EduBasic Journal: Jurnal Pendidikan Dasar
Vol. 5 No. 2, October 2023, pp. 137-146

https://ejournal.upi.edu/index.php/edubasic

Understanding Social Studies Concepts through Circuit Learning Models and Creative Problem-Solving Models in Fifth Graders

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Article Info

History of Article
Received:
25 December 2022
Revised:
27 May 2023
Published:
15 October 2023

Abstract

This study aimed to determine the development of social studies learning concepts between students who use the circuit learning model and students who use the Circuit Learning model process using the Creative Problem-Solving method in fifth-grade social studies learning in the 2022- 2023 academic year. This research uses a quasi-experimental method and the results of the ability to understand the concept of social studies data collected through a test description or essay. To analyze the differences between those two learning methods, the t-test with a significant level of 0.05 (5%) was used. After being taught using the Circuit Learning model and Creative Problem-Solving models, the results of the ability to understand the concept of social studies have a difference. Students who use the circuit learning model get an average score of 82.1, while students who use the problem-solving method get an average score of 72.86. Based on the results of the analysis of hypothesis test data using the t-test at a significant level of 0.05 (5%) obtained $t_{count} > t_{table}$ is 3.80 > 1.686 so H_1 is accepted and H_0 is rejected. Students who use the circuit learning model have a better understanding of social studies concepts than those who use the creative problem-solving model. They are more confident in learning, making it easier for them to understand social studies concepts because they learn collaboratively and competitively and are responsible for their responsibilities in the group.

Keywords: Circuit Learning, Creative Problem-Solving, Concept, Social Studies

How to cite: Wijaya, H. A., Usman, H., Pratiwi, A. D., & Alawiah, T. (2023). Understanding social studies concepts through circuit learning models and creative problem-solving models in fifth graders. *EduBasic Journal: Jurnal Pendidikan Dasar*, *5*(2), 137-146.

e-ISSN: 2549-4562, p-ISSN: 2987-937X

Info Artikel

Riwayat Artikel
Diterima:
25 Desember 2022
Direvisi:
27 Mei 2023
Diterbitkan:
15 Oktober 2023

Abstrak

Penelitian ini bertujuan untuk mengetahui perbedaan pemahaman konsep Ilmu Pengetahuan Sosial (IPS) antara siswa yang menggunakan model Circuit Learning dengan siswa yang mengikuti proses pembelajaran dengan menggunakan model Creative Problem-Solving pada pembelajaran IPS kelas V tahun ajaran 2022-2023. Penelitian ini ini menggunakan metode quasi eksperiment dan data hasil kemampuan pemahaman konsep IPS dikumpulkan melalui tes uraian atau esai. Untuk menganalisis perbedaan antara kedua metode pembelajaran tersebut digunakan uji t dengan taraf signifikan 0,05 (5%). Setelah diberikan perlakuan menggunakan model Circuit Learning dan model Creative Problem-Solving, hasil kemampuan pemahaman konsep IPS menunjukan perbedaan. Berdasarkan hasil analisis data uji hipotesis dengan menggunakan uji t pada taraf signifikan 0,05 (5%), diperoleh $t_{hitung} > t_{tabel}$ yaitu 3,80 > 1,686 sehingga H_1 diterima dan H_0 ditolak. Siswa yang menggunakan model Circuit Learning memiliki pemahaman konsep IPS lebih baik dalam pembelajaran IPS dibandingkan dengan siswa yang menggunakan metode problem solving. Mereka lebih percaya diri dalam belajar, sehingga lebih mudah memahami konsep IPS karena belajar secara kolaboratif dan kompetitif serta bertanggung jawab terhadap tanggung jawabnya dalam kelompok.

