

The Effect of The Application of The Gallery Walk Learning Model Assisted by Infographics on Critical Thinking Skills of IPAS Energy Material Grade 4 SD

Amalia Nur Fany¹, Esti Untari¹, Titis Angga Rini¹

¹State University of Malang

²Departement of Elementary and Preschool Education, State University of Malang, Malang, Indonesia

*email: esti.untari.fip@um.ac.id

Keywords

Influence

GalleryWalk

Critical Thinking

Abstract

Pada pembelajaran IPAS, peserta didik dituntut tidak hanya menguasai aspek pengetahuan, tetapi di tuntut untuk mengembangkan keterampilan pada era saat ini yaitu keterampilan berpikir kritis. Dalam pembelajaran, pendidik harus menggunakan model pembelajaran yang tidak hanya membuat peserta didik menjadi aktif tetapi dapat mengajak peserta didik untuk berdiskusi dan saling berbagi ide melalui model pembelajaran gallery walk berbantuan infografis yang mereka ciptakan secara berkelompok. Permasalahan yang ditemukan di lapangan menunjukkan bahwa kegiatan pembelajaran IPA, guru menggunakan model pembelajaran direct learning. Pada pembelajaran ditemukan sintaks yang digunakan oleh guru tidak berjalan semua. Peserta didik yang duduk di belakang kurang fokus dan menjadi pendengar yang pasif. Penelitian ini bertujuan untuk mengetahui pengaruh penerapan model pembelajaran gallery walk berbantuan infografis terhadap keterampilan berpikir kritis IPAS materi energi kelas IV SD. Dalam penelitian ini menggunakan metode kuantitatif. Pada penelitian kuantitatif ini desain penelitian yang digunakan adalah Quasi Experimental. Kelas IV A dan IV B berjumlah 54 peserta didik adalah sebagai subjek penelitian. Hasil penelitian ini mengungkapkan bahwa nilai rerata post-test kelas eksperimen adalah 89.5 dengan nilai tertinggi 96 yang termasuk dalam kategori tinggi. Uji hipotesis melalui analisis statistik uji-t hasil signifikansi uji t pada nilai post-test yaitu $<.001$ (sig. <0.05). Maka terdapat perbedaan yang signifikan pada nilai rata-rata post-test di kelas eksperimen dan kontrol. Hal tersebut dibuktikan pada nilai rata-rata post-test kelas eksperimen yaitu 89.5 dan kelas kontrol yaitu 63.8 dengan nilai terendah 82 dan 52, serta nilai tertinggi kelas eksperimen yaitu 96 dan kelas kontrol yaitu 74. Hasil temuan ini menunjukkan adanya pengaruh yang signifikan pada penerapan model gallery walk berbantuan infografis terhadap keterampilan berpikir kritis materi energi kelas 4 SD.

Abstract

In science learning, students are required not only to master the knowledge aspect, but are required to develop skills in the current era, namely critical thinking skills. In learning, educators must use a learning model that not only makes students active but can invite students to discuss and share ideas through a infografis-based gallery walk learning model that they create in groups. Problems found in the field indicate that science learning activities, teachers use a direct learning learning model. In learning, it was found that the syntax used by the teacher did not work at all. Students who sat at the back were less focused and became passive listeners. This study aims to determine the effect of implementing a infografis-based gallery walk learning model on critical thinking skills in science on energy material for grade IV elementary school. In this study using quantitative methods. In this quantitative study the research design used was Quasi Experimental. Class IV A and IV B totaling 54 students were the research subjects. The results of this study revealed that the average post-test score of the experimental class was 89.5 with the highest score of 96 which was included in the high category. Hypothesis testing through statistical analysis of the t-test results of the significance of the t-test on the post-test value is $<.001$ (sig. <0.05). So there is a significant difference in the average post-test value in the experimental and control classes. This is evidenced by the average post-test value of the experimental class, namely 89.5 and the control class, namely 63.8 with the lowest values of 82 and 52, and the highest value of the experimental class is 96 and the control class is 74. These findings indicate a significant influence on the application of the infografis-based gallery walk model on critical thinking skills in energy material for grade 4 elementary school.

1. Introduction

The learning model is a learning process that is arranged or designed in order for the learning process to be carried out as well as received easily from students. The learning model can involve several efforts, methods, and techniques that are harmonized with the characteristics of the subject matter, the needs of students, as well as the educational objectives to be obtained. In addition, the

learning model is used as a support and foundation for organizing the learning process, in determining educational programs, selecting materials, and showing directions for classroom teachers (Putri et al., 2021). Learning activities teaching can be done optimally if it uses maximum learning methods and models according to the subject matter studied, for example in IPAS learning. In the IPAS subject, students have the opportunity to carry out various activities that support the understanding of concepts and the application of science. Natural Science (IPA) learning is ideally delivered through a fun approach and can be easily understood by students. To improve understanding of concepts and trigger curiosity of students, educators need to present material through concrete examples or direct experience in real life. This strategy can be supported through the application of appropriate learning models (Untari et al., 2019). One efficient approach in activating learner engagement is the gallery walk learning model. Through this model, learners are encouraged to move from one post to another to observe, analyze, and discuss information presented in visual form such as infographics. One of the cognitive aspects that can be developed through gallery walk is critical thinking skills. Critical thinking refers to an individual's skill to deeply analyze information, evaluate various perspectives, as well as make decisions based on logical and objective reasoning. In the context of gallery walk implementation, learners are invited to actively explore ideas, exchange ideas, provide feedback, and clarify both within the group and between groups. This creates a constructive and reflective discussion space, which ultimately strengthens students' critical thinking competencies (Hatimakausarina et al., 2022).

