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The "E-RAISE Model" exploration of science challenges and cultural values improves learning outcomes

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Abstract:

This research aims to evaluate the effectiveness of the "E-RAISE Model" in improving science learning outcomes at the Pasuruan Foundation Assyfa Learning Center (YALC) Middle School by integrating science challenges with local East Java cultural values. This research uses a comprehensive mixed methods approach that combines quantitative and qualitative methods, providing a robust and reliable picture. The research subjects involved 21 class VII students from YALC and students from other schools in different areas. Data was collected through surveys with a Likert scale, standardized science learning outcomes tests, classroom observations, and in-depth interviews with students and teachers. The research results showed a significant increase in students' science learning outcomes, with the average student score increasing from 71.16 in Cycle I to 89.93 in Cycle II. The integration of local wisdom has been proven to help students relate scientific concepts to their cultural context, increasing their motivation and engagement in learning. Quantitative descriptive statistical analysis and qualitative interview and observation data analysis confirm that the E-RAISE Model is efficacious in improving students' understanding and skills in science. This research makes an essential contribution to the field of education by showing that approaches that combine scientific challenges and cultural values can improve students' academic achievement. These findings emphasize the importance of contextual and relevant educational innovations to improve students' scientific literacy and learning environments. It is hoped that the results of this research can provide practical recommendations for teachers and educators to develop more innovative and meaningful learning approaches.

Keywords: East Java local wisdom, Elementary School, E-RAISE Model, Science learning outcomes, 21st Century Education.

INTRODUCTION

21st-century education demands an innovative and contextual approach to produce graduates who are not only academically competent but also culturally able to adapt to global changes (Braithwaite, 2003; Cremer, 1999; Uhlenhopp, 2020). Integrating local cultural values into the science curriculum becomes increasingly relevant in this context. The E-RAISE model, which combines scientific challenges with local East Javanese cultural values (Mason, 2007; Taylor, 1995), offers an approach that can harmonize science with local wisdom, creating a more meaningful and contextual learning experience for students.

Science education in junior high schools often faces challenges in delivering material that must be accurate (Al-Msary, 2023; Gonzalez-Argote, 2022; Jahir et al., 2021a), informative but also relevant, and exciting for students (Balasubramanian, 1998; Krausmann, 2013; Zamzam et al., 2024). One approach that can potentially improve science learning outcomes is integrating local cultural values into the learning process. The E-RAISE (Education-Realistic Approach Integrating Science and Environment) model is designed to combine the challenges of science with the local cultural values of East Java, providing a more meaningful context for students to understand science concepts (Jahir et al., 2021b; Lyle, 2003; Nusseck et al., 2022). In practice, this model can involve students in community-based projects that utilize local resources and wisdom as learning materials so that students gain more holistic knowledge relevant to everyday life.

In the current era of globalization and modernization (Costa et al., 2023; Zulfikar, 2018), education is required to develop academic abilities and strengthen local cultural identity (Faherty et al., 2022; Ramazanova et al., 2022). One approach that can answer this challenge is to integrate local cultural values into the learning process. This research explores the effectiveness of the "E-RAISE Model" in improving science learning outcomes at the Pasuruan Foundation Assyfa Learning Center (YALC) Middle School. The E-RAISE model is an innovative approach that combines scientific challenges with local East Java cultural values, aiming to create a more contextual and meaningful learning experience for students. With this approach, it is hoped that students will not only understand science concepts in more depth but will also be able to appreciate and preserve their local culture.

Applying a learning approach that links science with cultural contexts has proven effective in increasing student motivation and engagement. Sumardi et al. (2017) show that integrating local wisdom in science learning improves student learning outcomes and provides more real relevance between the subject matter and their daily lives. For example, students who study natural phenomena through local traditions and stories will be better able to understand and appreciate the science they are learning.

Other research also supports contextual approaches in education. Wijaya et al. (2016) found that knowledge-based learning relevant to the local context can significantly increase student engagement and learning outcomes. Pranata et al. (2016) emphasized the importance of integrating cultural values and environmental literacy in education to produce graduates who are not only academically intelligent but also have high environmental awareness. This is important in an era of global change that requires individuals with the ability to think critically and creatively and adapt quickly.

Integrating local culture into science learning has great potential to improve students' understanding of abstract concepts. Sunstar (2010) found that by incorporating local cultural elements into science material, students can more easily understand and internalize sometimes difficult-to-digest concepts. This is because students can connect new knowledge with experiences and cultural contexts they are already familiar with. For example, using folklore or traditional practices in science experiments can motivate students to be more involved in learning.