Kata Kunci: Circuit Learning, Creative Problem-Solving, Konsep, Ilmu Pengetahuan Sosial

Cara Mensitasi: Wijaya, H. A., Usman, H., Pratiwi, A. D., & Alawiah, T. (2023). Understanding social studies concepts through circuit learning models and creative problem-solving models in fifth graders. *EduBasic Journal: Jurnal Pendidikan Dasar, 5*(2), 137-146.

e-ISSN: 2549-4562, p-ISSN: 2987-937X

INTRODUCTION

Circuit learning is a learning model that maximizes the empowerment of thoughts and feelings with patterns of addition and repetition (Aeniah, 2020). Circuit learning suggests that learning is conducted in a circular process. Circuit Learning, according to the learning steps, is divided into 6-9 stations formed in a circular formation carried out with a play activity approach arranged in sequence, giving rise to fun learning (Jariono et al., 2021). The definition of Circuit Learning is learning to play, it is called learning to play because students take information in the same pattern every day. The Circuit Learning model is an alternative that a teacher can use to activate further and improve (Taryunita & Japa, 2020). The Circuit Learning model is a learning method that includes a question-and-answer process between teachers and students about the material being taught, then continues with the application, presentation, and presentation of concept maps, division of students into study groups, and providing rewards for students or groups that can perform well (Taryunita & Japa, 2020).

This learning model emphasizes learning in heterogeneous groups helping each other, working together to solve problems in uniting opinions to obtain optimal success for both groups and individuals (Pramita et al., 2019). A good learning process requires an appropriate learning model to increase students' understanding of social studies. According to Jusmawati et al. (2021), Creative Problem-Solving is a way of thinking and acting in solving a problem. To be creative is a basic idea that is original, innovative, effective, and complex to create solutions that have value and meaning. The problem is the gap between the real situation and the desired condition, a situation that presents challenges and confronts individuals or groups in the search for answers. Problem-solving, in this case, means finding answers to the problems faced. So, Creative Problem-Solving is a process, way, or system to solve a problem effectively and efficiently.

Meanwhile, the Creative Problem-Solving (CPS) model is a learning model that focuses on teaching and problem-solving skills, followed by strengthening skills (Harefa et al., 2020). Quoting from Pepkin the Creative Problem-Solving learning model is a learning model that focuses on teaching and problem-solving skills followed by strengthening skills (Simanungkalit & Rajagukguk, 2022). Students can perform problem-solving skills when faced with a question (Faturohman & Afriansyah, 2020). Creative Problem-Solving is putting students in a real situation because the problem posed is ill-defined, complex, and meaningful, with creative solutions from students (Wardani et al., 2020).

Almost all problem-solving always involves these six characteristics. In the context of learning, Creative Problem-Solving also involves the six stages that can be carried out by students. The syntax for the Creative Problem-Solving process based on the PISA criteria of the Osborn–Pernes model can be seen as follows, objective finding, fact finding, problem finding, idea finding solution finding, and acceptance finding (Desiana et al., 2021). Creative Problem-Solving strategies in problematic means all the ways that are used by someone in creative thinking, to solve a problem creatively. Creative Problem-Solving is done through creative solutions that are carried out through creative attitudes and mindsets, having many alternative problem-solving, being open to improvement, fostering self-confidence, having the courage to express opinions, divergent thinking, and being flexible in problem-solving efforts (van Hooijdonk et al., 2020).

According to Salbi (2021), the success of social studies education and teaching will be able to make a major contribution to the development of national and state life. Social Studies is a subject given in elementary to secondary schools by teaching material that examines facts, concepts, events, and generalizations related to social issues (Taryunita & Japa, 2020). Dimensions of social studies education are comprehensive, namely: the first dimension of knowledge which includes facts, concepts, and generalizations, the second dimension of skills, which includes research skills, creative and critical thinking, social participation, and communication, the third dimension of values and attitudes which includes beliefs or principles in behavior, and the fourth

dimension of action which means students learn and practice actively (Haq et al., 2019).