According to the results of observations and interviews conducted from researchers in class IV SDN Wedoro 1 Pandaan on January 9, 2025, it was found that the teacher's IPAS learning activities used a direct learning model. In this learning, it was found that the syntax used by the teacher did not run all. It was found that the teacher used several syntaxes and not all syntaxes were used. Not only that, the teaching materials used from teachers are using textbooks from the government. Teachers use learning media made by students themselves from the results of group work, for example pictures posted on the wall. In addition, the attitude of students when participating in learning is still not considered. Learners who sit at the back are less focused and do not seriously participate in learning activities. The results of interviews with teachers also found that the critical thinking skills of students were also lacking because students were still difficult when solving problems in learning and lacking in classroom discussions. Based on observations and documentation of the learning outcomes of class IV students, the scores obtained by class IV A and IV B students with a total of 54 are still low and have not been able to convey answers by referring to critical thinking students. Obstacles when teaching material on changes in energy forms in grade 4 IPAS subjects often face various obstacles. One of the main challenges is the abstract concept of energy, which is difficult for students to understand because it is not directly visible. Many students still have difficulty in understanding the instructions of the problem and applying the concepts that have been taught. For example, when faced with analytical problems that require critical thinking and the skill to connect various information, students often feel confused. This suggests that although they have received instruction, there are gaps in understanding that need to be addressed. Thus, an alternative learning model is needed that can encourage the development of critical thinking skills and increase students' active participation in learning activities. One of the relevant approaches to achieve this goal is the application of the infographic-assisted gallery walk model. This model not only allows students to interact directly with the material presented in the form of visuals, but also encourages them to analyze, evaluate, and also show feedback on the performance of other groups collaboratively. Therefore, students' critical thinking skills can be formed through meaningful and contextual activities. In the 21st century learning should focus more on training ways of thinking and acting, especially with the aim of students being able to think critically and creatively, communication skills and working together are used as a way to help develop these critical thinking skills (Untari et al., 2024).

Based on the results of previous research conducted from Ramdani et al (2019), it shows that the gallery walk learning model has an influence on improving students' critical thinking skills, especially in the material of the body defense system material. The study proves that the use of the gallery walk model has a positive impact on the development of students' critical thinking skills. Similarly, a study by Hayati et al. (2021) found that there was a significant effect of the application of the Gallery Walk model on students' science learning outcomes. Based on some research results, it proves that the use of the gallery walk model can affect students' critical thinking skills. Although there have been many studies that have shown the effect of the gallery walk model, it is still necessary

to re-test to ensure that this model remains relevant in improving critical thinking skills. Because for each study has a different research location, facilities and infrastructure and characteristics of students.

This research is motivated by the challenges for the implementation of Natural Science (IPA) learning at the elementary school level, especially in developing students' critical thinking skills. Based on initial observations, science learning is still dominated by the lecture method with a one-way nature, therefore students are less actively involved in the learning process and also do not have enough space to explore, analyze, and evaluate information in depth. As a result of these conditions, the development of students' critical thinking skills has not proven the results appropriately. The purpose of this study is to determine the extent of the influence of the gallery walk learning model assisted by infographics on the critical thinking skills of students on energy material in class IV elementary school. Through the use of this model, students are intended to be more active in observing, discussing, and reflecting on the material collaboratively, so that their critical thinking skills can be honed systematically. The learning model invites students to discuss and share ideas through infographic works that they create in groups and present together. It is an active and fun learning experience. The novelty in this research lies in the collaboration between the use of infographics as learning media and the gallery walk model that is typical of 21st century learning. Thus, this study hopes to be a new alternative, inspiring educators to develop science learning in a more fun, interactive way, leading to students. This study aims to analyze the differences in critical thinking skills of grade IV elementary school students in learning IPAS between groups that utilize the gallery walk learning model assisted by infographics and groups that utilize the direct learning model. In addition, this study also aims to determine how much influence the use of the gallery walk learning model assisted by infographics has on improving students' critical thinking skills on energy material. By comparing the two learning models, this research aims to provide empirical evidence regarding the effectiveness of the gallery walk model in encouraging the development of critical thinking skills at the basic education level.

2. Method

This research applies a quantitative approach. Quantitative approach is a research method by utilizing data in the form of numbers, graphs, and tables that are numerically analyzed through statistical techniques (Syahroni et al., 2022). The research design applied is a quasi experimental design (pseudo experiment). This research applies a nonequivalent control group design, which is a form of quasi-experimental design involving two groups, including a control group and an experimental group, the selection of subjects in each group is not carried out randomly. In this design, class IV A was determined to be the control group with 26 students, while class IV B was determined to be the experimental group with 28 students. This research was conducted during the 2024/2025 school year and took place at SDN Wedoro 1 Pandaan, which is located in Sentir Hamlet, RT 01 RW 04, Wedoro Village, Pandaan District, Pasuruan Regency.

