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THE EFFECT OF RADEC LEARNING MODEL ON STUDENTS' SELF-EFFICACY IN ELEMENTARY SCHOOLS IN CIREBON CITY

PENGARUH MODEL PEMBELAJARAN RADEC TERHADAP SELF-EFFICACY SISWA DI SEKOLAH DASAR KOTA CIREBON

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Abstract

The purpose of this study was to examine the effect of the RADEC (Read, Answer, Discuss, Explain, and Create) learning model on students' self-efficacy. This study used an experimental method with a pretest-posttest control group design. The population in this study consisted of fifth-grade students at SDN Sekecamatan Kesambi, Cirebon City, which holds an A accreditation. The sample consisted of 21 students from SDN Mega Eltra, the experimental group, and 26 students from SDN Karya Winaya, the control group. Data were collected using a self-efficacy questionnaire. Statistical tests included normality, homogeneity, the Mann-Whitney U test, and the N-Gain test. The analysis results showed moderate N-gain scores in the experimental group and low N-gain scores in the control group. This analysis suggests that the implementation of the RADEC learning model has a more significant impact on improving students' self-efficacy compared to the conventional image-assisted learning model, even after accounting for the initial score differences between the two groups.

Keywords: *RADEC Learning Model, Self-efficacy, Elementary School Students*

Abstrak

Tujuan penelitian ini adalah untuk menguji pengaruh model pembelajaran RADEC (Read, Answer, Discuss, Explain, and Create) terhadap efikasi diri siswa. Penelitian ini menggunakan metode eksperimen dengan desain pretest-posttest control group. Populasi dalam penelitian ini adalah kelas V di SDN Sekecamatan Kesambi, Kota Cirebon dan memiliki Akreditasi A. Sampel penelitian terdiri dari 21 siswa dari SDN Mega Eltra sebagai kelompok eksperimen dan 26 peserta didik dari SDN Karya Winaya yang berfungsi sebagai kelompok kontrol. Data dikumpulkan dengan menggunakan instrumen berupa kuesioner efikasi diri. Uji statistik meliputi uji normalitas, homogenitas, uji Mann-Whitney U, dan N-Gain. Hasil analisis menunjukkan skor N-gain berkategori sedang pada kelompok eksperimen dan skor N-gain berkategori rendah pada kelompok kontrol. Analisis ini menunjukkan bahwa penerapan model pembelajaran RADEC memberikan dampak yang lebih signifikan dalam meningkatkan efikasi diri siswa dibandingkan dengan model pembelajaran konvensional berbantuan gambar, bahkan setelah mempertimbangkan perbedaan skor awal antara kedua kelompok.

Kata Kunci: *Model Pembelajaran RADEC, Self-efficacy, Siswa Sekolah Dasar*

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1. Introduction

Education is the development of student behavior to foster independence and character. Education does not only emphasizes cognitive aspects but also the balance of intellectual, emotional, and spiritual intelligence to prepare students to face life's challenges in the future (Antonio, Camba, Matibag, & Conde, 2022; Rasyid, Fajri, Wihda, Ihwan, & Agus, 2024). Education is a fundamental aspect in developing quality, inclusive human resources that can think critically and creatively and behave morally (Khairiyah & Dewinda, 2022; Sudarma, 2022). The primary school subject in the dominant national curriculum used worldwide is Mathematics, as it can influence the development of logical, analytical, systematic, and problem-solving skills (Fauzan & Anshari, 2024). Mathematics in elementary school enables students to gain the confidence to apply it in daily activities and work on math problems (Sari & Putri, 2024).

