nisa, S. K., et. al. (2020). Application of Group Investigation Model Assisted with Puzzle Media to Improve Learning Outcomes of Elementary Students. [in Bahasa] *Lectura : Jurnal Pendidikan* 11 (2): 211–224. https://doi.org/10.31849/lectura.v11i2.4722

Pertiwi, R.P., et. al. (2023). Implementation of Scientific Literacy in The Independent Curriculum (Merdeka Curriculum) at Elementary School. *JIP (Jurnal Ilmiah PGMI)* 9 (2): 136–144. https://doi.org/10.19109/jip.v9i2.19875

Prasetya, A.D. (2023). The Effect of Cooperative Learning Model Type Group Investigation (GI) on Cognitive Learning Outcomes of Fifth Grade Social Studies Students SD Negeri Klidang Wetan. [in Bahasa] *Skripsi*, 1–90. Semarang: Universitas Islam Sultan Agung.

Prasetyana, S. D, et. al. (2015). Development of Discovery Learning Model Integrated with Group Investigation on Protista Material for Tenth Grade Students in SMA Negeri Karangpandan. [in Bahasa] *Jurnal Inkuiri* 4 (2): 135–148. https://doi.org/10.20961/inkuiri.v4i2.9628

Putri, N.Km. I. P., et. al. (2018). The Effect of Group Investigation Learning Model Assisted with Questions Card on the Concept I am running a few minutes late; my previous meeting is running over. And Scientific Critical Thinking Skills. [in Bahasa] *Thinking Skills and Creativ Journal* 1 (2): 46–55. https://doi.org/ 10.23887/tscj.v1i2.20492

Rohman, M. G., and Susilo, P. H. (2019). The Role of Teachers in the Use of Learning Media Based on Information and Communication Technology (ICT) Case Study at Muslimat NU Maslakul Huda Kindergarten. [in Bahasa] *Reforma : Jurnal Pendidikan Dan Pembelajaran* 8 (1). https://doi.org/10.30736/rfma.v8i1.140

Rusdi, M. (2019). Marketing Strategy to Increase Sales Volume at Genting Company Ud. Berkah Jaya. [in Bahasa] *JSMB : Jurnal Studi Manajemen Dan Bisnis* 6 (2). https://doi.org/10.21107/jsmb.v6i2.6686

Sai, M. (2017). The Effect of Internet-Based Group Investigation Model on Student Learning Outcomes and Digital Literacy Skills. [in Bahasa] *Harmoni Sosial : Jurnal Pendidikan IPS* 4 (1): 39–54. https://doi.org/10.21831/hsjpi.v4i1.9869

Sari, M. I. (2018). The Effect of Gadget Use on Motivation and Learning Outcomes of Fifth Grade Students of MI Thoriqotussa'adah Pujon, Malang Regency. *Skripsi*. Malang: Universitas Islam Negeri Maulana Malik Ibrahim Malang.

Sugiyono. (2016). *Quantitative, Qualitative, and R&D Research Methods.* [In Bahasa]

Bandung: ALFABETA cv.

Susanti, D., et. al. (2022). Geogebra-assisted Group Investigation Cooperative Learning to Support Collaboration, Problem Solving, and Communication Skills. [in Bahasa] *Aksioma : Jurnal Program Studi Pendidikan Matematika* 11 (2): 1000–1008. http://dx.doi.org/10.24127/ajpm.v11i2.4726

Umbarwati, R., et. al. (2020). Application of Group Investigation Learning Model and Virtual Box Learning Media to Improve Student Activeness and Learning Outcomes in Operating System on Tenth Grade Multimedia Class at SMK N 6 Surakarta. [in Bahasa] *Jurnal Ilmiah Pendidikan Teknik Kejuruan (JIPTEK)* 13 (1): 61–67. https://doi.org/10.20961/jiptek.v13i1.24268

Utami, N. L. M. S., et. al. (2020). The Effect of Group Investigation Learning Model Assisted by Semi-concrete Media on Science Knowledge Competency. [in Bahasa] *Jurnal Ilmiah Pendidikan Dan Pembelajaran* 4: 270–283. https://doi.org/10.23887/jipp.v4i2. 26436

Widyanto, P. (2017). Application of Group Investigation Learning Method Assisted by Flannel Graph Media to Increase Student Interest and Learning Outcomes in Science Subjects. [in Bahasa] *JPDN : Jurnal Pendidikan Dasar Nusantara* 3: 118–129.

Yunita, S., et. al. (2018). The Effect of Group Investigation Type Cooperative Learning Model on Mathematical Problem Solving Ability in Review of Learning Motivation of Junior High School Students in Kampar. [in Bahasa] *Juring (Journal For Research Mathematics Learning)* 1 (1) : 11-18. http://dx.doi.org/10.24014/juring. v1i1.4700