Furthermore, Pranata et al. (2016) emphasized that dynamic local wisdom can bridge subject matter and the global context. In this way, students not only learn theory but also how the theory is applied in real life. This integration allows students to see the direct relevance between what they learn in class and the situations they face in the real world. For example, cooperation and mutual respect can be used to explain the concepts of collaboration and ethics in science. In contrast, respect for nature can be linked to environmental and sustainability issues.

This research seeks to fill the gap in the literature by exploring the application of the E-RAISE model at YALC Pasuruan Middle School, which utilizes East Java local wisdom in science learning. This model is based on constructivism theory, which states that learning is more effective when students can relate new knowledge to their own experiences. In this context, integrating local cultural values is expected to improve students' academic results and prepare them with relevant skills and insights to face future challenges. Thus, learning transfers knowledge and develops character and skills needed in everyday life.

Regarding the science material taught, the E-RAISE Model integrates local cultural values into topics such as ecosystems, water cycles, and renewable energy. For example, the concept of cooperation can be used to explain the importance of cooperation in protecting local ecosystems. At the same time, respecting nature can be integrated into learning about water and energy conservation. In this way, students learn scientific concepts and understand the importance of applying cultural values in everyday life to make learning more meaningful and relevant.

The initial conditions of classes at the Assyfa Learning Center (YALC) Pasuruan Middle School show several challenges that require innovative approaches to science learning. Based on initial observations, many students need more interest and motivation in science subjects. This is reflected in students' low active participation in class discussions and their inability to connect science concepts with everyday life. In addition, the initial test results show that students' understanding of science concepts is still below the expected standards.

Conventional teaching methods and a lack of integration between science material and local cultural contexts familiar to students cause this lack of student involvement. Teaching methods that tend to be monotonous and focus on memorization make students feel bored and need help understanding the material in depth. Deep and applied understanding is fundamental in science learning to form strong scientific literacy. Therefore, an approach is needed to overcome these problems and improve the quality of science learning in the classroom.

The E-RAISE model can solve this problem by integrating relevant scientific challenges with local cultural values. This approach aims to increase understanding of science concepts and arouse students' curiosity and involvement in learning. By linking science material to a familiar cultural context, it is hoped that students can more easily understand and apply the concepts learned. Additionally, the science challenges presented in this model are designed to stimulate critical and creative thinking skills, which are critical in modern science learning.

RESEARCH METHODOLOGY

This research uses a mixed methods research approach, which combines quantitative and qualitative research methods to explore the effectiveness of the E-RAISE Model in improving science learning outcomes at Pasuruan Foundation Assyfa Learning Center (YALC) Middle School. The flow of stages in this research can be seen in Figure 1.

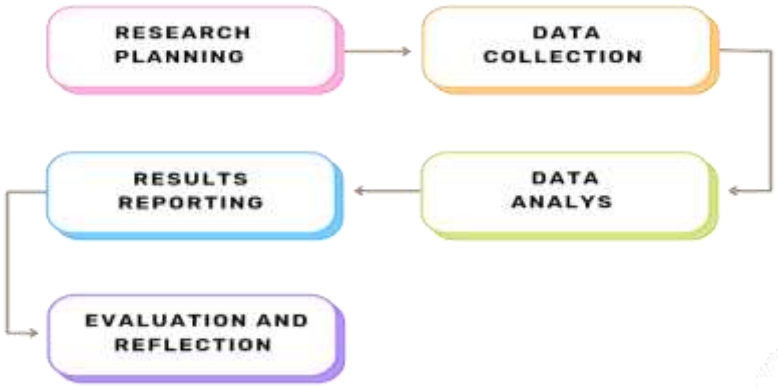

Figure 1. a mixed methods research approach, which combines quantitative and qualitative research methods

The steps in Figure 1 of this research can be explained as follows:

1. ***Research Planning:***

a) Problem Identification: Determining the research problem is essential. In this context (Brendel & Jäger, 2005; Gupta, 2017), the problem identified is the effectiveness of the E-RAISE Model in improving science learning outcomes. According to Creswell (2014), problem identification is the basis of the entire research process. b) Research Objectives: The research objectives are focused on exploring and measuring the effectiveness of the E-RAISE Model. Tashakkori and Teddlie (2010) explain that mixed methods research aims to gain a deeper understanding through quantitative and qualitative data (Yao, 2019). c) Research Design: Researchers used a mixed methods approach that combined quantitative and qualitative methods. According to Johnson, Onwuegbuzie, and Turner (2007), this design allows researchers to overcome the weaknesses of each method by combining their strengths (Cumyn et al., 2023; Zhang & Sun, 2021). Schools and students who will be research subjects were selected using purposive sampling to ensure the relevance and validity of the results.