One of the key elements that motivate students to learn mathematics is self-efficacy. Self-efficacy is related to a student's confidence in understanding and completing academic assignments according to their abilities. To enhance students' self-efficacy in learning mathematics, it is essential to implement an engaging and experiential learning model (Sari, Hayati, Sartika, & Lestari, 2024; Fashiha & Mariana, 2023). The RADEC teaching and learning model is a form that has been refined to facilitate the active involvement of students in exploring problem-solving, discussing, and creating solutions (Iwanda, Malika, & Aqshadigrama, 2022; Yulianti, Qomario, & Nureva, 2023). RADEC's teaching and learning model creatively allows students to gain a deeper understanding through problem-based thinking and reflection. Currently, it utilizes an independent curriculum within the Indonesian education system, emphasizing the development of character and skills in the 21st century (Kustiarini, Sarwi, Purnamasari, & Rosyadi, 2024; Nurfadillah & Da, 2024; Suryati, Abdullah, & Rahmadhani, 2023).

Various obstacles to learning mathematics in elementary school, both internal and external, cause students to experience difficulties in learning concepts and achieve poor learning outcomes(Fauzi, Sawitri, & Syahrir, 2020; Sukmana, 2024). There are main problems that often occur in mathematics learning, namely the use of lecture-based learning methods or conventional learning models. This method makes students less active in their learning, or they are only passive in receiving information without being fully engaged in their thinking process. Thus, the lecture learning model is less effective in terms of increasing understanding, and the self-efficacy of students in solving mathematical problems is less honed in the Mathematics learning process (Wiryana & Alim, 2023; Žakelj, Cotič, & Doz, 2024).

Several studies have investigated the impact of the RADEC learning model on students' learning outcomes and 21st-century skills. One of the studies found that the level of self-efficacy among elementary school students at SDN Mega Eltra and SDN Karya Winaya in Cirebon City remains very limited. To gain a more concrete understanding of the initial conditions of students' self-efficacy, researchers administered an initial questionnaire to fifth-grade students at both schools. The results of the questionnaire showed that most students still felt less confident in solving math problems, were afraid of making mistakes, and were unsure of their ability to understand fractions and arithmetic operations. These findings were reinforced by interviews with class teachers, who stated that students often showed doubt and were passive in learning mathematics.

One of the causes is that the learning model still applied tends to be conventional, specifically in the form of lectures that are less effective in encouraging students to take an active role in their learning. Teachers believe that many students struggle to grasp

mathematical concepts, particularly in solving specific problems that require a deeper understanding, and consequently feel less confident. This situation demonstrates that students' self-efficacy in mathematics remains low. Researchers are interested in implementing the RADEC (Read, Answer, Discuss, Explain, and Create) learning model as a solution to increase student engagement and foster self-efficacy.

The RADEC learning model provides students with space to actively manage their understanding of mathematical concepts, discuss them with friends, and re-explain the concepts they have understood during the learning process in a more structured and meaningful way. This learning method fosters a clear learning environment, where students not only passively receive material but also build understanding through discussion and creative activities (Aprilina, 2024; Febriyanti, Susanta, & Muktadir, 2021). The right RADEC learning model provides a good foundation by building students' self-efficacy towards mathematics. High self-efficacy in students can increase their confidence in solving challenges and create high motivation to learn (Fariha, Marlina, & Ayuningtyas, 2024; Ramadhani, Witri, & Fendrik, 2023).

The five sequential stages of RADEC, including reading, answering, discussing, explaining, and creating, are designed to improve both comprehension and active participation (Widodo, Suciati, & Hidayat, 2024). Reading, Answering, Discussing, Explaining, and Creating are the five phases of RADEC's learning approach. Students can read on their own before learning, allowing them to master the material by reading it aloud in front of the class first. Next, students answer questions about the readings they have studied to assess their initial comprehension. Students are actively engaged with their peers during the discussion stage to deepen their understanding further. Additionally, during the explanation stage, they share a mutual understanding with peers or teachers to enhance communication and critical thinking skills. Finally, students are accustomed to creating products or solutions related to learning materials at the design stage, allowing for creativity and a deep understanding of concepts (Aurelia, Sufa, & Jumanto, 2024; Magfirah, Imran, & Amal, 2024).

