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Students' Analytical Thinking Skills in Social Science Subjects in Elementary Schools: CORE Learning Model

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ABSTRACT

This study sought to evaluate the influence of the CORE learning model on the analytical thinking skills of fourth-grade elementary students. This study utilized Class IV A as both the experimental and control group. A cohort of 42 fourth-grade students from SDS Swadhipa Natar participated in this study. The control group employed a problem-based learning approach, whereas the experimental group utilized a learning CORE model. This study utilized a quantitative methodology using a quasi-experimental design. This study employed purposive sampling to choose individuals, designating class IV A (experimental group) and class IV B (control group). This study's findings demonstrate that the CORE learning technique enhances students' analytical thinking abilities in Chapter 8 of the IPAS Lesson, which emphasizes the cultivation of a civilized society. Class IV A, implementing the CORE learning model, achieved an average score of 87.82, whilst Class IV B, utilizing the problem-based learning model, attained an average score of 78.77. The conclusion is corroborated by t-test results indicating a significance level of 0.000. Given that the significance level of 0.000 is below 0.05, we may conclude that the application of the CORE learning model significantly influences students' analytical thinking skills.

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1. INTRODUCTION

Every human being basically needs education to ensure their survival and that of the nation and state. Education is another way to improve the standards of human resources because it educates humans to achieve progress in all areas of a country (Pratikno et al., 2022; Hafidah & Sunardi, 2023). The development of competitive and high-quality human resources depends on education. According to Law No. 20 of 2003 on the National Education System, education is defined as "Education is a planned and conscious effort to help create learning conditions and learning processes in such a way that students are able to develop their potential actively and have self-control, intelligence, skills in society, spiritual religious strength, personality, and noble morals" (Hakim & Darojat, 2023). Additinally, the Big Indonesian Dictionary, the word

"education" comes from the word "didik," with the prefix "pe" and the ending "an." The meaning is "the process or way of educating." In other words, education means changing the attitudes and behavior of a person or group to mature themselves through training and teaching (Ratnasari & Nugraheni, 2024).

The educational process in academic institutions should be conducted interactively, inspiringly, engagingly, and challengingly, thereby motivating students to actively participate, particularly through the development of critical thinking abilities (Laksono & Fatimatuzzahra, 2022; Sunubi & Bachtiar, 2022). Analytical thinking skills are among the most crucial cognitive abilities, comparable to the processes of recalling, comprehending, and implementing thoughts. Analytical thinking abilities are essential as they enable students to investigate and uncover new knowledge (Anggraeni et al., 2023; Wulandari et al., 2018). This capability can also educate kids to comprehend material holistically and integrate its components (Fitriani et al., 2023). Analytical thinking refers to the capacity to resolve issues and make decisions grounded in logical, critical, and data-driven reasoning (Hasyim, 2018). Students' analytical reasoning abilities are crucial. Consequently, numerous methods exist for instructing pupils in critical thinking skills. One method is via natural and social sciences.

IPAS is a field that discusses how living things interact with their environment and the universe (Palupi et al., 2025). One example is humans, who are living things and cannot live alone. In short, IPAS is a combination of natural science and social science lessons. The combination of science and social science in one unit of science helps students learn to manage their natural and social environment. It also fosters students' curiosity about the phenomena that occur around them. This curiosity encourages students to understand how the universe functions and how human life on Earth interacts with it. To achieve sustainable development goals, this understanding can be used to identify various problems faced and determine solutions (Meylovia & Julianto, 2023).

According to the findings from pre-research and interviews by researchers at SDS Swadhipa Natar, there are several issues with learning IPAS on the topic "My Region and Its Natural Resources." These include students not understanding the material well, the teaching being too focused on the teacher, students not performing well in IPAS, and students' analytical thinking skills not being very strong. Additionally, research by Sharp et al. (2017) suggests that the learning methods need to be more varied, as the current ones are often dull and unengaging for students. Using different teaching models can help students better understand the lessons (Iqbal et al., 2021).

Research conducted by Westgate & Wilson (2018) shows that the learning model must be varied, as the methods currently used are less attractive to students and tend to be monotonous and boring. To facilitate the application of various models, students can understand the lessons given. In addition, it is important to know that one way to improve the quality of learning is to understand the learning style of each student (El-Sabagh, 2021). Not many teachers know the learning style of each student, so the learning process becomes more difficult and learning outcomes decline. One of the interests of students in the lesson depends on the way the teacher teaches. If the teacher teaches in a fun way, difficult material will feel easy and fun. Conversely, if the teacher

teaches in an unpleasant way, difficult material can be boring. Therefore, a teacher must employ various teaching methods and a unique approach to ensure that students enjoy being in class (Daniel et al., 2024). Teachers can adopt the CORE model (connecting, organizing, reflecting, and extending) as an alternative.

