THE EFFECTIVENESS OF THE CIRCUIT LEARNING MODEL ASSISTED BY QUARTET CARDS ON SOCIAL STUDIES LEARNING OUTCOMES

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ABSTRACT

Based on pre-research data from fourth-grade students at SDN Gugus Sultan Agung, Jepara, the Social Studies learning outcomes were found to be suboptimal. The learning model used tended to be teacher-centered, with image-based learning media. This research is an experimental study using cluster random sampling, with a population consisting of 158 fourth-grade students from SDN Gugus Sultan Agung, Jepara. The sample used was SD Negeri 02 Pecangaan Wetan as the control group and SD Negeri 01 Karangrandu as the experimental group. The aim of this study is to describe the learning outcomes of fourth-grade students at SDN Gugus Sultan and to test the effectiveness of the Circuit Learning model assisted by quartet cards on Social Studies learning outcomes. The results show that the experimental group scored higher, at 76.3, compared to the control group, which only scored 66.6. The hypothesis test results indicate that $t_{calculated}$ = 2.9627 > t_{table} = 2.0009, meaning the null hypothesis is rejected, which shows that the Circuit Learning model assisted by quartet cards is effective for teaching Social Studies to fourth-grade students. The conclusion of this research is that the Circuit Learning model assisted by quartet cards is more effective for teaching Social Studies on the topic of Hindu-Buddhist historical heritage compared to the Direct Instruction model for fourth-grade students at SDN Gugus Sultan Agung, Jepara. Keywords: circuit learning, social studies, quartet card

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ABSTRAK

Berdasarkan data pra penelitian di SDN Gugus Sultan Agung Kabupaten Jepara pada kelas IV diperoleh data hasil belajar IPS kurang optimal. Model Pembelajaran yang digunakan cenderung berpusat pada guru dan media pembelajaran berupa gambar. Penelitian ini merupakan jenis penelitian eksperimen dan menggunakan *cluster random sampling* dengan populasi yaitu siswa kelas IV SDN Gugus Sultan Agung Kabupaten Jepara yang berjumlah 158 siswa. Sampel yang digunakan yaitu SD Negeri 02 Pecangaan Wetan sebagai kelompok kontrol dan SD Negeri 01 Karangrandu sebagai kelompok eksperimen. Tujuan dari penelitian ini adalah mendeskripsikan hasil belajar siswa kelas IV SDN Gugus Sultan dan menguji keefektifan model pembelajaran *Circuit Learning* berbantuan media kartu kuartet terhadap hasil belajar IPS. Hasil perhitungan menunjukkan bahwa kelompok eksperimen memperoleh nilai yang lebih tingi yaitu 76,3 dibandingkan kelompok kontrol hanya memperoleh nilai 66,6. Hasil uji hipotesis menunjukkan bahwa t_{hitung} = 2,9627 > t_{tabel} = 2,0009 maka Ho ditolak yang berarti model pembelajaran *circuit*

learning berbantuan kartu kuartet efektif digunakan pada pembelajaran IPS kelas IV. Kesimpulan dari penelitian ini adalah model pembelajaran *Circuit Learning* berbantuan media kartu kuartet lebih efektif digunakan pada pembelajaran IPS materi peninggalan sejarah Hindu Budha dibandingkan model *Direct Instruction* siswa kelas IV SDN Gugus Sultan Agung Kabupaten Jepara.

Kata Kunci: circuit learning, IPS, kartu kuartet

A. Introduction

Education is a developmental process aimed at creating superior and high-quality human resources, capable of enhancing creative and innovative thinking in solving problems, thus producing a superior generation to advance the nation (Nurohmah et al., 2023).

Widodo et al., (2020) explain that social studies (IPS) education in elementary schools is an interdisciplinary study of social sciences and humanities, including sociology, history, economics, and geography, which equips students with social knowledge for social life.