The RADEC learning model not only provides students with a means to receive messages but also challenges them to think critically, collaborate with their peers, and develop their ability to solve real-world problems (Hasibuan, Pebriana, & Fauziddin, 2024; Wardani & Munir, 2024). In addition, the RADEC learning model is designed to enable students to learn independently, as they are encouraged to be more active in exploring and building knowledge based on their abilities (Asy'arie, Aziz, Bahy, Rahman, & Mariyana, 2025; Virmayanti, Suastra, & Suma, 2023). The learning model aims to help students develop their understanding and critical and creative thinking skills in addition to imparting knowledge (Akbar, Dharmayanti, Nurhidayah, Lubis, Saputra, Sandy, Maulidiana, Setyaningrum, Lestari, Ningrum, Astuti, Nelly, Ilyas, Ramli, Kurniati, & Yuliastuti, 2023; Almujab, 2023).

Several studies have shown that the application of the RADEC model has a positive impact on improving learning outcomes (Andini & Fitria, 2021), numerical skills (Predi, Supriadi, & Suri, 2022), as well as students' creativity and self-confidence (Nurafifah, Sujana, & Aeni, 2024; Suryana, Sopandi, Sujana, & Pramswari, 2021). Furthermore, the 'Create' component of RADEC enables students to express original ideas and strengthen their creative thinking abilities, which in turn builds their confidence in their intellectual capabilities (Widyarti, Rokhmaniyah, & Suryandari, 2024). Students also demonstrate positive responses to learning, such as increased motivation and self-confidence (Setyawan, Roshayanti, & Novita, 2023). Based on the findings of several

studies, the use of the RADEC learning model helps students develop their self-confidence in the learning process. Therefore, it is essential to investigate further the impact of the RADEC learning model on supporting students' self-confidence compared to conventional learning in elementary schools.

2. Research Method

This research falls under the category of quantitative research, employing an experimental approach. The design used is a true experimental design with a pretest-posttest control group model. The selection of this design is based on the assumption that the entire population in the study consisted of fifth-grade students from A-accredited Elementary Schools in Kesambi District, Cirebon City. The samples were selected using a random sampling technique. It was decided that SDN Mega Eltra and SDN Karya Winaya, consisting of 21 students from SDN Mega Eltra and 26 students from SDN Karya Winaya, would be included. The experimental group received learning using the RADEC model, while the control group used a conventional model supplemented with visual aids, such as pictures. The treatment was conducted over four meetings using the fraction material.

Table 1. Pretest-Posttest Control Group Design

Class	Pre-test	Treatment	Posttest
Experiment	O_1	X_1	O_2
Control	O_3	X_2	O_4

Laksono, Nurcahyo, & Wibowo (2023)

Description:

O_1: Pre-test initial self-efficacy of experimental class

O_2: Posttest initial self-efficacy of experimental class

O_3: Pre-test initial self-efficacy of control class

O_4: Posttest initial self-efficacy of control class

X_1: Learning using the RADEC model

X_2: Learning using conventional model assisted by picture media

The true experimental design is considered feasible because the researcher has adequately controlled the relevant variables. Both schools have the same level of accreditation, state school status, and comparable student characteristics, including the number of students, socioeconomic background, and learning environment. Variable control is carried out by equating teaching materials (fraction materials), learning time (four meetings), and teachers who have equivalent qualifications and experience. The pre-test and post-test were also administered using the same self-efficacy instrument (questionnaire) in both groups.

Data collection was conducted using non-test techniques, specifically questionnaires, to assess students' self-efficacy. The instrument used in this research trial was a self-efficacy questionnaire consisting of 15 statements. This instrument was developed based on five main indicators, namely: (1) confidence to complete tasks, (2) confidence to motivate others, (3) confidence to work hard and diligently, (4) confidence to overcome challenges, and (5) confidence to complete tasks in various situations. Before being used, the instrument was tested on 45 sixth-grade students from the same two

schools to assess its validity and reliability. The detailed structure of the questionnaire instrument is presented in Table 2.