The CORE learning model can impact knowledge growth and enhance students' cognitive abilities to connect, organize, learn, develop, and retain acquired information (Udayani et al., 2019; Saregar et al., 2021). The CORE learning model consists of four specific stages: The CORE learning approach promotes students to link newly acquired information with their existing knowledge. Educators guide pupils in structuring the material or information they have obtained. Educators guide reflective learners to reevaluate the knowledge they obtained throughout the organizing process (Irawan & Iasha, 2021). Extending enhances pupils' understanding (Sari, 2020; Triyani & Maysarah, 2024). The CORE Model seeks to improve students' critical thinking, polish problem-solving skills, deepen understanding of learning materials, cultivate creativity in education, and increase active engagement in the learning process (Rohmah & Ulya, 2021; Agustina, 2024).

Wati et al. (2019) conducted research revealing that the paired sample t-test yielded a t-count of 23.013, exceeding the t-table value of 2.05553, so validating H1. Additionally, the average N-Gain value was 0.55, signifying a moderate level. Subsequent research by Ulfa et al. (2019) indicated that the t-test results yielded a t-count value of 4.043, exceeding the t-table value of 2.021. Thus, it can be concluded that a disparity exists in mathematical problem-solving abilities between students who engage with the CORE learning model and those who do not. The data analysis results from the two-way ANOVA reveal an interaction (A x B) count of -6.07, which is below the F (A x B) table value of 3.21; consequently, it can be inferred that there is no interaction between the CORE learning model and self-confidence in relation to students' mathematical problem-solving capabilities. The research indicates that the use of the CORE paradigm enhances educational outcomes.

Consequently, this study addresses the deficiencies between the initial and prior research descriptions. The objective of this study is to assess the impact of the connecting, organizing, reflecting, and extending (CORE) learning model on the analytical thinking abilities of elementary school pupils.

2. METHOD

This study uses a quantitative approach known as a quasi-experiment. This approach does not allow researchers to have full control over the variables and conditions of the experiment. The study took place at SD Swadhipa Natar. The population in this study was students in classes IV A and IV B, with a total of 43 students.

This study's sample comprised two classes: class IV A, the experimental group with 21 students utilizing the CORE model, and class IV B, the control group with 22 students employing the problem-based learning model. The sample technique employed purposive sampling. This design uses the nonequivalent control group approach to

randomly choose two groups. This approach facilitates the comparison between the control group and the experimental group. Following the administration of their respective therapies, the two classes underwent a pretest and posttest, evaluating their analytical thinking skills. This procedure illustrates the nonequivalent control group design, as depicted in Figure 1.

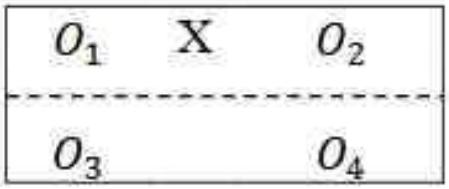

Figure 1. Nonequivalent Control Group Design

Information:

O_1: Pretest Experimental Class
O_2: Posttest Experimental Class
O_3: Pretest Control Class
O_4: Posttest Control Class

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3. RESULTS AND DISCUSSION

Resuts

Descriptive Analysis Test

The CORE learning model ability test evaluates students' analytical thinking skills in IPAS, chapter 8, "Building a Civilized Society," with scores ranging from 78 to 95, an average of 87.52, and a standard deviation of 4.297. The problem-based learning model ability test yields scores between 70 and 90, with a mean of 78.77 and a standard deviation of 6.633. The outcomes of the descriptive analysis test are displayed in Table 1 below.

Table 1. Descriptive Analysis Test Results

	N	Minimum	Maximum	Mean	Std. Deviation
Control Pretest	22	33	56	46.95	7.371
Control Posttest	22	70	90	78.77	6.633
Pretest Experiment	21	40	58	49.86	5.189
Experiment Posttest	21	78	95	87.52	4.297
Valid N (listwise)	21				

Table 1 indicates that the mean pretest score for the values instructed using the CORE learning model was 49.86, whereas the mean posttest score was 87.52, resulting in an average improvement in learning outcomes of 37.66. The problem-based learning model attained a pretest score of 46.95 and a posttest score of 78.77, yielding an average improvement in learning outcomes of 31.82. The use of the CORE learning approach

markedly enhances participants' critical thinking skills in comparison to problem-based learning.

Normality Test

The normality test assesses the normal distribution of pretest and posttest data. The Shapiro-Wilk method was employed in this test, yielding a significance value of 0.052 for the control class pretest, 0.105 for the control class posttest, 0.271 for the experimental class pretest, and 0.093 for the experimental posttest. The four significance values exceed 0.05, indicating that the data follows a normal distribution. The data is presented in Table 2 below.