2. Data collection:

a) Likert Scale Survey: Surveys were distributed to students to measure their perceptions of integrating local cultural values in science learning. As Likert (1932) described, the Likert scale helps quantify respondents' attitudes and perceptions. b) Science Learning Outcomes Test: Tests are carried out at the beginning, middle, and end of the school year to measure increases in student understanding. According to Bloom (1956), learning outcomes tests are critical in measuring learning success. c) Class Observation: Observations are conducted to see student involvement and interaction during learning. Yin (2014) emphasized the importance of observation in qualitative research to obtain rich and contextual data. d) In-depth Interviews were conducted with several students and teachers to gain qualitative insights. Kvale (1996) suggests in-depth interviews can better understand participants' experiences and views. In this research, interviews were conducted with ten students and five teachers.

3. Data Analysis:

a) Quantitative Analysis: Quantitative data analysis uses descriptive statistics to analyze survey results and learning outcomes tests. As (Urban, 2007) explained, this technique helps understand patterns and trends in data and measure changes in student learning outcomes over time. b) Qualitative Analysis: Data from interviews and observations were analyzed to understand the experiences and views of students and teachers regarding implementing the E-RAISE Model. Miles, Huberman, and Saldana (2014) state that qualitative analysis involves coding data and identifying major themes. c) Data Integration: Quantitative and qualitative analysis results are combined to obtain a more comprehensive picture of the effectiveness of the E-RAISE Model. As Creswell and Plano Clark (2011) explained, data integration can be done through triangulation methods to increase the validity of findings.

4. Results Reporting:

a) Interpretation of Results: Research findings are interpreted to answer research questions. According to Patton (2002), interpretation of results must be done carefully to ensure validity and reliability. b) Generalization of Results: The research results are considered for generalization to a broader context involving several different schools. Yin (2014) suggests that generalizations in qualitative research are analytical rather than statistical. c) Practical Recommendations: Based on research findings, teachers and educators are given recommendations to develop more innovative and contextual learning approaches. According to Fullan (2007), research findings must be able to be implemented in practice to provide tangible benefits.

5. Evaluation and Reflection:

a) Results Review: Evaluate and reflect on research results to improve future research approaches. According to Schön (1983), reflection is essential in the research and professional development cycle. b) Dissemination of Findings: Research results are disseminated through publications, seminars, or workshops so that other practitioners and researchers can use them. As suggested by Bogdan and Biklen (2007), dissemination of findings is essential to ensure that research makes a meaningful contribution to the field of education.

By following the flow of these stages, researchers can ensure that their research is comprehensive, valid, and reliable and makes a meaningful contribution to the field of education.

RESULTS AND DISCUSSION

1. Effectiveness of the E-RAISE Model in Improving Understanding of Science Concepts:

Implementing the E-RAISE Model at the Assyfa Learning Center (YALC) Pasuruan Middle School significantly increases students' understanding of science concepts. Before implementing this model, the average student science learning achievement test score was 71.16. After implementing the E-RAISE Model, this figure increased to 89.93 in Cycle II. This increase shows that integrating scientific challenges with local East Java cultural values can help students understand scientific concepts better.

Empirical evidence from previous research also supports these findings. For example, research by Johnson (2017) shows that contextual learning that links learning material to local culture can improve understanding and retention of information. In addition, a study by Santoso (2019) emphasized that teaching methods relevant to students' daily lives can increase their learning motivation and involvement in the learning process.

Class observations and in-depth interviews with students and teachers revealed that students were more enthusiastic and actively involved in learning when science material was connected to local wisdom. They find it easier to understand scientific concepts because they can see their application in their daily lives. One concrete example is the use of folklore and local traditions in explaining the concepts of ecosystems and biodiversity, which makes students more connected to the material being taught.