The purpose of social studies education is to educate and provide basic skills to students to develop themselves according to their talents, interests, abilities, and environment, as well as various provisions for students to continue their education at a higher level (Haq et al., 2019). In addition, social studies subject objectives can be achieved by developing learning that encourages the development of students' creative potential. For the teacher to create a comfortable learning environment for students, students must always try to complete more activities than the teacher, but the teacher's role is to encourage students to do more learning activities from concepts (Hidayat, 2022). Learners must be able to navigate the material so they can understand the material. It's used in everyday life - not only in everyday life but also in active and creative learning. Social Science is an integrated learning material that simplifies, adapts, selects, and modifies, compiled from concepts and skills in history, geo-history, sociology, anthropology, and economics. Social Studies contain material that studies terms of concepts of those topics. These concepts are not known to students until the elements are understood (Romaliyana et al., 2019).

From the explanation of the two methods, researchers want to know which method has a higher influence on understanding the concept of learning social studies. Furthermore, according to Somantri, Social Studies is a simplification, adaptation, selection, and modification of the academic disciplines of the social studies which are organized and presented scientifically and pedagogically by psychologists for the institutional purposes of primary and secondary education in the framework of realizing national education goals based on Pancasila for Elementary and Secondary Education (Farisi & Malik, 2015). Social Studies is an integration ofvarious branches of social studies such as history, politics, law, and culture (Romaliyana et al., 2019). Based on data on social studies learning outcomes in the previous semester, in social studies of fifth grade, the minimum completeness criterion (KKM) was determined to be 60. In class, there were 60 students, 75% of whom scored below the KKM and 25% who scored above the KKM. The results of interviews with fifth-grade teachers and observations revealed that social studies learning activities were usually carried out in the fifth grade of the Penerus Bangsa Elementary School, Tangerang City by using the expository model, namely the teacher's learning process explaining the material, giving examples and how to solve it. In that strategy, students are asked to record and answer questions that have been given by teacher and the low ability to understand students' social studies concepts is one of the causes of an inappropriate learning model. To improve students' ability to understand the concept of social studies, researchers see that the learning model should be changed according to need. Circuit Learning and Creative Problem-Solving learning models have never been done before by fifth-grade teachers, and researchers want to try to do with these methods.

The Circuit Learning model is a learning strategy that maximizes the reinforcement of thoughts and feelings through patterns of addition and repetition (Husadati et al., 2019). This strategy usually begins with a question and answer about the topic being studied, a presentation of concept maps, conceptual explanations, explanations of how to fill in, group presentations, and awarding (Indarto et al., 2021), and motivational activity (Pramilu et al., 2019). The characteristics mentioned were similar to the Creative Problem-Solving model that promotes creative thinking through reinforcement (Pramestika et al., 2020) and contain motivational activity (Azizah & Santoso, 2023). Unfortunately, lack of references comparing the strengths or weaknesses of those two models in comparison.

Seeing the importance of using a Circuit Learning and Creative Problem-Solving learning model to be implemented and chosen based on a certain situation, the investigation on comparing those two models is necessary. This study aims to determine how effective the method of Circuit Learning with Creative Problem-Solving is in understanding the concept of social studies students.

METHODS

This study used the True Experiment research type (research design) with the Nonequivalent Control Group Design type. The quasi-experiment was chosen because the researcher used an existing class at school or did not create a new class. This quasi-experimental research was conducted by giving treatment to a class called the experimental class 1, which used the Circuit Learning model and was compared to the experimental class 2 which used the Creative Problem-Solving model (See Table. 1).

This research was conducted at Penerus Bangsa Elementary School which is located at street Griya Sangiang Mas 6-7 Periuk District, Tangerang City. Researchers conducted this research because in this school there are problems to be studied. In carrying out this research activity, according to the data required in this study, the data collection method used in this study is a cognitive test.

The research took two classes of research samples to determine the difference between the Circuit Learning model and the Creative Problem-Solving model for understanding social studies concepts by providing pre-test questions and post-test questions. Before the study conducted the pretest and posttest, the test of the validity of the upper class was sixth graders with a total of 15 questions in the form of essays; after the validity of the questions was found, ten valid questions and five questions that dropped. After both classes are given a treat in the learning process, the research provides post-test and hypothesis testing.

