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The Effectiveness of the RADEC Learning Model in Strengthening Religious Character and Critical Thinking among Elementary School Students

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Abstract: This research is based on the persistently low critical thinking skills of students and the suboptimal internalization of religious character values in the learning process in elementary schools. Learning that is still oriented toward memorization and teacher-centered approaches results in students being less engaged in reflective, dialogical, and contextual activities. However, the demands of 21st-century education and the Pancasila Student Profile emphasize the importance of strengthening religious character and critical reasoning skills in an integrated manner starting from elementary school. This study aims to analyze the effectiveness of the RADEC learning model in strengthening religious character and critical thinking skills in elementary school students. This study used a quantitative approach with a one-group pretest-posttest design. The subjects were 125 elementary school students in Cluster IV, Pagerageung District, Tasikmalaya Regency. The RADEC learning model was implemented in the learning process using the syntax "Read, Answer, Discuss, Explain, and Create," which was designed to encourage literacy activities, critical discussions, value reflection, and actualization of student understanding. The research instruments were a religious character questionnaire and a critical thinking questionnaire, both of which have been tested for validity and reliability. Data were collected through measurements before and after the implementation of the RADEC learning model. Data analysis was conducted using descriptive statistics and the Wilcoxon Signed Rank Test to determine differences in students' religious character scores and critical thinking skills before and after the treatment. The results showed that the RADEC learning model was significantly effective in strengthening students' religious character with a significant value of $p < 0.05$. Furthermore, students' critical thinking skills also significantly improved after participating in the RADEC learning model. The findings of this study indicate that the RADEC learning model is effective as an alternative learning method in elementary schools to improve students' religious character and critical thinking skills. Practically, the RADEC model can support learning that is more meaningful and relevant to students' needs. Empirically, this study provides evidence that literacy-based learning, discussion, and reflection can simultaneously strengthen character education and higher-order thinking skills.

Keywords: Critical thinking; Elementary school; Learning effectiveness; RADEC model; Religious character

Introduction

Strengthening religious character and critical thinking skills are two main competencies that must be developed in 21st century education (Rose et al., 1979;

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Lestari & Hindun, 2023; Purwanto & Yanuarto, 2025). The Pancasila Student Profile emphasizes that students are expected to have a dimension of faith, piety toward God Almighty, and critical reasoning as a foundation for character building and life skills (Kemendikbudristek, 2022; Sufyadi et al., 2021; Ulum et al., 2025; Andriyani et al., 2024; Golden, 2023; Zivkovil, 2016; Handayani et al., 2019; Batdi et al., 2024; Ernata et al., 2024). However, various findings in the field indicate that the achievement of these two competencies at the elementary school level is still not optimal, thus more effective and measurable learning efforts are needed.

In daily learning practices, the learning process in elementary schools is still dominated by conventional approaches that are oriented toward memorization and one-way delivery of material (Suryana et al., 2025; Chin & Osborne, 2008; Dessie et al., 2024; Tong et al., 2022; Fischer & Kleen, 2021; Rusmin et al., 2024; Lazonder & Harmsen, 2016; Yani et al., 2025; Sharma et al., 2022; Sumirat et al., 2022; Pratama et al., 2019; Muspiroh et al., 2025). This situation results in students being less engaged in higher-order thinking activities, such as analyzing, evaluating, and reflecting on knowledge. Furthermore, strengthening religious character is often delivered normatively and separately from the learning context, so that these values are not meaningfully internalized by students.

Various innovative learning models have been developed to improve the quality of learning, but their effectiveness in enhancing religious character and critical thinking skills needs to be empirically proven. A good learning model is not only conceptually designed but also demonstrates a tangible impact on the development of students' attitudes and abilities. Therefore, research that tests the effectiveness of learning models through a quantitative approach is essential to provide a basis for decision-making in educational practice.

The RADEC (Read, Answer, Discuss, Explain, Create) learning model is a learning model that emphasizes literacy activities, discussion, reflection, and creation as the core of the learning process (Handayani et al., 2019; Setiawan et al., 2020; Sopandi, 2019, 2021; Suryana et al., 2025; Anita et al., 2022; Candraswari & Suniasih, 2024; Fiteriani et al., 2025; Hanum et al., 2023; Safitri et al., 2025; Satria & Sopandi, 2019; Burhanudin et al., 2024). This model provides space for students to actively build understanding, engage in critical dialogue, and actualize knowledge through creative work. Theoretically, these characteristics have the potential to support the development of religious character and critical thinking skills in elementary school students.

