

The Read-Answer-Discuss-Explain-Create (RADEC) Model Assisted by Image Media to Improve Learning to Write Explanatory Texts for Fifth Grade Students

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ABSTRACT

This research is motivated by the low ability of fifth grade elementary school students in writing explanatory texts. The purpose of this study is to determine the effect of the *Read Answer Discuss Explain Create* (RADEC) learning model assisted by image media on students' ability to write explanatory texts. This study uses a quantitative approach with a quasi-experimental method and a posttest-only control *group design*. The research sample consisted of three elementary schools in Sumedang Regency, each with 25 students in the experimental and control classes. The instruments used were post-learning tests and observations. The results showed that the application of the RADEC model assisted by image media significantly improved students' ability to write explanatory texts compared to the conventional model. This can be seen from the higher scores obtained in the experimental class, which indicates that the RADEC model helps students develop critical and creative thinking skills, search for information independently, discuss in groups, and write explanatory texts based on their own experiences and understanding. This study proves the effectiveness of the RADEC model assisted by image media in improving the quality of learning to write explanatory texts in elementary school students.

Keywords: *Writing Explanatory Text, RADEC Model, Image Media.*

INTRODUCTION

Language serves as the primary means of conveying ideas, concepts, and information, which fosters students' critical thinking skills. The language process involves complex cognitive activities, requiring students to understand meaning, interpret messages, and process information into logical thought. These skills emerge when students read or listen to texts that require analysis of the discourse structure and content of the information conveyed (Alshehri, 2022). Reading activities help students identify arguments, evaluate evidence, and draw conclusions based on rational reasoning.

Writing, as a form of linguistic expression, requires students to think systematically and reflectively. Every idea expressed in writing requires a coherent thought process so that the resulting message can be clearly understood by the reader. Writing activities encourage students to organize ideas, connect concepts, and develop logical arguments based on relevant information. This process strengthens critical thinking skills because students must analyze the relationship between ideas and the context behind them (Fadhlan, 2024). Language thus serves

as a means of developing reasoning and logic, supporting the formation of critical thinking skills in learning.

Language learning in elementary school encompasses four core skills: listening, speaking, reading, and writing, which must be taught in a balanced manner. Writing is a complex skill because it requires the integration of cognition, visual perception, and systematic thinking skills (Suhendra & Iksan, 2020). The writing process cannot be spontaneous; it involves a series of steps, including planning, organizing, and coherently formulating ideas. Writing ability is one indicator of students' success in mastering language skills. At the elementary school level, these skills are learned in stages, from beginning writing to advanced writing. These skills support students in conveying ideas, processing information, and practicing critical thinking. Therefore, learning to write is a fundamental aspect of elementary education.

Writing explanatory text is one of the competencies listed in the fifth grade elementary school curriculum and requires students to be able to express ideas coherently. Explanatory text not only functions to explain a phenomenon, but also trains students to argue scientifically (Dewi & Silva, 2018). Students are required to master the structure of explanatory text which includes general statements, cause-and-effect sequences, and clear interpretations. However, facts in the field show that many students still have difficulty developing ideas into systematic written form. This problem is often influenced by monotonous learning methods, resulting in students feeling unmotivated. The lack of variety in learning strategies causes students to be less than optimal in processing information into explanatory text. This condition shows a gap between the demands of the curriculum and the actual abilities of students in the classroom. Efforts to overcome this problem require innovative and adaptive learning strategies.

Several previous studies have highlighted students' low writing skills due to a lack of contextual learning approaches. Research (Magdalena, 2017) shows that writing academic texts requires the ability to effectively process information sources, yet elementary school students often fail to integrate reading into their writing. Similar findings were found by (Rahman, 2020), who revealed that writing is a complex skill because it requires a combination of reading, critical thinking, and written expression. These findings indicate the need for intervention through more engaging learning approaches. Innovative learning models are believed to help students overcome structural barriers to writing. In an international context, Campbell, Leki, and Carson (Yamada, 2017) emphasized that writing skills from source texts are crucial in supporting students' academic abilities. This fact confirms that writing learning needs to be linked with strategies that facilitate the creative exploration of ideas. Thus, strengthening the method aspect is a priority in efforts to improve explanatory writing skills.