Data collection was done using tests. The assessment consisted of essay questions that were distributed before and after the treatment, both in the experimental and control groups. Each question has assessment criteria and an assessment score. The control class received learning utilizing the direct learning model, specifically with energy material, while the experimental class was taught using the gallery walk learning model assisted by infographics adapted to the same topic. The results of the tests were analyzed to answer the research questions and test the hypotheses proposed. In the pre-test and posttest questions, there are indicators of critical thinking skills developed based on indicators adapted from Ennis in (Nur Adisty et al., 2021) which researchers use as a reference in making questions, some of the indicators of critical thinking skills that researchers use are (1) Analyzing Argument and answering clarifying questions, (2) showing reasons in a decision, (3) Considering a source and observation.

2.1. Research Procedure

There are three systematic steps in the implementation of this research, as follows

- a. The initial stage which includes preparation: includes curriculum analysis, preparation of teaching tools, and instrument validation.

- b. The core stage which focuses on the implementation of activities: includes giving pre-test, implementation of learning, and the last is the administration of the post-test.
- c. The final stage involves data collection and processing.

One of the characteristics of quantitative research is data analysis that is used by researchers to determine the relationship between variables (Irfan Syahroni et al., 2022). The data analysis technique utilized to manage the data collected for this study utilized parametric statistics, including the prerequisite test and T-test to analyze the data. Data were analyzed using the JASP program with descriptive and inferential analysis. For this study, the data were analyzed using two approaches. First, descriptive analysis was utilized in showing an overview of the pretest and posttest results in the form of mean, minimum, maximum, as well as standard deviation. Second, inferential analysis was applied in testing the hypothesis, which included normality test as a condition of data distribution, homogeneity test in seeing the similarity of variance between groups, and t-test to determine the significance of differences between experimental and control groups. The following is a table of statistical tests used by researchers. Salah satu ciri dari penelitian kuantitatif adalah analisis data yang dimanfaatkan peneliti dalam mengetahui hubungan antar variabel (Irfan Syahroni dkk., 2022).

Table 1. Statistical Test

No	Statistical Test	Purpose
1.	Normality Test	The normality test has the aim of knowing whether the data results are normal. Research there is distribution in normal distribution test. Normality test was carried out utilizing the program JASP via approach. Shapiro-Wilk test, considering that the number of samples utilized was less than than 50 learners. Decision-making criteria based on significance value (Sig.) in the Shapiro-Wilk test a data is declared not normally distributed, if the Sig. < 0.05, vice versa, a data is categorized as normally distributed if at a value of Sig. > 0,05.
2.	Homogeneity test	Test homogeneity utilizing Levene's Test in level significance level of 5%. This test was also analyzed through the JASP program. Criteria in determining data homogeneity based on the results of Levene's Test is if the Sig. value is <0.05, so the data can be concluded to be not homogeneous (different variants), while for Sig. >0.05, with thus able to concluded homogeneous (variants equal). After the data meet the requirements of normal distribution and
3.	T-test	The t-test is to test the difference in critical thinking skills scores between the the experimental group as well as the control group. The form of the test that was utilized is an independent sample t-test, which conducted on pretest and posttest data in two different classes. different classes. Decision-making criteria in the t-test, if for the value of Sig. < 0.05, so that there is a significant difference between the two groups. groups otherwise, if the Sig. > 0.05.

3. Results and Discussion

3.1. Results

a. Instrument Test Results

Before the instrument is used for research implementation, to ensure the accuracy and suitability of the research instrument, the validity and reliability test stages are carried out before the instrument is applied in the field. Content validation was carried out by two lecturers from relevant scientific fields, namely lecturers from the PGSD Study Program at State University of Malang, who acted as expert validators. The instrument validity test was carried out on the pre-test and post-test items using an assessment instrument in the form of a validation sheet with a scale of 1-5. The score of the assessment results from each validator is summed up, then compared to the maximum score that can be achieved, then converted into a percentage. The results of the validity

test are used to assess the feasibility and quality of the items as an instrument for evaluating students' critical thinking skills. The results of the validity test can be presented in

Table 2. Results of Validity Test by Expert Question Instrument

Instrument	Percentage Results		Description	
	V1	V2	V1	V2
Question instrument <i>Pre-test Post-test</i>	90%	80%	Very Valid	Very Valid

Referring to table 2 above, based on the results of the validity analysis, all 10 items in each instrument are categorized as valid and have met the eligibility requirements as an accurate measuring instrument in quantitative research. At the next stage, the test was conducted on Wednesday, May 14, 2025, which took place at Wedoro 2 Pandaan Elementary School with 25 respondents in the 2024/2025 school year and students had already taken energy change material. The results of the item validity test in the *pre-test* and *post-test* activities using the *Pearson Correlation* validity test with the help of the JASP program can be shown in tables 3 and 4 below.