Table 2. Self-Efficacy Questionnaire Instrument

Indicator	Statement Type	Statement Number	Number of Statement
Completing tasks	attitude statements	1,6,11	3
Motivating oneself	attitude statements	2,7,12	3
Working hard and diligently	attitude statements	3,8,13	3
Solving challenges	attitude statements	4,9,14	3
Completing tasks in various situations	attitude statements	5,10,15	3
Amount			**15**

Details of statement items that are valid and meet the specified criteria are presented in Table 3.

Table 3. Valid and Invalid Question Number Data

Valid or Invalid	Statement Number	Total
Valid	1,2,4,6,7,8,9,10,11,12,13,14,15	13
Invalid	3,5	2

In this study, the data were analyzed using SPSS 25 and Microsoft Excel. Descriptive statistical analysis was used to calculate the mean value, standard deviation, minimum and maximum scores. Inferential statistics include the normality test (to examine the distribution of data), the homogeneity test (to assess the equality of variance between groups), and the Mann-Whitney U test (the Mann-Whitney U test was employed for the reason that the data were normally distributed, the variance between groups was not homogeneous). Additionally, the N-Gain calculation was used to measure the effectiveness of increasing self-efficacy from the pre-test to the post-test.

The hypotheses tested in this study are as follows: H_0 if there is no significant difference in self-efficacy between students taught with the RADEC learning model and those taught with the conventional picture-based learning model. Whereas H_1 if there is a significant difference in self-efficacy between students taught with the RADEC learning model and students taught with the conventional picture-based learning model.

3. Results and Discussion

3.1 Results

3.1.1 Descriptive Statistical Analysis

Descriptive data analysis is used to describe the research data, including the number of data points, the highest and lowest values, the average value, and the standard deviation. This descriptive analysis was conducted using SPSS 25 for Windows software, and the results are presented in Table 4.

Table 4. Descriptive Analysis of Questionnaire Data

Class	N	Mean	Range	Min.	Maks.	Std. Dev
Pre experiment	21	51.29	40	29	69	2.100
Post experiment	21	76.57	27	63	90	1.841
Pre control	26	39.54	23	30	53	1.200
Post control	26	46.58	20	38	58	1.014
Amount						47

Based on the results shown in Table 4, the experimental class consisted of 21 students. At the pre-test stage, the lowest score obtained was 29, while the highest score reached was 69, with an average of 51.29 and a standard deviation of 2.10. After receiving treatment, the posttest results showed an increase, with the lowest score rising to 63 and the highest score reaching 90, with an average of 76.57 and a standard deviation of 1.841.

Meanwhile, the control class, consisting of 26 students, obtained pre-test results with a lowest score of 30 and a highest score of 53, an average of 39.54, and a standard deviation of 1.20. At the post-test stage, there was an increase in scores, although not as large as in the experimental class. The lowest score was 38, the highest score was 58, the average was 46.58, and the standard deviation was 1.014.

The results showed that both the experimental group and the control group experienced changes in scores, including the average, the lowest score, the highest score, the range, and the standard deviation. Although there was an increase, the difference was not as substantial as that of the experimental group. Thus, mathematics learning using the RADEC learning model is more effective than the conventional image-assisted learning model.