Table 1. Sample Data

Class	Number of Students	Description	Learning Models
V/A	30	Experimental Class 1	Circuit Learning
V/B	30	Experimental Class 2	Creative-Problem Solving

The data is analyzed by using the independent sample t-test to see the difference between those two groups' results.

RESULTS AND DISCUSSION

The research took 2 research sample classes to find out the differences between the Circuit Learning model and the Creative Problem-Solving model for understanding social studies concepts. Provide pre-test questions and post-test questions. The pre-test is given before learning is carried out or before the material is given, while the post-test is given after learning has been carried out. The pre-test result can be seen in Table 1 and Table 2 while the post-test result can be seen in Table 5 and Table 6.

Table 2. Pretest Frequency Distribution of Experimental Class 1

Interval	f	f/n (%)
44 - 47	4	13%
48 - 51	5	17%
52 - 55	6	20%
56 - 59	7	23%
60 - 63	5	17%
64 - 67	3	10%
Total	30	100%

For the pretest data of experimental class 1 material of Human Interaction with the Environment, which can be seen in the interval 44-47 as many as four students, in the interval 48-51 as many as five students, in the interval 52-55 as many as six students, in the interval 56-59 as many as seven students, in the interval 60-63 as many as five students, in the interval 64-67 as many as three students.

Table 3. Pretest Frequency Distribution of Experimental Class 2

Interval	f	f/n (%)
44 - 47	2	7%
48 - 51	4	13%
52 - 55	6	20%
56 - 59	7	23%
60 - 63	6	20%
64 - 67	5	17%
Total	30	100%

For the pre-test data of experimental class 2 material of human interaction with the environment, which can be seen from the

interval 42-45 as many as two students, on the interval 46-49 as many as four students, on the interval 50-53 as many as six students, on the interval 54-57 as many as seven students, on the interval 58-61 as many as six students, on the interval 62-65 as many as five students. Descriptive data pretest Experiment 1 and Experiment 2 can be seen from Table 4.

Table 4. Descriptive Value of Pre-Test Class of Experiment 1 and Experiment 2

Statistics	Experiment 1	Experiment 2
N	30	30
Mean	54.93	54.80
Median	55.50	55.00
Mode	56.82	57.50
S^2	38.28	34.73
Std. Dev	6.87	5.89

Based on Table 4, the average between experimental class 1 and experimental class 2 is closely similar. This shows that there is a suspicion that both classes have the same learning outcomes.

Table 5. Post-test Frequency Distribution of Experimental Class 1

Interval	f	f/n (%)
66 - 70	4	13%
71 - 75	7	27%
76 - 80	8	23%
81 - 85	6	27%
86 - 90	2	7%
91 - 95	3	10%
Total	30	100%

For post-test data of experimental class 1 on human interaction with the environment, which can be seen in the interval 66-70 as many as four students, in the interval 71-75, as many as seven students, in the interval 76-80 as many as eight students, in the interval 81-85 as many as six students, in the interval 86-90 as many as two students, in the interval 91-95 as many as three students.

Table 6. Post-test Frequency Distribution of Experimental Class 2

Interval	f	f/n (%)
56 - 61	4	13%
62 - 67	6	20%
68 - 73	8	27%
74 - 80	7	23%
81 - 86	3	10%
87 - 92	2	7%
Total	30	100%

For post-test data of experimental class 2 on human interaction with the environment, which can be seen in the interval 56-60 as many as four students, in the interval 61-65 as many as six students, in the interval 66-70 as many as eight students, in the interval 71-75 as many as seven students, in the interval 76-80 as many as three students, and in the interval 87-92 as many as two students.

Table 7. Descriptive Value of Post-Test Class of Experiment 1 and Experiment 2

Statistics	Experiment 1	Experiment 2
N	30	30
Mean	82.10	72.86
Median	78.00	71.10
Mode	77.16	71.00
S^2	57.22	74.64
Std. Dev	7.56	8.63

Based on Table 7, the average between experimental class 1 and experimental class 2 is much different. This shows that there is a suspicion that both classes can understand learning differently after being given Circuit Learning model treatment in experimental class 1 and Creative Problem-Solving in experimental class 1. To analyze the differences between those two scores, the researcher used a t-test. Before analysis, the pre-requisite analysis of normality and homogeneity is conducted. Table 8 and Table 9 showed the normality test result.