Table 3. Pre-test and Post-test Question Validity Results

	No	Criteria	Question number	r tabel	Total
Pre-test Question	1.	Valid	1,3,5,6,10	0,599	5
	2.	Invalid	2,4,7,8,9	0,599	5
Post-test Question	3.	Valid	1,3,4,6,8,10	0,599	6
	4.	Invalid	2,5,7,9	0,599	4
Total					20

Data Source: JASP Statistical Analysis Output

Based on Table 3, the results of the item validity analysis show that out of a total of 10 question items on each pre-test and post-test instrument, there are 5 pre-test items and 6 post-test items that meet the validity criteria. Conversely, 5 questions on the pre-test and 4 questions on the post-test were declared invalid. An item is considered valid if the *p-value* of the analysis results is below 0.05 ($p < 0.05$), which means that there is a significant relationship between the item score and the total score. Thus, the pre-test and post-test instruments used for this study each consisted of 5 questions that had been tested for validity and were considered to represent all indicators of critical thinking skills measured.

The next step is the reliability test to see the consistency of the measurement of the instrument used. The instruments tested for reliability were pre-test questions and post-test questions. The calculation process of the test instrument was carried out after conducting a trial test which was carried out at SDN Wedoro 1 Pandaan Pasuruan with the help of the JASP program using the *Cronbach Alpha* statistical test. The calculated results obtained by *Cronbach alpha* results can be presented in table 5 below.

Table 4. Problem Reliability Test Results

Frequentist Scale Reliability Statistic			Cronbach's α
Estimate	Point Estimate	Pre-test	0.751
		Post-test	0.727

Data Source: JASP Statistical Analysis Output

Based on table 4. obtained the Cronbach'Alpha value on the pre-test question of 0.751 and on the post-test question of 0.727. Since the alpha value is more than $0.60 < \alpha \leq 0.80$, it can be said that

the reliability criteria on both questions are categorized as high, so this instrument can be used for research.

In the next stage, descriptive analysis. Descriptive analysis is descriptive information about the description of the data results obtained as a whole. The results of the data obtained in the form of pre-test and post-test scores from the control and experimental classes. The results of this description calculation were carried out using the help of JASP and Microsoft Excel.

3.1.2. Results of Data Analysis of the Effect of Critical Thinking Skills in Control and Experimental Classes

Control Class

a. Pre-test and Post test

Before the application of the direct learning model, students in the control class were given a pre-test as a measure of initial understanding of the material of Natural and Social Sciences (IPAS). The pre-test results prove that the average value (mean) obtained by students is a total of 50.8, in the lowest value of 42 and the highest value of 62. After the learning process using the direct learning model is completed, students are again given a post-test as a form of final evaluation. According to the post-test results, the average score increased to 63.8, for the lowest score of 52 and the highest score of 74. The results of the pre-test and post-test scores of the control class are in table 5 below.

Table 5. Descriptive Statistical Test of Control Class Pre-test Results

<i>Pre-test class</i>	N	Minimum	Maximum	Mean	Std.Deviation
control	26	42	62	50.8	4.896
<i>Post-test class control</i>	26	52	74	63.8	6.060

Data Source: JASP Statistical Analysis Output

Based on the table above, there is no visible improvement in learning achievement in the control class, the results of the pretest posttest analysis conducted using the direct learning model with an average pretest value of 50.8, it can be concluded that students' understanding of energy material is low. This proves that in order for students to understand the material, thus a more efficient learning strategy or model is needed. The average posttest score of the control class was 63.8, the posttest results only slightly increased after the use of the direct learning model. This slight increase means that students' understanding does not increase with the learning model.

Experiment Class

a. Pre-test and Post-test

In the experimental class before the treatment of the gallery walk learning model, a pre-test was conducted in measuring students' knowledge of IPAS material, especially with regard to energy



material. The pre-test results showed an average value (mean) of 53.8, the lowest value of 40 and the highest value of 64.

Figure 1. Giving Gallery Walk Model Treatment

In making infographics, the teacher no longer explains the material because the purpose of this activity is to measure the extent to which students' critical thinking skills after following lessons one and two are delivered. It also serves for learners to be able to apply the knowledge they have learned in a concrete context related to the life of the learners' environment. Learners with rotating groups observe the work of other groups and each group member has their own duties, member 1 as the guardian of the post, members 2 and 3 at the post provide responses and answer questions from other group members, members 4 and 5 go around and ask questions to other posts and take notes. The learning model applied will build the physical and mental activeness of students, encouraging them to be actively involved in every activity so that it can bring out critical thinking skills. Through this experience, learners are also familiarized to give and receive criticism, which is an important skill in self-development and social interaction. Thus, all these aspects contribute to character building and critical thinking that are necessary in everyday life.