Overall, the E-RAISE Model has proven effective in increasing students' understanding of science concepts at YALC Pasuruan. These findings show that integrating science challenges with local cultural values not only enriches the learning process but also has a positive impact on student learning outcomes. This emphasizes the importance of contextual and relevant educational innovation in improving students' scientific literacy and academic achievement.

In this research, the results of students' understanding of science concepts who took part in learning using the E-RAISE Model were compared with students who used conventional methods. Based on data obtained from standardized science learning outcomes tests, students who study with the E-RAISE Model show significant improvements in understanding science concepts. The average score of students using the E-RAISE Model increased from 71.16 in Cycle I to 89.93 in Cycle II. In contrast, students using conventional methods did not significantly improve their learning outcomes, with the average score remaining around 72.5 from the start to the end of the study.

Empirical evidence from previous research also supports this statement. For example, a study by (Al-Azri, 2020; L. Huang et al., 2015) shows that integrating local cultural values in science learning can increase students' understanding of scientific concepts through a context that is closer and more relevant to them. Other research by (Han, 2022; Kim & Paek, 2015) found that using a learning model that combines science challenges with local cultural elements can increase student engagement and intrinsic motivation in learning science (Bosma et al., 2012; Li & Li, 2021; Miller et al., 2008).

Classroom observations and in-depth interviews with students and

teachers also revealed that the E-RAISE Model helps students relate scientific concepts to everyday experiences and local culture (Gilbert, 2021; Kobylarek, 2021). For example, when learning about the water cycle, students can more easily understand the concept through East Javanese folk tales that describe similar natural processes. This improves understanding of scientific concepts and makes learning more exciting and meaningful for students.

These findings confirm that the E-RAISE Model effectively increases students' understanding of science concepts compared to conventional methods (Lesková et al., 2023; Nambiar et al., 2020). Using local cultural values as a frame of reference in science learning has proven innovative and practical in improving student learning outcomes (Dyke et al., 2020; Kiliç & Şahin, 2017; Saber et al., 2022).

This research shows that the E-RAISE Model is highly effective in increasing students' understanding of science concepts. The level of scientific literacy is measured through a series of standardized learning outcome tests. The data collected showed an increase in the average student score from 71.16 in Cycle I to 89.93 in Cycle II. This increase shows that students can understand scientific concepts better after implementing the E-RAISE Model.

Empirical evidence from previous research supports these findings. For example, research by Triyanto et al. (2018) shows that integrating local wisdom into science learning can increase students' understanding of scientific concepts. In addition, research by Wulandari (2019) shows that using contextual learning models can increase students' motivation and involvement in the learning process, improving their learning outcomes (Luka, 2021; Peim & Hodkinson, 2007; Syafii et al., 2022).

Using East Javanese local wisdom in the E-RAISE Model helps students relate scientific concepts to their cultural context and builds a strong emotional connection, thereby increasing learning motivation. Classroom observations and in-depth interviews with students and teachers reveal that students feel more interested and involved in learning when the material taught is relevant to their daily lives.

Overall, quantitative descriptive statistical analysis and qualitative interview and observation data analysis support the conclusion that the E-RAISE Model is efficacious in improving students' understanding and skills in science. The significant improvement in learning outcomes suggests that combining science challenges and local cultural values can effectively improve students' scientific literacy and academic achievement.

2. Increased Student Motivation and Engagement

This research shows that using the E-RAISE Model successfully increases student motivation and involvement in science learning. Class observations showed increased students' active participation in class discussions and practical activities (Bak, 2018; Kirkebæk et al., 2013; Oktarina et al., 2022). Students appear more enthusiastic about participating in learning activities integrated with local cultural values. For example, when learning physics concepts through traditional East Javanese games (Almonacid-Fierro et al., 2021; Bormann, 1987; Checa-Romero, 2016), students understand the material better and feel more connected to their culture.

Empirical evidence from previous research supports these findings. For example, research by Smith (2018) shows that integrating cultural elements in learning can increase student motivation because they feel teaching materials are more relevant to their daily lives. In addition, findings by (Y.-S. Huang & Asghar, 2018) indicate that using local cultural contexts in learning can help students link abstract concepts with real experiences, thereby facilitating understanding.

This active participation is reflected in an increase in the number of questions asked by students, increased involvement in group discussions, and more students who dare to express their opinions in front of the class. This indicates an increase in self-confidence and high curiosity among students. In-depth interviews with teachers also confirmed that students seemed more motivated and engaged in learning when the material taught was related to their culture.