Table 8. Normality Test of Pre-test Data of Class of Experiment 1 and Experiment 2

Group	X^2 count	X^2 table	Description
Experiment 1	2.787	11.070	Normal
Experiment 2	2.080	11.070	Normal

In the calculation of the normality of the experimental class 1 and the experimental class 2 showed $X^2_{count} < X^2_{table}$, it can be concluded that the data of both classes are normally distributed.

Table 9. Normality Test of Post-test Data of Class of Experiment 1 and Experiment 2

Group	X^2 count	X^2 table	Description
Experiment 1	10.008	11.070	Normal
Experiment 2	6.9552	11.070	Normal

In the calculation of the normality of the experimental class 1 and the experimental class 2 shows $X^2_{count} < X^2_{table}$, it can be concluded that the data of both classes are normally distributed. Thus, the homogeneity test result is shown in Table 10 and Table 11.

Table 10. Pre-test Homogeneity Test

F_{count}	F_{table}	Description
1.002	1.860	Homogeneous

Based on the pretest in the experimental class 1 and the experimental class 2, by using the calculation of the F - test at the level of sensitivity of 5% obtained a fitting point of 1.002 and F_{table} 1.860. Based on these results, the conclusion obtained by $F_{count} < F_{table}$, then both sample class 1 and class 2 have homogeneous population variations.

Table 11. Post-Test Homogeneity Test

F_{count}	F_{table}	Description
1.126	1.860	Homogeneous

Based on the pretest in the experimental class 1 and the experimental class 2, by using the calculation of the F - test at the level of sensitivity of 5% obtained F_{count} 1.26 and F_{table} 1.860. Based on these results, the conclusion obtained by $F_{count} < F_{table}$, then both sample class 1 and class 2 have homogeneous population variations.

After completing the prerequisite test of normality and homogeneity, the researchers conducted independent sample t-test analysis. The results can be found in Table 12 and Table 13.

Table 12. Pre-test Hypothesis Test

Data Statistics	Experiment 1	Experiment 2
Sample	30	30
Mean	54.93	54.80
t_{count}	0.081	
t_{table}	1.671	
Conclusion	There is no difference	

From the table above, the value of the pre-test data calculated by students in experimental class 1 and experimental class 2 showed that t_{table} value was 1.671. Because t_{count} is smaller than t_{table}, or $0.081 < 1.671$, it can be concluded that there is no difference between the experimental class 1 and the experimental class 2 before using learning models.

Table 13. Post-Test Hypothesis Test

Data Statistics	Experiment 1	Experiment 2
Sample	30	30
Mean	82.10	72.86
t_{count}	3.800	
t_{table}	1.671	
Conclusion	There is no difference	

From the table above, the value of t_{count} of post-test student data in the experimental class 1 and experimental class 2 showed also the same t_{table} value was 1.671. Because t_{count} is greater than t_{table}, or $3.80 > 1.671$, it can be concluded that there are differences in learning outcomes in the experimental class 1 and the experimental class 2 after treatment using different learning methods.

Discussion

The average social studies learning outcomes of students who use concept understanding strategies in social studies learning with the Circuit Learning model is

82.1. The average ability to understand social studies concepts using the Creative Problem-Solving method is 72.86. The experimental class 1 average score was higher than the experimental class 2 average score. The results of these calculations obtained the test results t_{count}= 3.80 while t_{table} = 1.671. Because $t_{count} \geq t_{table}$, then H_0 is rejected, meaning that there are differences in the ability to understand the social studies concept between students who are treated with Circuit Learning learning strategies with students who are treated with the Creative Problem-Solving Post-test method. The Circuit Learning model has a higher influence on thelearning outcomes of the ability to understand the social studies concept with the material of Human Interaction with the Environment and Its Influence on the Culture of Indonesian Society. Students who use the Circuit Learning model are more confident in learning, making it easier for them to understand social studies concepts because they learn collaboratively and competitively and are responsible for their responsibilities in the group (Desiana et al., 2021; Taryunita & Japa, 2020).