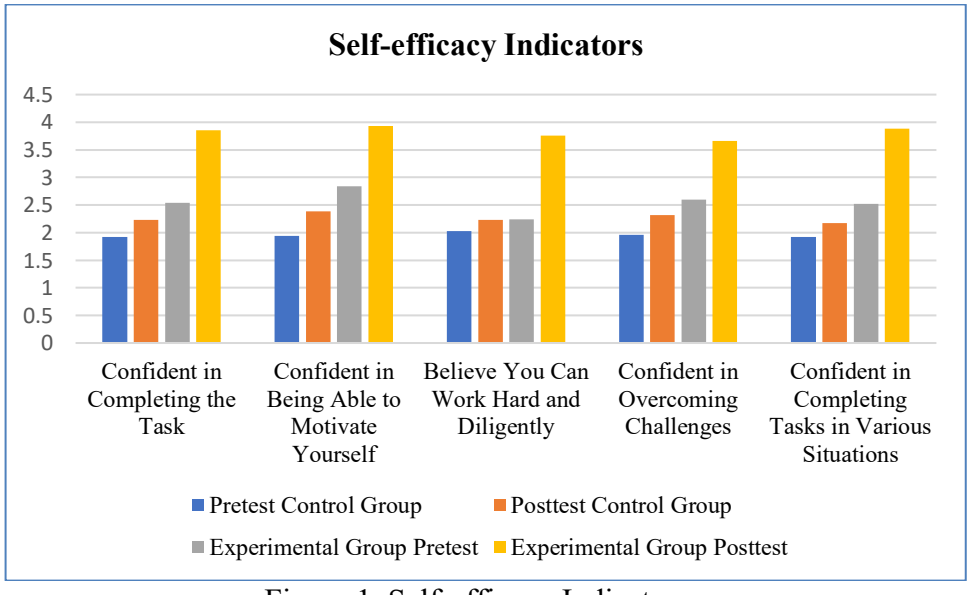

Figure 1. Self-efficacy Indicators

Based on the analysis results for each self-efficacy indicator, it is evident that all indicators showed a higher increase in the experimental group compared to the control group. The indicator of confidence to complete the task increased by 1.31 points in the

experimental group, significantly higher than the control group, which increased by 0.31 points. Likewise, in the indicator of confidence to motivate oneself, the experimental group increased by 1.09 points, while the control group increased by only 0.44 points. The highest increase occurred in the indicator of confidence to work hard and diligently, which rose to 1.52 points in the experimental group, compared to 0.20 points in the control group. The indicator of confidence to overcome challenges also showed a significant difference, with an increase of 1.06 points in the experimental group and 0.36 points in the control group. Finally, the indicator of confidence in completing tasks in various situations increased by 1.36 points in the experimental group and by only 0.25 points in the control group.

These findings indicate that the RADEC learning model not only improves students' self-efficacy in general but also strengthens every cognitive-affective aspect related to motivation, self-confidence, and fighting spirit in learning mathematics in Elementary School. This significant increase suggests that active involvement, reflection, and systematic stages in the RADEC model play a crucial role in strengthening students' self-efficacy. From these data, it can be concluded that the increase in the average score in the experimental class is more significant than that in the control class. This result indicates that the treatment administered to the experimental class has a greater impact on increasing students' self-efficacy.

3.1.2 Inferential Statistical Analysis

Before conducting hypothesis testing, prerequisite tests are required, namely normality tests and homogeneity tests, to determine the appropriate statistical analysis method, which can be either parametric or nonparametric. The results of the normality test on learning outcome data, analyzed using SPSS 25 for Windows, are presented in Table 5.

Table 5. Normality Test Results

Tests of Normality

Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Ngain_Experiment	.080	21	.200*	.962	21	.557
Ngain_Control	.107	21	.200*	.963	21	.574

In both the experimental and control classes, the normality test value was greater than 0.05, as indicated by the results of the statistical analysis test shown in Table 5. This test shows that both meet the assumption of normalcy. Therefore, research data is distributed regularly. To determine the variance between the two groups, a variance homogeneity test was also conducted.