In order to assess the effect of the learning process that has been provided by researchers, a *post-test* was distributed to students after being treated with the infographic-assisted *gallery walk* learning model. Based on *post-test* research data, the mean value is 89.5, the minimum value is 82 and the maximum value is 96. From these results, it can be seen that there is an increase in student learning achievement in the experimental class by utilizing the infographic-assisted *gallery walk* learning model. The following table will display the results of the *pre-test* and *post-test* of the experimental class

Table 6. Descriptive Statistical Test of Experimental Class *Pre-test* and *Post-test* Results

<i>Pre-test</i>	N	Minimum	Maximum	Mean	Std.Deviation
Class experiment	28	40	64	53.8	5.294
<i>Post-test</i> class experiment	28	82	96	89.5	4.168

Data Source: JASP Statistical Analysis Output

Students' understanding of energy material before and after applying the infographic-assisted gallery walk learning model is significantly different, according to the results of the pretest and posttest of the experimental class, the average pretest score is only 53.8 before using this learning model, the understanding of students is still low, it can be concluded that the need for intervention to increase knowledge of the material. Before using this learning model, students' understanding is still low, it can be concluded that the need for intervention to increase knowledge about the material. The posttest results proved a significant increase in learning achievement after the use of the gallery walk learning model in a greater range of scores than the pretest, the average score increased to 89.5. This proves that the use of the gallery walk learning model assisted by infographics improves students' critical thinking skills on material related to energy.

3.1.3. Hypothesis Test

1. Normality Test

The normality test in the data utilizes the shapiro-wilk statistical test to determine the amount of data showing normal or normally distributed criteria, for p-value (significance value for making data normality decisions).

Table 7. Normality Test of Pre-test and Post-test of Experiment Class

	<i>Test</i>	<i>Statistic</i>	<i>P-Value</i>
<i>Pre-test class experiment</i>	Shapiro- Wilk	0.957	0.303
<i>Post-test class experiment</i>	Shapiro- Wilk	0.932	0.068

Data Source: JASP Statistical Analysis Output

Based on table 7 above, it proves that the normality test for pre-test data in the experimental class is a p-value of 0.303 while for post-test data it gets a p-value of 0.068. The normality test results get a value > 0.05, which means that in line with the basis for taking the normality test, the pre-test and post-test data can be determined to have a normal distribution.

Table 8. Normality Test of Control Class *Pre-test* and *Post-test*

	<i>Test</i>	<i>Statistic</i>	<i>P-Value</i>
<i>Pre-test class control</i>	Shapiro-Wilk	0.971	0.646
<i>Post-test class control</i>	Shapiro-Wilk	0.922	0.051

Data Source: JASP Statistical Analysis Output

Based on table 8 above shows that, the normality test of the control class pre-test data is a p- value of 0.646 and the post-test data gets a p-value of 0.051. The normality test results get a value > 0.05, which means that according to the basis for taking the normality test, the pre-test and post-test data are determined to be normally distributed.

2. Homogeneity Test

Homogeneity test is a prerequisite test carried out in knowing whether the pre-test and post- test data are homogeneous or not, as a determination of the next test or t test.

Table 9. Homogeneity Test of Pre-test and Post-test Experiment Class

	F	df ₁	df ₂	p
Pre-test and Post-test class experiment	0.895	1.000	54.000	0.348

Data Source: JASP Statistical Analysis Output

The homogeneity test results based on table 11 obtained regarding the results in the pre-test and post-test are 0.348 (sig.>0.05). This proves that the post-test and pre-test in the experimental class are homogeneous (the same). Hypothesis testing is done through parametric statistical tests because the data is normally distributed.

Table 10: Homogeneity Test of *Pre-test* and *Post-test* of Control Class

	F	df ₁	df ₂	p
<i>Pre-test and Post-test class control</i>	1.505	1.000	50.000	0.226

Data Source: JASP Statistical Analysis Output

The homogeneity test results according to table 12 obtained regarding the pre-test and post- test results are 0.226 (sig.>0.05). This proves that the post-test and pre-test in the control class are homogeneous (the same).

3. T-Test Results

The type of t-test conducted for this study is the independent sample t-test utilizing the help of the JASP application at a significance of 0.05. Below are the results of the t-test in this study.

Table 11: Independent Sample T-test Results

	t	df	p
<i>Pre-test</i>	-1.959	52	0.056
<i>Post-test</i>	-18.265	52	<.001

Data Source: JASP Statistical Analysis Output

Based on table 11, the significance value of the t test for pre-test data is 0.056 (sig.>0.05). Thus there is no significant difference in the average value of the pre-test in the control class and the experimental class. This is evidenced by the average pre-test of the control class and the experimental class of 50.8 and 53.8. With a minimum value of 42 and 40 and a maximum value of 62

3.2. Discussion

3.2.1. Critical Thinking Skills of Learners in Experimental and Control Classes

In the 21st century and current technological developments, educators have the task of developing students' skills. In this case, the government supports the implementation of 21st century learning by designing the 2013 curriculum. In the 2013 curriculum, the learning process is expected to facilitate learners in developing creative and critical thinking skills, as well as improving skills to communicate and cooperate with other individuals. Learners need these skills because students will compete in the 21st century era, one of which is critical thinking skills. According to Saputra (2020) critical thinking skills are part of the cognitive thinking process that encourages students to rethink and evaluate a problem. Critical thinking skills include inductive thinking skills, such as recognizing, evaluating, analyzing causal relationships, drawing conclusions, and assessing data relevant to the problem at hand.