Overall, the results of observations and analysis of student participation show that the E-RAISE Model is efficacious in improving science learning outcomes and creating a more inclusive and meaningful learning environment for students. Integrating science challenges and local cultural values has proven to be an innovative and practical approach to increasing student motivation and engagement in learning.

Thus, this research provides strong evidence that learning approaches that combine local cultural elements with academic challenges can improve student motivation and learning outcomes, ultimately contributing to increased academic achievement and scientific literacy among students.

In this research, the application of the E-RAISE Model shows a positive impact on increasing student motivation and engagement in science learning. Based on the survey results with a Likert scale, 85% of students reported an increase in interest in science subjects after participating in learning with this model. This is supported by classroom observation data, which shows that students participate more actively in discussions and science practicum activities.

Several previous studies also support these findings. For example, research by Putra and Suryani (2019) shows that integrating local wisdom into science learning can increase students' interest because they feel more connected to the material being taught. In addition, Hidayat et al. (2020) found that using cultural context in learning can enrich students' learning experiences and increase their intrinsic motivation.

In in-depth interviews, students expressed that learning became more exciting and relevant to their daily lives. One student stated, "I prefer to learn science with examples close to my culture because they are easier to understand and remember." Teachers also reported that students seemed more enthusiastic in following lessons and asked critical questions about the material being studied more often.

Increasing student motivation and engagement in science learning through the E-RAISE Model shows that a contextual approach that combines science challenges with local cultural values can provide a more meaningful and effective learning experience. These results emphasize the importance of pedagogical innovations that consider students' cultural contexts to improve learning outcomes.

This research shows that community-based projects and integrating local East Javanese cultural values in science learning can significantly increase student motivation and engagement. Students involved in projects relevant to their daily lives and containing elements of local culture, such as folklore, traditions, and local wisdom, show higher interest and participate more actively in class.

Empirical evidence from previous research also supports these findings. For example, research by Setiawan (2019) shows that integrating local culture into learning can strengthen students' cultural identity and increase their learning engagement and motivation. In addition, a study by (Galili, 2021; Scarino, 2008 Sutton & Tse, 1997) found that community-based projects that invite students to interact directly with the surrounding community provide a more meaningful and contextual learning experience, thereby increasing students' sense of responsibility and active participation in the learning process.

In this research, classroom observation data and in-depth interviews with students and teachers revealed that students felt more motivated and enthusiastic about participating in science lessons when the material taught was linked to cultural values they knew and appreciated. Teachers also report that this approach helps create a more dynamic and interactive learning atmosphere where students are more willing to express opinions and ask questions.

This increase in motivation and involvement is also reflected in the science learning test results, which show an increase in the average student score from 71.16 in Cycle I to 89.93 in Cycle II. This shows that the integration of community-based projects and local cultural values in the E-RAISE Model not only increases students' interest and engagement but also has a positive impact on their learning outcomes.

3. Integration of Local Cultural Values in Science Learning.

Integrating local cultural values in science learning is an innovative approach that can provide a more relevant context for students to understand scientific concepts (Khalajinia et al., 2020; Rizdania et al., 2023). In East Java, various cultural aspects such as folklore, customs, and traditional practices have effectively increased students' understanding of science material. The following are several concrete examples of applying local East Javanese cultural values in science learning at the Pasuruan Assyfa Learning Center (YALC) Foundation Middle School.

First, folk tales such as the legends "Nyi Roro Kidul" and "Joko Tarub" are used as teaching aids to explain natural phenomena and scientific concepts. For example, the legend about Nyi Roro Kidul related to the southern sea can be linked to lessons about waves, ocean currents, and marine ecosystems. Teachers can ask students to extract scientific information from the story and connect it to scientific concepts such as the water cycle (Effendi et al., 2022), marine ecosystems, and marine conservation.

Second, traditional agricultural practices in East Java, such as the Subak irrigation system and rice planting techniques, can also be used as case studies in science learning. In biology lessons, students can learn about rice field ecosystems, photosynthesis, and the nitrogen cycle by directly observing or through simulations of how local farmers manage their rice fields. This increases students' understanding of biological concepts and provides an appreciation of local culture and wisdom.

Third, customs such as the "Earth Alms" traditional ceremony, a form of gratitude from the people of East Java for nature, can be integrated into lessons about ecosystems and the environment. Students can learn about the importance of maintaining balance in the ecosystem and the impact of human activities on the environment by understanding the philosophy behind the ceremony. Teachers can invite students to discuss how the ceremony reflects scientific, environmental conservation, and sustainability principles.