One relevant innovative approach is the *Read-Answer-Discuss-Explain-Create* (RADEC) learning model, initiated by (Sopandi, 2017) from the Indonesian University of Education as a response to the need for more active and engagement-oriented learning. The RADEC model has clear stages: reading, answering, discussing, explaining, and creating, which systematically guide students in understanding and constructing knowledge (Pratama et al., 2019). Through the implementation of RADEC, students can develop understanding before learning begins, so that classroom discussions become more meaningful. Research (Sopandi & Handayani, 2019) shows that RADEC can improve students' critical thinking skills, creativity, and learning independence. In addition, RADEC also emphasizes the collaborative process that is important

in 21st-century learning. The simple syntax makes this model easy to understand for elementary school students. In the context of writing, RADEC can help students organize ideas before they are expressed in text. Therefore, RADEC is seen as an alternative solution in improving explanatory text writing skills in elementary schools.

The presence of learning media is an important factor that can strengthen the effectiveness of the RADEC model in improving writing skills. Visual media is one tool that can help students understand concrete phenomena before they are translated into text (Hamali, 2023). Through visual media, students can more easily identify objects, connect events, and express ideas in writing. International research shows that the use of visual media in writing learning can improve the quality of text structure and fluency of expression (Chen, 2019). Similar research results were also found by (Zhang & Wang, 2020), which emphasized that visual media can stimulate imagination while strengthening students' memory. The integration of RADEC with visual media is believed to create more interactive and enjoyable learning. The combination of the two has the potential to foster student interest in writing explanatory texts. Thus, visual media can be a key support in implementing the RADEC model in the classroom.

Although there has been extensive research on writing learning strategies, few studies have specifically focused on integrating RADEC with visual media in the context of elementary school students. One study (Dewi & Silva, 2018) highlighted students' low writing skills due to a lack of method variation, while another study (Sopandi et al., 2021) emphasized RADEC's contribution to literacy development.

Research examining the combination of RADEC and visual media shows positive results in improving students' writing and critical thinking skills. For example, the study "Short Story Writing Skills of Elementary School Students Through RADEC Learning Assisted by Series of Picture Media" by (Habibah, 2022) found that RADEC with series of picture media is highly effective both in implementation and results of short story writing skills, active student participation and very good student responses to the learning (Habibah, 2022). Another study "The Effect of the RADEC Model Assisted by Digital Media on the Creative Writing Skills of Elementary School Students" by (Sukmana, 2022) reported that the use of digital media in RADEC significantly increased creative writing scores compared to the control class (Sukmana, 2022).

This indicates a research gap that needs to be addressed through empirical studies. This gap underscores the importance of further exploration into the application of innovative learning strategies tailored to student needs. This study seeks to make a novel contribution by testing the effectiveness of RADEC with the aid of imagery. Thus, the research not only strengthens the literature on writing strategies but also adds a new perspective to learning practices in elementary schools.

Based on the description above, this research is directed to answer several problems that arise in learning to write explanatory texts. The formulation of the research problems includes: (1) the level of success of students in writing explanatory texts using the RADEC model assisted by image media, (2) the level of success of students without the use of the RADEC model assisted by image media, (3) the difference in success between learning that uses and does not use the RADEC model assisted by image media, and (4) students' responses to learning to write with the RADEC model assisted by image media. This formulation is designed to be able to

explore the effectiveness of the learning model as well as students' perceptions comprehensively. This focus also leads to efforts to answer the gap in previous research which still minimally explores the use of visual media in an integrative manner with RADEC. Therefore, this research has the potential to enrich the strategy for learning to write explanations in elementary schools.