The gallery walk learning model according to Bzulolo (2022) is a discussion learning model that makes students dare to express their opinions in public and increase the cooperation and activeness of students in learning activities. The gallery walk learning model is one form of active learning which when implemented shows many opportunities for students to be directly involved. One of the aspects of critical thinking according to Robbert H in (Anggitasari et al., 2021) states that one of the main factors contributing to critical thinking skills is a focus on questions is an important aspect of critical thinking skills, where individuals can identify questions or problems faced and come up with definite answers. One of the main factors contributing to this critical thinking skill is creating infographics with the theme of each group and each member have their own tasks. Through this learning model, students do not just listen to explanations but also interact with other students by asking questions and answers at each gallery walk post. This process encourages meaningful learning because learners are involved in higher-level thinking processes, not just receiving information (Lestari S Wibowo, 2022).

The activities of the gallery walk learning model, students can be trained not only to receive information, but also to evaluate it critically, so as to strengthen critical thinking skills. The question and answer activities of each group during the gallery walk learning model not only train the courage of learners to communicate in public, but can convey arguments. In this process, it is the main component for students' critical thinking skills. This statement is in line with the results of research by Ramdani et al (2019) by proving that critical thinking skills can be obtained more easily if the learning model used in the learning activity process is appropriate. The learning model serves as a guide or reference in the implementation of learning. This statement is in accordance with Trianto's view in Alkalah (2022) which suggests that the learning model serves to guide teachers in designing the learning process. In addition, Rusman (2020) also emphasized that the learning model is a conceptual framework by describing the stages arranged to organize learning experiences in obtaining predetermined learning objectives.

This is in line with constructivism learning theory by focusing on the learning process when students actively build their knowledge through experience and interaction with the environment Piaget in (Mokalu et al., 2022). The gallery walk model is in line with constructivism learning theory

by explaining that learners will be able to understand the material better if they are active through teaching activities (Piaget in Mokalun et al., 2022). According to Ahdianto et al. (2024) critical thinking includes the skills of providing basic explanations, making decisions, making conclusions, and evaluation. All critical thinking skills are found in gallery walk activities. This is also reinforced by the results of research by Ningsih et al. (2023) by proving that the use of the Gallery Walk model is effective for training students' higher-level thinking skills, especially in terms of analyzing information, reflecting opinions, and presenting arguments clearly.

The application of the infographic-assisted gallery walk learning model in the experimental class proved that there was an increase in the critical thinking skills of students compared to the control class by applying the direct learning model. This statement is shown in the post-test results as well as the activities of students who are more active in expressing ideas, asking questions, as well as providing responses. In line with the research of Susanti et al. (2024), learning models that involve collaborative activities and information visualization such as gallery walk have proven effective in improving the critical thinking skills of elementary school students.

3.2.2. The Effect of the Application of Gallery Walk Learning Model Assisted by Infographics on Critical Thinking Skills

According to the results of research and hypothesis testing, evidence was obtained related to the Gallery Walk learning model assisted by infographics significantly influenced the improvement of critical thinking skills of class IV B students of SDN Wedoro 1 Pandaan, Pasuruan Regency. Analysis of post-test data with independent sample t-test obtained a significance value of < 0.001 ($\text{sig} < 0.05$), indicating that there is a significant difference between the experimental and control groups after the treatment is applied. With this significance value, the hypothesis testing decision is H_0 rejected and H_a accepted based on the significance value. These results prove that the use of the gallery walk learning model assisted by infographics significantly improves the critical thinking skills of fourth grade students of SDN Wedoro 1 Pandaan, Pasuruan Regency.

Similar results were also found in research conducted from Handayani et al. (2023), by proving that the application of the Gallery Walk learning model assisted by infographics positively and significantly improved students' critical thinking skills. This proves that the Gallery Walk model is able to create a learning environment that encourages active student involvement, group discussion, and reflection. In addition, in a study conducted by Rahmawati (2021), it was explained that the Gallery Walk model can increase students' active participation and also support the critical thinking process gradually and purposefully. Thus, the significant difference in results between the experimental group and the control group in this study can be seen through the indicators of the success of the gallery walk model in applying the learning model actively and leading to students. It can be concluded that the gallery walk learning model assisted by infographics positively and significantly improves students' critical thinking skills. Similar results were also found by Yuliana et al. (2021), who stated that the infographics used in Gallery Walk help students understand information visually and analyze it more easily.

This research is evidenced by the mean value of the post-test reaching 89.5 in the experimental class with the lowest score of 82 and the highest score of 96. However, the control class got an average (mean) of 63.8 in the lowest score of 52 and the highest score of 74. This shows a fairly high difference between these two classes. The average difference (mean) of post-test scores in the experimental class is 89.5 but the control class is only 63.8 with a large enough difference. The average value of the experimental class post-test is much more than the average pre-test which is 53.8, indicating that there is a significant development in critical thinking skills after utilizing the gallery walk learning model assisted by infographics. The results of the study are also in line with Praptiningtyas et al. (2020) which states that the gallery walk model makes students understand the material more easily because they are actively involved in learning through group work. The use of infographics as media in the gallery walk has a big role in helping students visualize information and strengthen students' memory. Communication skills developed during gallery walk activities also contribute to the improvement of learners' argumentation which is an important component in critical thinking (Dewi S Prasetya, 2023).