Table 6. Homogeneity Test Results

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
N-gain	Based on Mean	10.414	1	45	.002
	Based on Median	9.655	1	45	.003

Test of Homogeneity of Variances				
	Levene Statistic	**df1**	**df2**	**Sig.**
Based on the Median and with adjusted df	9.655	1	35.936	.004
Based on trimmed mean	10.477	1	45	.002

Table 6 shows a significance value of 0.002 < 0.05. The conclusion is that the data group comes from a population using unequal or inhomogeneous variance. This inhomogeneity suggests that the assumption of similarity of variance is not met. As a next step, the analysis is followed by a nonparametric test to obtain more accurate results.

Table 7. Mann-Whitney U Test Hypothesis Test Results

Test Statistics[a]	
	N-gain
Mann-Whitney U	5.500
Wilcoxon W	356.500
Z	-5.728
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Class type

Table 7 describes the value of Asymp.Sig. (2-tailed) is 0.000 < 0.05. This table explains the hypothesis that the research is acceptable. As a result, a significant disparity emerged in the self-efficacy of the experimental group and the control group. This significant variation demonstrates that the application of the RADEC learning model is effective in enhancing the self-efficacy of elementary school students. The findings of this study thus confirm that the RADEC learning paradigm is an effective way to increase students' self-efficacy during the learning process.

Table 8. N-Gain Result

Class	**Nilai rata-rata**			**Category**
	Pre-Test	**Post-Test**	**N-Gain**	
Experiment	51.29	76.57	0.51	Currently
Control	39.54	46.58	0.11	Low

Based on the pre-test results, it is evident that the average self-efficacy score in the experimental group was 51.29, whereas in the control group, it was 39.54. This striking difference indicates that from the outset, the level of self-efficacy among students in the experimental class was higher than in the control class. This condition is caused by various factors, including differences in the learning environment, learning habits, and previous learning approaches employed by teachers in each class. Although there is a difference in the initial score, the N-gain analysis is still conducted to measure the effectiveness of the intervention in proportion to the students' initial conditions.

Based on Table 8, the results of the N-gain score calculation indicate that the average N-gain score in the experimental class using the RADEC learning model is 0.51,

or 51%, which falls within the moderate category. The range of N-gain scores in this class ranges from 0.21 (21%) as the minimum value to 0.82 (82%) as the maximum value. Meanwhile, the control class using the conventional learning model had an average N-gain score of 0.11, or 11%, which falls within the low category. The minimum N-gain score in the control class was -0.09 (-9%), while the maximum score reached 0.29 (29%). The difference between the experimental group and the control group suggests that the application of the RADEC learning model has a more significant impact on increasing student self-efficacy compared to the conventional image-assisted learning model, even after considering the initial score differences between the two groups. In other words, the superiority of the RADEC model is proven not only by achieving the final score but also by a more proportional and meaningful rate of increase.

3.2 Discussion

In the experimental class, the RADEC learning model was applied by providing students with an understanding of how to use and the benefits of the learning model in the mathematics classroom. While in the control class, they still used the conventional picture-assisted learning model that the class teacher usually applies. At the first meeting in the experimental class, the application of the RADEC learning model still faced several obstacles. Some students were confused because they did not understand the stages in the RADEC model, namely reading, answering, discussing, explaining, and creating. Therefore, additional guidance is still needed at the initial meeting. The researcher provided guidance to students to understand the concept of fractions by encouraging them to think critically about solving Mathematics problems related to fractions (Fauziani, Istianti, & Arifin, 2021; Rindiana, Arifin, & Wahyuningsih, 2022).

In the second meeting, some students began to get accustomed to the implementation of the RADEC learning model. However, some still struggled with adapting, particularly due to their understanding of the stages in the RADEC model, such as independent reading, answering, discussing, explaining, and creating. This difficulty was exacerbated by the abstract nature of the fraction material, making it difficult for students to relate it to concrete experiences. Additionally, some students expressed doubt and low self-confidence when asked to share their opinions. This finding suggests that students' self-efficacy, particularly confidence in overcoming challenges and completing tasks in various situations, remains at a low level. Entering the third and fourth meetings, students began to be more proficient in understanding fraction material through the RADEC learning model, thus helping them learn more easily.