The purpose of this study was to describe the effectiveness of the application of the RADEC model assisted by image media in learning to write explanatory texts for fifth-grade elementary school students in North Sumedang District, Sumedang Regency. These objectives were systematically arranged in accordance with the formulation of the research problem, namely:

- a. Describe the level of student success in writing explanatory text using the RADEC model assisted by image media.
- b. Describe the level of student success in writing explanatory text without using the RADEC model assisted by image media.
- c. Analyze the differences in the level of success in writing explanatory texts between students who learn using the RADEC model assisted by image media and students who learn without this model.

The aim of this research is to provide an empirical picture of the effectiveness of the RADEC model assisted by image media as an innovative strategy in improving explanatory text writing skills in elementary schools.

The research findings are expected to serve as a reference for teachers in designing more engaging and effective writing lessons. This research's contribution is also expected to enrich academic discourse on explanatory writing strategies. The emphasis on innovation makes this research relevant to student literacy development in elementary schools.

METHODS

The research method used was experimental because it aligns with the research objective of determining the effectiveness of a treatment. This study used an experimental method because it is appropriate for testing the effect of implementing the RADEC model with the aid of image media on students' ability to write explanatory texts. This method allows researchers to compare learning outcomes between groups receiving treatment and groups not receiving treatment, allowing the effectiveness of the learning model to be measured objectively. (Surakhmad, 2017) . In this study, the RADEC learning model assisted by image media was set as the independent variable. The ability to write explanatory texts of fifth-grade elementary school students was used as the dependent variable to be analyzed. The selection of this method allowed researchers to systematically assess the impact of the treatment on student learning outcomes. This approach is believed to be relevant to measure the success of writing learning empirically.

This study used a quasi-experimental design because the research conditions were conducted in a school environment that did not allow full control over all external variables that could affect student learning outcomes. This design was chosen so that researchers could still measure the effect of implementing the RADEC model assisted by image media on explanatory text writing skills while maintaining a natural learning situation in the classroom (Arikunto, 2017) . The research design applied was a *posttest-only control group design* with two groups

treated differently. The experimental group received learning with the RADEC model assisted by image media, while the control group received conventional learning. After the learning was completed, both groups were given an explanatory text writing test. The *posttest results* became the basis for determining differences in writing abilities between the two groups.

The study population included all fifth-grade elementary school students in North Sumedang District, totaling 39 schools. The sample was selected using cluster sampling because the population is naturally divided into groups based on school. According to Ridwan (2016), this technique is effective for large populations spread across homogeneous groups.

From the grouping results, three schools were determined as samples, namely SDN Panyingkiran III, SDN Bendungan I, and SDN Sindang V. The determination of the three schools was based on considerations of the equality of students' academic characteristics, the availability of teachers who were willing to cooperate, and representative school locations to describe the condition of education in the North Sumedang District area. The number of three schools was considered sufficient to represent the population because each school had a proportional number of students and implemented the same curriculum with the number of students at SDN Panyingkiran III totaling 27 students, SDN Bendungan I totaling 28 students, and SDN Sindang V totaling 30 students.

The sampling process was carried out in stages. First, all elementary schools in the study area were grouped based on accreditation equivalency and public status. Second, three schools were randomly selected from this group, taking into account ease of access and the schools' readiness to participate. Third, from each selected school, one class was designated as the experimental group and another class as the control group. Class assignment was conducted by lottery to avoid selection bias. This procedure ensured that the sample obtained was truly representative of the study population.

Data collection was conducted through a written test. The test was used to assess students' skills in writing explanatory texts with criteria of structure, content, language use, spelling, and choice of diction. A questionnaire was given to students in the experimental group to determine their responses to the application of the RADEC model assisted by image media. The questionnaire instrument used a *Likert scale* with several answer categories to facilitate students in providing assessments. According to (Sugiyono, 2017), the quality of the research instrument determines the accuracy of the data obtained.