3.3. Findings

Based on the results of the research conducted by researchers, the findings from class 4 found that some learners are often sent home early if they have Quranic activities outside school or Quranic activities at home. Some learners also often get permission not to go to school. This condition makes not all learners able to carry out full learning activities at school. Some learners who are sent home early are often left behind in class. Koranic activities at home are considered very important by learners and parents. Thus, many learners choose to participate in Quran recitation activities even though they have to leave some learning time at school. In this finding, schools need to provide support so that learners can carry out Koranic activities without sacrificing their right to education.

Another finding is that Grade 4 learners prefer learning that is fun and involves physical activity, such as playing, and hands-on practice. Because in previous learning activities, Grade 4 teachers have never used learning models designed for active learners in the classroom and involving physical activity.

3.4. Conclusion

The results of the study prove that the application of the Gallery Walk model assisted by infographics shows a significant effect on improving students' critical thinking skills. This is evidenced in the experimental class experiencing an increase in value after the learning model is applied. The average value (mean) increased from 53.8 in the pre-test to 89.5 for the post-test. The minimum value increased from 40 to 82, but the maximum value increased from 64 to 96. This increase means that the Gallery Walk learning model is able to facilitate the learning process that fosters active involvement of students, including in expressing opinions, asking questions, and evaluating information through infographic media and group discussions. The difference in critical thinking skills between the experimental group and the control group proved significant. The results of the independent sample t-test in the post-test data proved a number < 0.001 (sig. < 0.05) for the significance value, therefore H_0 was rejected while H_a was accepted. This finding can be concluded that the Gallery Walk learning model assisted by infographics has a significant effect on improving the critical thinking skills of fourth grade students of SDN Wedoro 1 Pandaan. Suggestions for future research, it is recommended that the Gallery Walk model be further developed by involving other visual media variations or combined with technology-assisted approaches to reach a wider range of learning styles.

Author Contributions

All authors have contributed equally to this paper. All authors have read and approved the final manuscript. The following is a description of the authors' contributions to this study. Amalia Nur Fany: Conceptualization, Methodology, Data Curation, Investigation, Writing - Original Draft, Visualization. Esti Untari, S.Pd., M.Pd: Corresponding Author, Methodology, Supervision, Writing - Review and Editing. Titis Angga Rini, S.Pd., M.Pd: Supervision, Writing - Review and Editing.

Funding

No financial support was received, funds for the implementation of the research came from the author's personal funds.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Acknowledgement (Optional)

Recognize those who helped in the research, especially funding supporter of your research. Include individuals who have assisted you in your study: Advisors, Financial supporters, or may another supporter, i.e. Proofreaders, Typists, and Suppliers, who may have given materials. Do not acknowledge one of the authors names.

References

- Ahdhianto, E., Masula, S., Thohir, M. A., & Khotimah, K. (2024). Pengembangan E-modul berbantuan PBL untuk meningkatkan keterampilan pemecahan masalah dan berpikir kritis siswa sekolah dasar. *Jurnal Math Educator Nusantara: Wahana Publikasi Karya Tulis Ilmiah Di Bidang Pendidikan Matematika*, 10(1), 167–178. <https://doi.org/10.29407/jmen.v10i1.22376>