Although several studies have shown that RADEC can improve learning engagement and conceptual understanding, studies empirically testing the effectiveness of the RADEC model in improving religious character and critical thinking skills in elementary school students are still limited. Some studies emphasize cognitive aspects or learning outcomes, without simultaneously measuring its impact on character dimensions and higher-order thinking skills. This situation indicates a research gap that needs to be filled through measurable empirical testing.

Based on the above description, this study aims to analyze the effectiveness of the RADEC learning model in improving the religious character and critical thinking skills of elementary school students. This study focused on measuring changes in religious character and critical thinking scores before and after the implementation of the RADEC model. The results are expected to provide empirical evidence regarding the effectiveness of the RADEC model as a learning alternative that supports character strengthening and the development of critical thinking skills in elementary schools.

Method

This study uses a quantitative approach with a one-group pretest–posttest design (Sugiono, 2014; Pandiangan & Albina, 2025; Muhajirin et al., 2024; Siroj et al., 2024; Risnita et al., 2024; Daminik et al., 2025). This design was chosen to determine the effectiveness of the RADEC learning model in improving the religious character and critical thinking skills of elementary school students. This design allows for systematic and controlled measurement of changes in student scores before and after the implementation of the learning model.

The research subjects were 125 elementary school students from Cluster IV, Pagerageung District, Tasikmalaya Regency. The selection of research subjects was based on the suitability of student characteristics to the research objectives and the accessibility of the research location. All research subjects participated in the learning process using the RADEC model in accordance with the established learning design.

The treatment in this study was the application of the RADEC learning model, which includes five main stages: Read, Answer, Discuss, Explain, and Create. In the Read stage, students are directed to read the learning material independently and reflectively. The Answer stage encourages students to answer provocative questions that require analysis and understanding. The Discuss and Explain stages facilitate group discussions and critical presentation of ideas, while the Create stage directs students to actualize their understanding and values in the form of meaningful work or activities.

The research instruments used included a religious character questionnaire and a critical thinking skills

questionnaire. The religious character questionnaire was developed based on indicators of religious attitudes relevant to the elementary school context, while the critical thinking questionnaire was developed based on indicators of higher-order thinking skills. Both instruments underwent validity and reliability testing before being used in the study to ensure measurement feasibility.

Data collection was conducted through pretests and posttests using the same questionnaire. The pretest was administered before the RADEC learning model was implemented to determine the initial state of students' religious character and critical thinking skills. The posttest was administered after the entire RADEC learning series was completed. The data obtained were scores for students' religious character and critical thinking skills before and after the treatment.

The collected data were analyzed using descriptive statistics to illustrate the trend in students' religious character and critical thinking skills scores. Furthermore, inferential analysis was conducted using the Wilcoxon Signed Rank Test to determine differences in scores before and after the implementation of the RADEC learning model. The Wilcoxon test was chosen because the data were not assumed to be normally distributed. Decision-making was based on significant values with a 95% confidence level.

Result and Discussion

Findings

The results of the study showed a difference in students' religious character scores and critical thinking skills before and after the implementation of the RADEC learning model. Based on descriptive statistical analysis, the average score of students' religious character in the pretest stage was in the moderate category. After the implementation of the RADEC learning model, the average score of religious character in the posttest stage showed a higher increase compared to the initial condition. This increase indicates a change in students' religious attitudes after participating in learning using the RADEC model.

Table 1. Descriptive Statistics of Pretest and Posttest Scores

Variable	N	Pretest (Mean)	Posttest (Mean)	Description
Religious character	125	72.45	83.10	Increase
Critical thinking	125	68.30	80.25	Increase

In addition to religious character, students' critical thinking skills also improved after implementing the RADEC learning model. Descriptive analysis results showed that critical thinking scores in the posttest were higher than those in the pretest. Students demonstrated improvements in their ability to analyze problems, provide reasons, and relate learning materials to broader contexts. These findings demonstrate that the RADEC model is able to encourage students to actively engage in higher-order thinking processes.