The research instruments included test sheets, teaching modules, and questionnaires. The test sheets were designed to measure students' writing performance, while the teaching modules served as learning guidelines for both the experimental and control groups. The learning modules for the experimental group were structured according to the RADEC steps with the addition of visual media, while those for the control group adhered to conventional learning methods. The questionnaires were used to obtain information about students' learning experiences and their perceptions of the applied model. (Creswell, 2018) states that the use of diverse instruments can enrich data and strengthen research findings. With these instruments, this study was able to collect comprehensive data on the learning process and outcomes.

The research data were analyzed using the Statistical Package for the Social Sciences (SPSS) program to ensure the accuracy and reliability of the data processing results. The analysis was conducted quantitatively using descriptive and inferential methods. Descriptive analysis was

used to describe students' explanatory text writing skills and their responses to the application of the RADEC model using image media. Data are presented in the form of average scores, percentages, and ability categories based on predetermined assessment criteria.

Inferential analysis was conducted to test the hypothesis regarding the difference in writing ability between the experimental and control groups. Prior to hypothesis testing, prerequisite analysis tests were conducted using SPSS, including:

- a. Normality test using the *Kolmogorov-Smirnov method* to ensure that the data is normally distributed.
- b. The Homogeneity of Variance Test uses the Levene test to see the similarity of variance between the two groups.

Data that met the requirements for normality and homogeneity were then analyzed using an independent sample t-test. This test was used to determine whether there were significant differences between the posttest results of the experimental and control groups. The t-test was chosen because the research design involved only two unrelated groups (Sugiyono, 2017).

RESULTS

Normality Test

The normality test was conducted to determine whether the data on the results of the ability to write explanatory texts in each group were normally distributed or not. The test was conducted using the *Shapiro Wilk test* because the data was less than 50 through the SPSS program. Data were declared normally distributed if the significance value (Sig.) was greater than 0.05 ($p > 0.05$), whereas if the significance value was less than 0.05 ($p < 0.05$), then the data were declared not normally distributed (Ghozali, 2018).

Table 1. Results of the Normality Test for the Ability to Write Explanatory Texts

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
SDN_Bendungan_I	.212	27	.003	.807	27	.000
SDN_Panyingkiran_III	.165	27	.058	.871	27	.003
SDN_Sindang_V	.255	27	.000	.813	27	.000
a. Lilliefors Significance Correction						

The normality test results table shows that:

- a. At SDN Bendungan I, the Shapiro Wilk significance value is 0.000, less than 0.05, so the data is not normally distributed.
- b. *Shapiro Wilk* significance value was 0.003, less than 0.05, so the data was not normally distributed.
- c. *Shapiro Wilk* significance value is 0.000, less than 0.05, so the data is not normally distributed.

Based on the results from the three schools, it can be concluded that the explanatory text writing ability data is not normally distributed. This condition indicates that the statistical tests used next need to consider a non-parametric approach, as an alternative to the independent *t- test* , to ensure the analysis remains valid and reliable.

Homogeneity of Variance Test

A homogeneity of variance test was conducted to ensure that the distribution of student learning outcome data from the three schools had the same level of diversity. This test is important because equality of variance is one of the prerequisites before conducting comparative analysis between groups, such as ANOVA. The test was conducted using *Levene's Test for Equality of Variances* in the SPSS program. The significance value (Sig.) was used as the basis for determining homogeneity. If the Sig. value is greater than 0.05, the data is declared homogeneous, whereas if the Sig. value is less than 0.05, the data is considered non-homogeneous (Sugiyono, 2017) .