- Alkalah, C. 2022. Indikator Model Pembelajaran. 19(5), 1–23.
- Anggitasari, V., Widyaningrum, T., & Utari, S. (2021). PENGEMBANGAN BERPIKIR KRITIS MELALUI ANALISIS JURNAL (Vol. 1, Issue 1).
- Dewi, N. R., & Prasetya, A. (2023). Kolaborasi dan komunikasi dalam pengembangan berpikir kritis siswa. *Jurnal Pendidikan Inovatif*, 9(2), 77–88.
- Handayani, T., Widodo, S., & Lestari, I. (2023). Pengaruh pembelajaran aktif berbantuan media visual terhadap keterampilan berpikir kritis siswa. *Jurnal Teknologi Pendidikan Dasar*, 11(1), 45–57.
- Hatimakusarina, N., Jayanti, M. I., & Nurfathurrahmah. (2022). Penerapan Metode Gallery Walk Terhadap Motivasi Belajar Dan Hasil Belajar Siswa Kelas VIII SMP Islam Al-Faat Bara Tahun Pelajaran 2022/2023.
- Hayati, M., & Salam, R. (n.d.). Pengaruh Penerapan Model Pembelajaran Gallery Walk Terhadap Hasil Belajar IPA Siswa Kelas IV SDN 6 Bilacaddi Kecamatan Pattalassang Kabupaten Takalar The Effect Of The Application Of The Gallery Walk Learning Strategy On The Science Learning Outcomes Of Fourth Grade Students Of Sdn 6 Bilacaddi Pattalassang District Takalar Regency.
- Irfan Syahroni, M., STIT Al-Aziziyah, D., TGH Umar Abdul Aziz kapek Gunung Sari Lombok Barat, J. I., & pos, kode. (2022a). PROSEDUR PENELITIAN KUANTITATIF. *Jurnal Al-Musthafa STIT Al- Aziziyah Lombok Barat*, 43(3).
- Irfan Syahroni, M., STIT Al-Aziziyah, D., TGH Umar Abdul Aziz kapek Gunung Sari Lombok Barat, J. I., & pos, kode. (2022b). PROSEDUR PENELITIAN KUANTITATIF. *Jurnal Al-Musthafa STIT Al- Aziziyah Lombok Barat*, 43(3).
- Lestari, P., & Wibowo, H. (2022). Pembelajaran aktif untuk meningkatkan keterampilan berpikir kritis siswa sekolah dasar. *Jurnal Inovasi Pendidikan Dasar*, 6(3), 100–110.
- Mokalu, V. R., Panjaitan, J. K., Boiliu, N. I., & Rantung, D. A. (2022). Hubungan Teori Belajar dan Teknologi Pendidikan. *EDUKATIF : JURNAL ILMU PENDIDIKAN*, 4(1), 1475–1486. <https://doi.org/10.31004/edukatif.v4i1.2192>
- Ningsih, A., & Sari, M. (2023). Penerapan Model Gallery Walk untuk Meningkatkan Berpikir Kritis Siswa Sekolah Dasar. *Jurnal Pendidikan Dasar*, 15(2), 112–120.
- Nur Adisty, A., Hasanah, N., Pgsd, P., & Kusuma Negara, S. (2021). Prosiding Seminar Nasional Pendidikan STKIP Kusuma Negara III Analisis Keterampilan Bepikir Kritis Pada Pembelajaran Ilmu Pengetahuan Alam (IPA).
- Praptiningtyas, D. A., Sari, P. P., & Kurniawan, R. (2020). Penerapan model gallery walk dalam meningkatkan hasil belajar dan berpikir kritis siswa. *Jurnal Pendidikan Dasar Nusantara*, 6(1), 56–65.
- Purwasila, G. E. J., Pujani, N. M., & Sujanem, R. (2024). Model Pembelajaran Flipped Clasroom Berbasis Stem Meningkatkan Keterampilan Berfikir Kritis Dan Hasil Belajar Ipa Siswa. In *Jurnal Pendidikan dan Pembelajaran IPA Indonesia* (Vol. 14, Issue 1).
- Putri, E. A., Sari, P. M., Anitra, R., & Sulistri, E. (2021). PENGARUH MODEL PEMBELAJARAN GALLERY WAL TERHADAP HASIL BELAJAR IPA SISWA KELAS V SDN 84 SINGKAWANG. *Pedagogi: Jurnal Penelitian Pendidikan*, 8(2). <https://doi.org/10.25134/pedagogi.v8i2.4929>
- Rahmawati, D. (2021). Efektivitas Model Gallery Walk dalam Meningkatkan Partisipasi dan Berpikir Kritis Siswa. *Jurnal Inovasi Pembelajaran*, 10(1), 25–34.
- Ramdani, D., Popo, J., Kamil, M., Liah Badriah, J., Biologi, J. P., Keguruan, F., & Pendidikan, I. (2019). PENGARUH METODE PEMBELAJARAN GALLERY WALK TERHADAP KETERAMPILAN BERPIKIR KRITIS SISWA PADA MATERI SISTEM PERTAHANAN TUBUH (The Infuence of Gallery Walk Learning Method on Students Critical Thinking Ability on Body Defense System Material) 1).
- Rusman. (2020). *Model-model Pembelajaran: Mengembangkan Profesionalisme Guru*. Jakarta: Rajawali Pers.
- Saputra, H. (2020). Keterampilan Berpikir Kritis Matematis. *Artikel*.
- Susanti, I., Maulidah, N., & Fahmi, M. (2024). Efektivitas model gallery walk berbantuan media visual dalam meningkatkan keterampilan berpikir kritis siswa SD. *Jurnal Pendidikan Inovatif*, 10(1), 112–123.
- Untari, E., Lilik Bintartik, dan, & Ir Soekarno No, J. (2019). PEMANFAATAN DAN PEMBUATAN MEDIA MATEMATIKA DAN IPA BERBANTUAN INOVASI BAGI GURU SEKOLAH DASAR DI KOTA BLITAR. 2(3), 147–154.
- Untari, E., Tiansi Noppy, F. P., & Utama, C. (2024). ANALISIS MUATAN 4C DALAM BUKU IPAS KELAS IV SEKOLAH DASAR KURIKULUM MERDEKA. 1 Nomor 1. <https://e-jurnal.mediainsancreative.org/index.php/ipnu>
- Yuliana, R., & Ardiansyah, F. (2021). Visualisasi informasi sebagai alat bantu pengembangan keterampilan berpikir kritis siswa. *Jurnal Edukasi Visual*, 5(2), 90–98.