Social studies education has been implemented for quite some time in the Indonesian education curriculum, but the expected results have not been optimal. This aligns with the opinion of Susrianto & Putra, (2020), who argue that social studies learning fails to capture students' interest in participating in learning activities due to monotonous and lecture-based teaching methods. Furthermore, social studies teaching in elementary schools mainly uses teaching aids such as pictures and books, causing students to remain passive during the learning process (Siregar, 2022). Similarly, Fairuz Putri Isa & Rustini (2023) explain that almost all social studies lessons in elementary schools tend to be teacher-centered, while students merely serve as learning objects, which deviates from the goals of social education.

Based on the conditions observed in social studies learning at SDN Gugus Sultan Agung in Grade IV, several problems were identified. The learning model applied is still teacher-centered, namely the direct instruction model. In this model, the teacher's role is very prominent, and learning activities tend to be passive. Additionally, the learning media used are limited to printed images, which causes students to think abstractly, and their social studies learning outcomes are suboptimal.

Supported by observations and interviews, students' interest in

learning social studies is not optimal because the subject matter in social studies is quite broad, requiring a lot of reading and memorization. One of the social studies topics with a broad scope is historical heritage. This issue is supported by the data on the social studies exam results of Grade IV students at SDN Gugus Sultan Agung, Jepara Regency, in the 2018/2019 academic year. Of the 158 students, 84 students (53.16%) scored below the passing grade (KKM), and the remaining 74 students (46.83%) scored above the KKM. Based on these issues in social studies learning, the researchers aimed to test the effectiveness of the circuit learning model assisted by quartet card media compared to the direct instruction model aided by picture media. The circuit learning model with quartet card media is expected to enhance students' engagement while maintaining a conducive learning environment.

The circuit learning model is a learning process with a pattern of repetition and addition that aims to empower both thoughts and feelings. Learning activities are conducted in groups to solve problems, resulting in individual and group success (Zherina Weley et al., 2024). The circuit learning model begins with a classical question-and-answer session about the topic to be studied, followed by displaying a concept map to be studied together, group discussions related to the concept map, group work on student worksheets with the concept map, group presentations, and providing rewards as feedback (Fahri et al., 2013).

The problem-solving-based circuit learning model will be more effective when implemented with engaging learning media that help students understand social studies material (Astika Wanhar et al., 2022). According to Alfina et al., (2024) utilizing learning media can increase students' motivation, which ultimately leads to improved academic achievement.

Quartet cards are a type of visual learning media containing images and text to help students understand the lesson material by involving them in a game (Arfiana et al., 2024).The playful learning style of elementary school students is well-suited to the use of quartet cards in learning activities because quartet cards are a game-like medium that includes several cards with images and descriptive text to explain the pictures (Nasution & Anshor, 2024).

Supporting research for problem-solving in this study includes the research conducted by Claudia Ritonga et al., in 2021. The findings showed that $t_{value} > t_{table}$, namely 3.387 > 1.708, indicating that the circuit learning model significantly improved learning outcomes, with an average score of 81.6 after implementing the circuit learning model compared to an average score of 65.6 before implementation. Another supporting study was conducted by Giwangsa in 202,which found that social studies in elementary schools is very suitable for using quartet card media because it is fun and easy for students to use, thereby increasing students' motivation to learn.

Based on the social studies learning issues, the researchers aimed to test the effectiveness of a more effective learning model and media, specifically the circuit learning model assisted by quartet card media. The circuit learning model with quartet cards is expected to increase student engagement while maintaining a wellmanaged classroom environment. Students are expected to understand the lesson material through a pattern of repetition and addition, which is realized in the form of a concept map so that students can deepen their understanding of the subject matter they have learned.

B. Research Metodology

This research uses a quantitative method. The type of research is experimental, with the research subjects being fourth-grade students at SDN Gugus Sultan Agung, Jepara. The research design is a QuasiExperimental Design in the form of a Nonequivalent Control Group Design (Sugiyono, 2016)

The population in this study consists of all fourth-grade students at SDN Gugus Sultan Agung, Jepara, totaling 145 students. The sample was selected using cluster random sampling, consisting of 33 students from fourth grade at SDN 1 Karangrandu (experimental group), 28 students from SDN 2 Pecangaan Wetan (control group), and 30 students from SDN 1 Pecangaan Wetan (trial group). The independent variable in this experimental research is the circuit learning model assisted by quartet card media, while the dependent variable is the Social Studies learning outcomes. Before using the test instrument for data collection, the test devices were analyzed through validity, reliability, difficulty level, and discriminating power tests.