To determine the significance of the difference in scores before and after implementing the RADEC learning model, an inferential analysis was carried out using the Wilcoxon Signed Rank Test.

Table 2. Results of the Wilcoxon Test for Pretest and Posttest Scores

Variable	Z	Sig. (2-tailed)	Description
Pre-Post Religious Character	–2.631	0.009	Significant
Pre-Post Critical Thinking	–4.619	0.001	Significant

The test results showed that there was a statistically significant increase in students' religious character with a significant value of $p < 0.05$. In addition, the Wilcoxon test results also showed a statistically significant increase in students' critical thinking skills with a significant value of $p < 0.05$. Thus, it can be concluded that the implementation of the RADEC learning model has a positive influence on improving the religious character and critical thinking skills of elementary school students.

Discussion

This discussion focuses on the effectiveness of the RADEC learning model in improving the religious character and critical thinking skills of elementary school students based on statistical analysis. The results showed that posttest scores for religious character and critical thinking skills were higher than pretest scores (Table 1). This increase indicates positive changes after implementing the RADEC learning model in the learning process.

The results of the Wilcoxon Signed Rank Test show that the difference in pretest and posttest scores on the variables of religious character and critical thinking skills is statistically significant ($p < 0.05$) as shown in Table 2. This finding confirms that the implementation of the RADEC learning model has a significant influence on improving students' religious character and critical thinking skills. Thus, the RADEC model is not only able to improve learning outcomes descriptively but is also proven to be effective quantitatively.

The effectiveness of the RADEC model in developing religious character can be explained through learning stages that emphasize reflective activities, responsible learning, and meaningful social interactions. The Read and Answer stages encourage students to learn independently and honestly to understand the

material, while the Discuss and Explain stages accustom students to expressing opinions politely, respecting differences, and working collaboratively in groups. This process aligns with the principles of character education, which emphasize the internalization of values through repeated and contextual learning experiences.

Furthermore, improvements in students' critical thinking skills demonstrate that the RADEC model is effective in facilitating higher-order thinking skills. The Discuss and Explain stages provide space for students to analyze information, evaluate arguments, and develop logical reasoning. The Create stage strengthens critical thinking skills through problem-solving and idea development activities, enabling students not only to understand concepts but also to apply them in broader contexts. These findings support the view that learning centered on intellectual and collaborative activities can improve students' thinking skills.

Theoretically, the results of this study align with constructivist theory, which positions students as active subjects in the learning process. The RADEC model provides a learning framework that allows students to construct knowledge through reading, discussion, explanation, and creation. The model's success in enhancing religious character and critical thinking skills reinforces previous research findings that suggest that learning based on literacy activities, discussion, and reflection can simultaneously improve effective and cognitive outcomes.

From an educational policy implementation perspective, the effectiveness of the RADEC model is strongly relevant to strengthening the Pancasila Student Profile, particularly in the dimensions of faith, devotion to God Almighty, and critical reasoning. This model provides a practical and structured learning alternative for elementary school teachers to simultaneously integrate character building and 21st-century skills. Therefore, the RADEC learning model can be recommended as an effective learning approach to improve the quality of learning in elementary schools.

Conclusion

Based on the results of descriptive statistical analysis, the posttest scores of students' religious character and critical thinking skills were higher than the pretest scores after the implementation of the RADEC learning model. The results of the Wilcoxon Signed Rank Test showed that the difference in pretest and posttest scores for both variables was statistically significant ($p < 0.05$). This finding proves that the implementation of the RADEC learning model is effective in improving the religious character and critical thinking skills of elementary school students. Thus, the RADEC learning model can be recommended as an effective learning alternative to integrate the strengthening of religious character and the development of critical thinking skills in the learning process in elementary schools. Further research is recommended to test the effectiveness of the RADEC model in a broader context and compare it with other learning models to strengthen the generalizability of the research findings.

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Conceptualization, methodology, software, validation, formal analysis, investigation, resources, data curation, writing—original draft preparation, N.S.; writing—review and editing, visualization, supervision, project administration, W.S. and Y.R. All authors have read and agreed to the published version of the manuscript.

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