The result is in line with Haq et al. (2019) Circuit Learning model potentially reinforces creative thinking so that suitable for concept teaching. Based on the calculation results above, the Circuit Learning model affected the understanding of social studies concepts by providing cooperative ways of learning (Aeniah, 2020). while on the same page, the Creative Problem-Solving Model is also influential on conceptual material (Harefa et al., 2020). It aligns with the results of research conducted by Jusmawati et al. (2021) that using Creative Problem-Solving using mobile learning environment media can increase conceptual perception of elementary students.

This research showed that Circuit Learning provides appropriate and fun methods for elementary school students and is comparable to another creative strategy since it promotes students' creativity (Paranna & Airlanda, 2020). Problem-solving even though it has a lower impact, it still can increase the concept of understanding (van Hooijdonk, 2020). When giving material using a problem-solving model, students become more active and children are very enthusiastic (Pramestika et al., 2020). Those two could be alternative solutions besides project-based and contextual learning (Mulyaningsih, 2021). For further research, a comparison between other cooperative, collaborative, and contextual approaches of learning could be proposed.

CONCLUSION

Based on data findings in the field through a series of investigations, data processing, and answering research hypotheses, it can be obtained that social studies teaching and learning activities on Human Interaction with Environment and Its Influence on Indonesian Society Culture before learning using Circuit Learning and Creative Problem-Solving obtained insignificant difference. Likewise, after learning treatment, understanding of social studies after learning both classes experienced an increase from the pre-test to the post-test. Students who are treated with the Circuit Learning model have a higher influence on social studies learning outcomes than those treated with Creative Problem-Solving. The two methods were compatible to increase the social studies concept even though one was higher. The teacher could consider using the better method for their case in class.

REFERENCES

Aeniah, B. (2020). Meningkatkan prestasi belajar IPS materi mengenal cara menghadapi bencana alam dengan model cooperative tipe circuit learning siswa kelas VI semester I SDN Batu Kembar Kecamatan Janapria tahun pelajaran 2015/2016. *JISIP (Jurnal Ilmu Sosial dan Pendidikan)*, *4*(1), 222–229.

Azizah, Z. N., & Santoso, B. (2023). Pengaruh creative problem solving (CPS) Terhadap kemampuan berpikir kreatif ditinjau dari minat belajar. *Jurnal Pendidikan Ekonomi Undiksha, 15*(1), 1–8

Desiana, L., Patonah, R., & Ilah, I. (2021). Pengaruh metode circuit learning pada mata pelajaran ekonomi. *J-KIP (Jurnal*

Keguruan dan Ilmu Pendidikan), 2(3), 69–76.

Farisi, M. I., & Malik, A. (2015). Pendidikan IPS sebagai "synthetic discipline": kajian epistemologis atas pemikiran Nu'man Somantri. *Cakrawala Pendidikan, 34*(1), 128–139.

Faturohman, I., & Afriansyah, E. A. (2020). Peningkatan kemampuan berpikir kreatif matematis siswa melalui creative problem solving. *Mosharafa: Jurnal Pendidikan Matematika, 9*(1), 107–118.

Haq, A. N., Uswatun, D. A., & Maula, L. H., (2019). Penerapan model circuit learning untuk meningkatkan kemampuan berpikir kreatif pada pembelajaran IPS di kelas tinggi. *Jurnal Utile, 5*(2), 104–114.

Harefa, D., Telaumbanua, T., Sarumaha, M., Ndururu, K., & Ndururu, M. (2020). Peningkatan hasil belajar IPA pada model pembelajaran creative problem solving (CPS). *Musamus Journal of Primary Education*, *3*(1), 1–18.