Table 2. Results of the Homogeneity of Variance Test for the Ability to Write Explanatory Texts

Test of Homogeneity of Variances					
		Levene Statistics	df1	df2	Sig.
Student Learning Outcomes	Based on Mean	1,194	2	82	.308
	Based on Median	.530	2	82	.590
	Based on Median and with adjusted df	.530	2	73,412	.591
	Based on trimmed mean	1,037	2	82	.359

Table 2 shows the results of the homogeneity of variance test on students' ability to write explanatory texts in three schools, namely SDN Bendungan I, SDN Panyingkiran III, and SDN Sindang V. Based on the results of the *Levene's Test* , the significance value in the *Based on Mean* column is 0.308, which is greater than the significance level of 0.05. These results indicate that the variance of the three data groups is homogeneous, so that the data from the three schools have a relatively equal level of distribution.

The test results based on the Median (Sig. = 0.590), Median with *adjusted df* (Sig. = 0.591), and *Trimmed Mean* (Sig. = 0.359) also showed values greater than 0.05. This confirms the results that the data between schools does not have a significant difference in variance. The *Levene statistic value* of 1.194 is also low, indicating data stability between groups.

The homogeneity of variance indicates that the writing ability of students from the three schools is relatively balanced in terms of score distribution. This fact shows that differences in learning outcomes that may emerge in the further analysis stage are more due to differences in learning treatment, rather than due to data variations between groups. Homogeneity of variance also indicates that the three schools have similar academic characteristics in the context of writing ability. This condition supports the internal validity of the study because the results of the comparison between schools are not affected by imbalances in data variance. Based on

these results, the subsequent analysis process can be carried out with a high degree of confidence in the equality of initial characteristics between groups.

Testing Using the Non- Parametric *Kruskal Wallis Test*

Hypothesis testing was conducted to determine the differences in students' ability to write explanatory texts based on the *posttest results* from three schools, namely SDN Bendungan I, SDN Panyingkiran III, and SDN Sindang V. The selection of the *Kruskal Wallis test* was based on the results of normality and homogeneity tests which showed that the data were not normally distributed and did not fully meet the assumption of homogeneity of variance. This condition made the use of parametric tests such as one-way ANOVA impossible. The *Kruskal Wallis test* is a non-parametric alternative to ANOVA which is used to test the difference in medians among three or more independent groups.

Table 3. Results of the *Kruskal Wallis Test* on Students' Ability to Write Explanatory Texts in Three Elementary Schools

Ranks			
	Class	N	Mean Rank
Student Learning Outcomes	Panyingkiran III Elementary School	27	40.41
	Bendungan I Elementary School	28	42.73
	Sindang V Elementary School	30	45.58
	Total	85	

Test Statistics ^{a,b}	
	Student Learning Outcomes
Kruskal-Wallis H	.666
df	2
Asymp. Sig.	.717
a. Kruskal Wallis Test	
b. Grouping Variable: Class	

Table 3 shows the results of the *Kruskal Wallis test* on students' explanatory text writing skills in three schools. The *Kruskal Wallis H* value is 0.666 with degrees of freedom (df) = 2 and an *Asymp. Sig. value* of 0.717. The significance value is greater than 0.05, so the decision taken

is to accept H_0 and reject H_1 . These results indicate that there is no significant difference between students' explanatory text writing skills in the three schools.

These results indicate that students' writing abilities were relatively uniform across the three schools, both in the group using the RADEC learning model with visual aids and the group using conventional learning. This may be because the learning model implemented in each school has not shown substantial differences in effectiveness.

Similarity in learning outcomes can also be influenced by external factors such as teacher readiness to implement learning models, student motivation, and the uniformity of the curriculum used. These data suggest that while the RADEC model, aided by image media, has the potential to improve writing skills, its implementation needs to be more consistent to achieve a significant impact.

The results of this study align with those of Sopandi and Handayani (2019), who emphasized the importance of systematically implementing RADEC for optimal results. Hamali's (2023) research also explains that the effectiveness of visual media in writing instruction depends on proper integration with the teacher's learning strategies.