To overcome these problems, researchers actively guide students, especially in the early stages of learning, by facilitating contextual discussions and simple exercises that relate the concept of fractions to everyday life. Over time, in the third and fourth meetings, students became more accustomed to it and showed increased enthusiasm. The ‘Create’ stage is an important moment in shaping students' confidence in their abilities, where students are asked to create problems and solve them in front of the class. This process is part of strengthening the indicator of confidence to develop solutions in various situations.

The observation results showed that student engagement in the experimental class increased significantly. They began to participate actively in discussions, were able to provide clear answers, and demonstrated initiative when faced with challenges. This finding was not shown in the control group, which still demonstrated the teacher's dominant role in the learning process, and student engagement was limited to following

instructions. Descriptively statistically, the most significant increase occurred in the indicator of confidence to work hard and diligently, with a difference of 1.52 points (from 2.24 to 3.76) in the experimental group. Other indicators, such as confidence to motivate oneself and confidence to complete tasks in various situations, also experienced high increases of 1.099 and 1.366 points, respectively. Meanwhile, the control group showed a much lower increase in all indicators, and even in some items, such as effort and perseverance, only increased by 0.20 points.

The difference in pre-test scores between the experimental group (51.29) and the control group (39.54) highlights the disparity in initial conditions. However, the N-Gain analysis still shows that the experimental group experienced a proportionally greater increase, with a value of 0.51 (medium category), compared to the control, which had a value of 0.11 (low category). This finding suggests that the influence of the RADEC learning model does not stem solely from initial differences but rather from the active learning process that is systematically designed through the stages of the RADEC learning model.

The final results of the data analysis indicated that the Mann-Whitney U test yielded a two-tailed significance value of 0.000, which is less than the threshold of 0.05. Based on the hypothesis testing framework, the null hypothesis (H_0), stating that there is no significant difference in students' self-efficacy between those taught using the RADEC learning model and those taught using the conventional picture-assisted learning model, is therefore rejected. Conversely, the alternative hypothesis (H_1), which posits that a significant difference exists, is accepted. These findings confirm that the implementation of the RADEC learning model has a statistically significant effect on enhancing students' self-efficacy compared to the conventional model. Furthermore, the N-Gain score in the experimental group reached 0.51, which falls within the moderate category, whereas the control group only achieved an N-Gain score of 0.11, categorized as low. This result further supports the conclusion that the RADEC model not only leads to a statistically significant improvement but also contributes to a more meaningful and proportionate increase in students' self-efficacy.

The results of this study are consistent with Piaget's theory of constructivism, which states that understanding built by students themselves is more meaningful and helps strengthen self-confidence. The RADEC learning model provides a learning structure that enables this through exploration, discussion, and creation. This finding is also supported by Mulyosari & Khosiyono (2023) and Wirastuti, Meteray, & Listyarini (2024), who stated that self-efficacy is influenced by students' ability to motivate themselves, complete tasks, overcome challenges, and demonstrate perseverance. All of these aspects appeared to increase in the experimental group, along with the active involvement of students in all stages of the RADEC learning model. This finding aligns with previous research, which suggests that the RADEC learning model is effective in enhancing students' active involvement, thereby positively impacting their self-efficacy (Fariha, Marlina, & Ayuningtyas, 2024; Yanti & Suriani, 2024).