The analysis techniques consist of initial data analysis and final data analysis. The initial data analysis includes normality and homogeneity tests, while the final data analysis involves normality, homogeneity, hypothesis testing, and n-gain testing. Hypothesis testing is performed using a t-test with the help of Microsoft Excel.

The hypothesis test is used to determine the effectiveness of the circuit learning model assisted by quartet cards in the experimental class on Social Studies learning outcomes. The t-test calculation uses an independent sample t-test with Microsoft Excel. According to Sugiyono (2016), the testing criteria are: if $t_{calculated} > t_{table}$, then Ha is accepted, or if $t_{calculated} < t_{table}$, then Ha is rejected. Meanwhile, the n-gain test is used to examine the average improvement between pretest and posttest scores in both the control and experimental classes.

C. Result and Discussion

The pretest and posttest scores are used to determine the effectiveness of the circuit learning model assisted by quartet cards, as measured by students' cognitive learning outcomes. The pretest is used to assess the initial ability equivalence between the control and experimental classes before treatment is administered and to draw conclusions from the researcher's hypothesis through the posttest results obtained after the treatment. The following are the pretest and posttest learning outcomes:

Table 1. Student Learning Outcomes

No	Description	Pretest		Posttest	
		Control	exp	Control	exp
1	Number of students	28	33	28	33
2	Average	62.4	64.3	66.6	76.3
3	Number students who have passed	10	16	12	27
4	Learning Mastery	32%	48%	43%	82%

Based on the results, it can be concluded that the learning outcomes between the pretest and posttest scores in the experimental class using the circuit learning model assisted by quartet card media are higher than those in the control class using the direct instruction model assisted by images.

The student learning outcome data was subjected to a prerequisite test for data analysis to determine the formula used for hypothesis testing.

The prerequisite tests included normality and homogeneity tests. The normality test used the Liliefors test with a significance level of 0.05. The posttest normality test results in the experimental class showed that the $L_{calculated}$ value (0.118) < L_{table} (0.1507), while in the control class, the $L_{calculated}$ value (0.0827) < L_{table} (0.162), leading to the conclusion that Ho is accepted and Ha is rejected, meaning both classes are normally distributed.

The homogeneity test used the F-test with a significance level of 0.05. In the experimental and control classes, the $F_{calculated}$ value (1.094) < F_{table} (1.8724), meaning Ho is accepted, indicating that the posttest data between the experimental class I and the control class is homogeneous. For experimental class II and the control class, the $F_{calculated}$ value (1.7516) < F_{table} (2.0733), meaning Ho is accepted, which shows that the experimental and control classes have homogeneous or equal variances. The normality and homogeneity test calculations were assisted by Microsoft Excel, showing that the social studies posttest results in both the experimental and control classes were normally distributed and had homogeneous variances.

After the data was subjected to normality and homogeneity tests, a hypothesis test was conducted to determine the difference in the mean scores between the control and experimental classes. The hypothesis test in this study showed that the circuit learning model assisted by quartet card media is more effective than the direct instruction model assisted by images in improving the social studies learning outcomes of fourth-grade students at SDN Gugus Sultan Agung, Jepara Regency. This is demonstrated by the results of the independent sample t-test, where the $t_{calculated}$ value is 2.9627, and the t_{table} value is 2.0009. Since $t_{calculated}$ = 2.9627 > t_{table} = 2.0009, Ho is rejected, and Ha is accepted, according to the testing criteria from Sugiyono (2016) which states that if $t_{calculated}$ > t_{table}, Ho is rejected. The hypothesis test results can be seen in the following table:

Table 2. Independent Sample T-Test Results

Desc.	Experimental class	Control class
Mean	76,3636	66,6071
Varian	157,4573	172,3214
N	33	28
tcalculated	t = 2,9627	
Df	n1-1 = 32	n2-1 = 27
ttable	2,0009	

The research supporting these results is by Nainggolan et al., (2022), which shows that there is an influence

of the circuit learning model on the subject "My Local Area" under the theme "Proud of My Local Area" at SD Negeri Huta Tinggir, with a t-value of 5.721 > t-table of 1.697, thus Ha is accepted, and Ho is rejected. The quartet card media is quite effective in improving social studies learning outcomes, with a pretest effectiveness percentage of 38.19% and a posttest effectiveness percentage of 78.47%, and the n-gain value falls into the medium category at 0.64 (Dila et al., 2024). Research conducted by Martini (2023) concludes that students' creativity and thinking skills can be improved by applying the circuit learning model. The circuit learning process begins with providing reinforcement, and the teacher presents visualizations throughout the lesson.

After conducting the average difference test on learning outcomes, the next step was to calculate the improvement in student performance before and after the treatment in both the experimental and control classes using n-gain. The control class obtained an average pretest score of 62.3, while the experimental class had an average pretest score of 64.3. The average posttest score for the control class was 66.6 and the average posttest score in the experimental class was 76.3. The experimental class produced a higher n-gain value of 0.3664, which falls under the medium criteria, compared to the control class with an n-gain value of 0.1182, which is categorized as low. Based on these n-gain results, it can be concluded that there was a higher improvement in learning outcomes in the experimental class, which applied the circuit learning model assisted by quartet card media, compared to the control class, which used the direct instruction model assisted by images.The results of the n-gain test can be seen in the following figure:

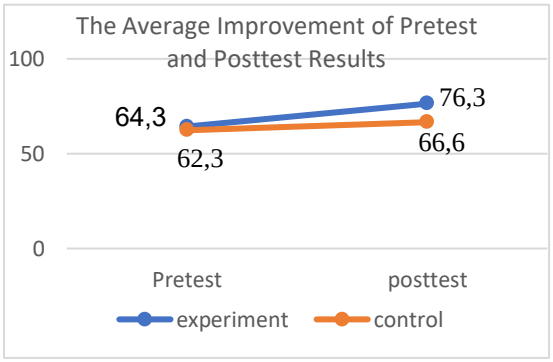


Figure 1. Diagram of the Average Improvement of Social Studies Learning Outcomes for Fourth-Grade Students at SDN Gugus Sultan Agung, Jepara Regency.

The results of this study are relevant to the research conducted by Saraswati & Dwi (2020)which explains that the n-gain value of motivation and learning outcomes after implementing

the learning model shows medium to high criteria, indicating that the circuit learning model assisted by diorama media is effective in influencing the motivation and learning outcomes of Grade V students at SDN Mangunharjo Semarang.

Research conducted by Samsiyah et al., (2021) shows the results of the experimental and control classes from pretest, treatment, and posttest. The results of the Independent Sample t-test calculation yielded a significance value = 0.00, meaning the significance value of 0.00 < 0.05 indicates that Ho is rejected and Ha is accepted. Therefore, it can be concluded that students who received learning activities using quartet cards performed more effectively compared to those who underwent monotonous learning activities.

Based on these results, supported by other relevant studies, it can be concluded that the learning activities in the experimental class, which implemented the circuit learning model with quartet card media, were more effective in improving the social studies learning outcomes of fourth-grade students compared to the control class, which used a teacher-centered learning model, namely direct instruction with only image-based media.

D. Conclusion

The circuit learning model assisted by quartet card media is more effective compared to the direct instruction model assisted by images on the social studies learning outcomes of fourth-grade students at SDN Gugus Sultan Agung, Jepara Regency. This is evidenced by the hypothesis testing results using the independent sample t-test, where the t-value obtained was 2.9627, while the t-table value was 2.0009, meaning t-value > t-table, so Ho is rejected. Based on the n-gain test results, the control class falls into the low criteria with a score of 0.1182, while the experimental class falls into the medium criteria with a score of 0.3664.

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