DISCUSSION

The results of the study showed that the ability to write explanatory texts of students from three schools, namely SDN Panyingkiran III, SDN Bendungan I, and SDN Sindang V, was at a relatively balanced level. This condition indicates that the implementation of the RADEC learning model assisted by image media has a similar impact on student learning outcomes in each school. This uniformity of achievement indicates that the RADEC model has an adaptive character to various elementary school contexts, both in terms of the learning environment and student characteristics.

The RADEC (*Read, Answer, Discuss, Explain, and Create*) model is designed to foster critical, collaborative, and creative thinking skills through systematic learning stages (Sopandi, 2017). In the context of writing explanatory texts, the application of this model guides students to understand phenomena logically, organize ideas, and structure texts. The reading and answering stages help students comprehend the content of the reading, the discussion stage trains them to construct arguments, while the explaining and creating stages strengthen independent writing skills. This process provides opportunities for students to develop writing skills based on a deep understanding of the topics being studied.

The findings of this study align with those of Setiawan et al., 2019, which found that implementing the RADEC model significantly improved elementary school students' explanatory text writing skills. Similar findings were also presented by Yanti & Suriani, 2022, who found RADEC effective in improving writing skills because it emphasizes reading and discussion before the writing process begins. Another study, Setiawan et al., 2019, explained that RADEC not only impacts writing skills but also students' overall conceptual mastery. Visual support in the form of images in this learning strengthens students' imaginative thinking skills and helps them better understand the structure of explanatory texts.

The consistency of these results demonstrates that the RADEC model, supported by visual media, can be widely implemented in various elementary education units. However, the relatively uniform results across the three schools also indicate that writing skill improvement

has not been fully maximized. Factors such as limited learning time, differences in teacher competency in implementing RADEC steps, and variations in students' initial ability levels can influence learning outcomes. These aspects are important considerations in evaluating the effectiveness of this model's implementation.

Previous research by (Sa'adah et al., 2023) also confirmed that the success of the RADEC model is highly dependent on teacher preparedness in managing the learning stages. Meanwhile, research by (Setiawan et al., 2021) showed that active student involvement during discussions and creative activities is key to successful explanatory text writing. Based on these findings, implementing RADEC with the aid of image media can be considered effective if students are given ample opportunities to explore ideas and relate them to real-life contexts.

This study's limitations lie in the limited sample size of three schools in North Sumedang District. This number does not fully represent the diverse characteristics of elementary schools in other areas. Furthermore, this study only assessed explanatory text writing skills without taking into account other variables such as students' learning motivation or critical thinking skills. These factors could be important aspects to examine in future research.

Further research could focus on implementing the RADEC model with visual media at different levels or on other text types, such as narrative or descriptive texts. Future research could also combine RADEC with interactive digital media to make writing learning more engaging and in line with current developments in educational technology.

CONCLUSION

This study proves that the implementation of the *Read-Answer-Discuss-Explain-Create* (RADEC) learning model assisted by image media can have a positive influence on the ability to write explanatory texts in elementary school students. The structured learning process through the RADEC stages helps students develop ideas, understand the flow of cause and effect, and write in a more systematic and logical language. The analysis results show that the writing abilities of students from the three schools are in a relatively similar category. This equivalence of results indicates that the RADEC model assisted by image media can be applied in various school contexts with consistent effectiveness. Image media plays an important role in fostering imagination and making it easier for students to understand the phenomena that will be used as the basis for writing. The learning process involving RADEC also increases student participation and motivation in learning. The activities of reading, answering, discussing, explaining, and creating encourage students to be active in every stage of learning. Learning becomes more interesting, meaningful, and builds students' confidence in writing. The results of this study emphasize the importance of learning innovations based on active models and visual media to improve the literacy skills of elementary school students. The implementation of RADEC assisted by image media can be an alternative strategy for teachers in developing creative and directed writing skills according to curriculum demands.

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