The RADEC learning model offers numerous benefits in teaching and learning activities, particularly in enhancing students' active understanding and fostering their confidence in delivering learning materials. This approach encourages students to be more actively engaged rather than simply passively listening in class. Instead, students are directly involved in reading, answering, discussing, explaining, and even acting as facilitators like teachers. Additionally, this method facilitates students' understanding of the concepts being studied and enhances their memory, particularly in developing critical

and creative thinking skills (Hasibuan, Pebriana, & Fauziddin, 2024). The RADEC learning model plays a role in increasing the self-efficacy of elementary school students by emphasizing their active involvement in the learning process. This approach encompasses the stages of Reading, Answering, Discussing, Explaining, and Creating, which simultaneously activates student understanding. Through this model, students are encouraged to communicate, discuss with their peers, develop ideas independently, and convey their understanding to teachers and classmates. Thus, RADEC not only improves understanding of concepts but also builds students' confidence in the learning process. In addition, this method encourages students to be more diligent in completing assignments, more enthusiastic about learning, and to apply more effective learning approaches. The RADEC learning model also has characteristics that are systematic and easy to implement, allowing students to feel confident in creating or finding solutions and achieve success in solving problems more quickly (Kurniayati, Hardiansyah, & Sukitman, 2025).

The RADEC learning model has been proven effective in enhancing the self-efficacy of elementary school students. In phases that promote active participation, this model helps students develop confidence in the learning process. With stages that encourage active engagement, this model allows students to build confidence in the learning process. The study by Nurmitasari, Banawi, and Riaddin (2023) demonstrates that the RADEC model can enhance science learning outcomes for grade 4 elementary school students. In addition, according to Achmad, Budiyanto, and Qosyim (2024), the application of the RADEC model helps junior high school students develop their critical thinking skills, thereby increasing their self-efficacy. Additionally, the RADEC learning model has been demonstrated to be problem-based, which can enhance the motivation and self-efficacy of elementary school students in learning mathematics (Herzamzam, 2021). The RADEC learning paradigm has a significant impact on improving students' self-efficacy in learning mathematics in elementary school, according to research findings conducted.

This model is designed to encourage students' active involvement in learning through the stages of Reading, Answering, Discussing, Explaining, and Creating, which help them build confidence in understanding the material. High self-efficacy in students plays a crucial role in enhancing learning motivation, resilience to academic challenges, and readiness to participate in the learning process actively. Applying the RADEC model, students are more motivated to complete tasks independently and feel confident in their ability to solve problems in math and other subjects. The ‘Creating’ stage in the RADEC model plays a crucial role in enhancing students' self-efficacy. At this stage, students are encouraged to develop solutions or products based on their own understanding, which directly reinforces their confidence in their abilities. According to Piaget's constructivist theory, learning that allows students to build their understanding will be more effective in increasing their self-confidence. Additionally, the implementation of project-based learning and group discussions in the RADEC model can increase students' confidence in expressing opinions and making decisions independently. This result aligns with the principle that active involvement in learning contributes to increasing students' self-efficacy (Aji & Khan, 2019).

In addition to internal student factors, the role of teachers as facilitators in implementing the RADEC model also significantly affects the development of self-efficacy. Teachers are not only material providers but also mentors who offer positive feedback and foster a supportive learning environment. Students who receive direct guidance to understand concepts through discussion and exploration will be more

confident in completing their academic tasks (Lin & Wang, 2024). Thus, RADEC not only enhances the understanding of academic concepts but also boosts students' confidence in tackling various learning challenges.

4. Conclusion

Based on the formulation of the problem and the results of the data analysis carried out, it can be concluded that the RADEC (Read, Answer, Discuss, Explain, and Create) learning model has a significant influence on increasing the self-efficacy of elementary school students because the learning process is carried out in stages and systematically, starting with reading, answering, discussing, explaining, and then creating. To be able to encourage students to build understanding independently, hone critical thinking, and foster courage in expressing ideas. This model fosters an empowering and meaningful learning environment, enabling students to become more confident in facing various academic challenges. These findings suggest that the RADEC learning model is significantly superior to conventional image-assisted learning, which is a passive approach that does not actively engage students in the learning process. Further research is also recommended to examine in more depth how RADEC can be applied in the context of other subjects and at different levels of education to expand its positive impact on improving the quality of learning.

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