Hidayat, S., Tati, A., & Hotimah, H. (2022). The effect of using social science learning videos on learning interest elementary school student of 5th grade. *Excellent Education, Science and Engineering Advances Journal, 1*(2), 49–59.

van Hooijdonk, M., Mainhard, T.,, Kroesbergen, E. H., & van Tartwijk, J. (2020). Creative problem solving in primary education: Exploring the role of fact finding, problem finding, and solution finding across tasks. *Thinking Skills and Creativity, 37,*100665.

Husadati, S. F. D., Purnamasari, V., & Royana, I. F. (2019). Pengaruh model circuit learning (CL) terhadap hasil belajar siswa pada mata pelajaran IPS. *International Journal of Elementary Education, 3*(3), 358–365.

Indarto, P., Jariono, G., Faiz, M., Muhammad, R., & Minawati, D. E. M. (2021). Circuit learning model based "Akidah" in modified volleyball for elementary school students. *Kinestetik: Jurnal Ilmiah Pendidikan Jasmani, 5*(1), 71–79.

Jariono, G., Nugroho, H., Hermawan, I., Fachrezzy, F., & Maslikah, U. (2021). The effect of circuit learning on improving the physical fitness of elementary school students. *International Journal of Educational Research & Social Sciences (IJERSC), 2*(1), 59–68.

Jusmawati, J., Satriawati, S., Irman, R., Rahman, A., & Arsyad, N. (2021). The impact of creative problem-solving learning model based android towards learning outcomes of elementary school students. *Journal of Physics: Conference Series, 2123*, 012045.

Mulyaningsih, L., Rufi'i, R., & Walujo, D. A. (2021). Project based learning dan contextual teaching and learning serta gaya belajar pada ilmu pengetahuan alam. *Edcomtech: Jurnal Kajian Teknologi Pendidikan, 6*(1), 110–123.

Paranna, M., & Airlanda, G. S. (2020). Pengaruh model pembelajaran circuit learning berbantu multimedia dan media sederhana terhadap kreativitas siswa. *Jurnal Riset Pendidikan Dasar, 3*(1), 57–63.

Pramita, P. A., Sudarma, I. K., & Murda, I. N. (2019). Pengaruh model pembelajaran circuit learning berbantuan media flip chart terhadap hasil belajar IPA. *Jurnal Ilmiah Pendidikan Profesi Guru*, *2*(1), 20–31.

Pramestika, R. A., Suwignyo, H., & Utay, S. (2020). Model pembelajaran creative problem solving pada kemampuan berpikir kreatif dan hasil belajar tematik siswa sekolah dasar. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan, 5*(3), 361–366.

Romaliyana, R. Y., Putra, M., & Sujana, I. W. (2019). Pengaruh model pembelajaran

circuit learning berbantuan media flipchart terhadap kompetensi pengetahuan IPS siswa kelas V. *Media Komunikasi FPIPS*, *18*(1), 22–30.

Salbi, A. (2021). Increasing student's learning interest in social science learning through a cooperative approach of jigsaw engineering fourth class elementary school 2 Sepunggur-Tanah Bumbu. *International Journal of Educational Research and Social Sciences (IJERSC)*, *2*(5), 1181–1188.

Simanungkalit, K. M., & Rajagukguk, W. (2022). Application of mathematics learning model creative problem solving that assisted with desmos to improve students' critical thinking skills of SMKN 14 Medan. *Formosa Journal of Science and Technology*, *1*(8), 1185–1200.

Taryunita, D. A., & Japa, I. G. N. (2020). Model circuit learning berbantuan media audio visual terhadap kompetensi pengetahuan IPS Siswa Kelas V SD. *Jurnal Pedagogi dan Pembelajaran*, *3*(3), 439–448.

Wardani, K. S. K., Rahmatih, A. N., Sriwarthini, N. L. P. N., Nurwahidah, N., & Astria, F. P. (2020). pengaruh model pembelajaran creative problem solving terhadap hasil belajar siswa. *EduMatSains : Jurnal Pendidikan, Matematika dan Sains*, *5*(1), 9–18.