Table 2. Normality Test Results

Class	Sig. Value	Description
Pretest Control Class	0.052	Normal
Posttest Control Class	0.105	Normal
Pretest Experimental Class	0.271	Normal
Posttest Experimental Class	0.093	Normal

Homogeneity Test

The homogeneity test assesses whether the pretest and posttest outcome data exhibit a homogeneous distribution. This assessment employs the Levene test. The outcomes of the homogeneity test are displayed in Table 3 below.

Table 3. Homogeneity Test Results

Class	Sig. Value	L-Table	Description
Control Experiment	0.754	0.05	Homogeneous

Table 3 presents the outcomes of the homogeneity test for both the experimental and control classes: The test value is presented as 0.754 > 0.05, signifying that both groups are homogeneous. If the significance value of the sample exceeds 0.05, it is deemed homogenous; otherwise, it is classified as heterogeneous.

T-Test (Independent Sample T-test)

We employ the t-test to compare the mean values between the control and experimental groups. The T-test data is presented in Table 4 below.

Table 4. T-Test Results

Class	Sig. Value	T-Table	Description
Control Experiment	0.000	0.05	H0 is rejected and Ha is accepted

Table 4 indicates that the t-test is statistically significant at a p-value of 0.000, which is less than 0.05. Consequently, the null hypothesis (Ho) is rejected, while the alternative

hypothesis (Ha) is accepted, signifying a substantial disparity in the analytical thinking of students in the control class compared to those in the experimental class.

Discussion

This study aimed to assess the impact of the CORE learning model on the analytical thinking abilities of fourth-grade pupils at SDS Swadhipa Natar. Students in class IV A, employing the CORE learning model, exhibit enhanced analytical thinking skills relative to their counterparts in class IV B, who utilize the problem-based learning model. The control group, utilizing the problem-based learning model, achieved an average score of 78.77 in the assessment of students' analytical thinking skills, whereas the experimental group, employing the CORE learning model, attained an average score of 87.82. The comparison of the academic approaches of the two cohorts clarifies this rationale. The t-test calculation indicates a t count ranging from 0.000 to 0.05 in the table. We conclude based on the significance threshold of 0.000, which is below 0.05. The findings indicate that the application of the CORE model significantly influences the analytical thinking skills of fourth-grade students at SDS Swadhipa Natar in the IPAS subject. This study's findings are substantiated and pertinent, demonstrating that the CORE learning model enhances student engagement in learning, fosters memory retention, cultivates critical thinking and problem-solving abilities, and delivers significant learning experiences for students (Rohmah & Ulya, 2021; Triyani & Maysarah, 2024).

The CORE learning model fosters a culture of initiative and decision-making among students (Chistella & Soekamto, 2017). This method has the potential to inspire and motivate students to further strengthen their analytical thinking skills. Students often lose interest during learning because it is still focused on the teacher, making them bored, and their level of analytical thinking skills is still low. Several facts emerged from the CORE study, including increasing students' interest and enthusiasm for learning and increasing students' analytical thinking skills (Siregar et al., 2018).

Throughout the CORE learning process, students engage more actively in inquiry and group discussions, which broadens their involvement across diverse facets, enriching their knowledge and enhancing their analytical thinking skills. The problem-based learning model incorporates group learning (Phungsuk et al., 2017; Muzaini et al., 2022; Hasbi & Fitri, 2023), yet it primarily concentrates on specific problems, resulting in insufficient breadth of information for students and a lack of development in their analytical thinking skills. The CORE learning model yields a superior average score for students in comparison to the problem-based learning model.

This research offers an overview of the impact of the connecting, organizing, reflecting, extending (CORE) learning model on students' analytical thinking skills in IPAS education.

4. CONCLUSION

The findings of this study reveal a notable enhancement in the analytical thinking abilities of fourth-grade pupils at SDS Swadhipa Natar. The results of the prerequisite analysis test indicate that the estimated t value and the t test table demonstrate a significant difference, with t: 0.000 < 0.05. This difference signifies a dismissal of Ho and an endorsement of Ha. Evidence indicates that the CORE learning model at SDS Swadhipa Natar has a significant influence. Students in grade IV A at SDS Swadhipa Natar, studying IPAS chapter 8 on constructing a civilized society through the CORE learning model, attained an average score of 87.82 on the analytical thinking ability assessment. Conversely, students in grade IV B utilizing the problem-based learning model achieved an average score of 78.77 on the same content. Consequently, pupils instructed with the CORE learning model attained a superior average score in critical thinking skills compared to those educated through the problem-based learning model.

As a suggestion, educators can apply the CORE learning model to improve students' analytical thinking skills. We suggest further research to develop an interactive model that integrates learning media on a broader scale.

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