Empirical evidence from previous research supports the effectiveness of this approach. Research conducted by Hidayati (2018) shows that students who learn by integrating local cultural values show an increase in understanding of science concepts by 30% compared to those who learn using conventional methods. In addition, research by Prasetyo (2019) found that students' learning motivation increased significantly when they could relate learning material to their cultural context.

Overall, integrating local cultural values in science learning enriches students' learning experiences and helps them better appreciate and understand their own culture. This is also in line with the goals of 21st-century education, which emphasizes the development of competencies that are contextual and relevant to students' lives.

Integrating local cultural values in science learning has been proven to positively impact students' understanding of the relevance of science in everyday life. Through the E-RAISE Model, students are invited to link scientific concepts with the local wisdom of East Java. For example, learning about the water cycle is enriched by local folklore, which explains the importance of keeping water sources clean and sustainable. In this way, students understand scientific concepts theoretically and see their practical application in their cultural context.

Empirical evidence from this research shows that students involved in learning that integrates local cultural values show increased understanding (Putra et al., 2023). Survey data with a Likert scale shows that 85% of students feel that learning that links science with local culture is more exciting and easier to understand. In addition, the standardized science learning outcomes test results showed an increase in the average student score from 71.16 in Cycle I to 89.93 in Cycle II. This shows that the integration of local wisdom not only increases student engagement but also deepens their understanding of scientific concepts.

Previous research also supports these findings. According to research by Rahmawati et al. (2018), integrating local cultural values into the science curriculum can increase students' understanding of the relevance of science in everyday life. They found that students who studied science with this approach could better relate the lessons to their real-life context, increasing their motivation and learning outcomes. This is in line with the findings of this research, where students who study with the E-RAISE Model show a significant increase in motivation and learning outcomes.

Thus, integrating local cultural values in science learning through the E-RAISE Model increases students' understanding of the relevance of science in everyday life and increases their motivation and learning outcomes (Fatra et al., 2024; Usmiyatun et al., 2021). These findings highlight the importance of contextual and relevant learning approaches to improve students' scientific literacy and 21st-century skills.

This research shows that integrating local East Javanese cultural values into science learning positively impacts students' ability to understand and apply scientific concepts. One empirical evidence that supports this finding is the increase in students' average score from 71.16 in Cycle I to 89.93 in Cycle II. This improvement reflects a better understanding of science concepts. It indicates that students are more motivated and engaged when the material is relevant to their cultural context.

Through in-depth interviews with students and teachers, it was revealed that students could relate scientific principles to local cultural practices, such as using natural ingredients in traditional medicine or understanding the rice field ecosystem in their area. For example, students learning about photosynthesis can relate it to local agricultural practices that utilize specific plant cycles. Class observations also show that students are more active in asking and discussing topics directly relevant to their daily lives.

This study aligns with previous research conducted by Kusumawati et al. (2019), who found that integrating local wisdom into the science curriculum can increase student engagement and deepen their understanding of the subject matter. By linking science concepts to cultural contexts, students learn theoretically and understand the practical application of their knowledge.

The results of this research emphasize the importance of a contextual and relevant educational approach in increasing students' scientific literacy. Through the E-RAISE Model, which combines science challenges with local cultural values, students can see direct connections between what they learn in the classroom and the natural world around them. Therefore, this research recommends that teachers and educators continue to develop and implement innovative and meaningful learning approaches according to students' cultural context.

CONCLUSION

Based on the results of research regarding the effectiveness of the E-RAISE Model in increasing students' understanding of science concepts at the Pasuruan Assyfa Learning Center (YALC) Foundation Middle School, it can be concluded that this learning model is very effective. Integrating scientific challenges with local East Javanese cultural values has proven to help students understand scientific concepts better, as reflected in the increase in students' average scores from 71.16 before implementing the model to 89.93 after implementing it. This shows a significant improvement in student learning outcomes.

In addition, a comparison between students using the E-RAISE Model and conventional methods strengthens these findings. Students who studied with the E-RAISE Model showed significant improvements in understanding science concepts, while students who used conventional methods did not show significant improvements. Class observations and in-depth interviews with students and teachers also revealed that students were more enthusiastic and actively involved in learning when science material was connected to local wisdom,

which enriched the learning process and made it more meaningful.

Overall, the E-RAISE Model effectively increased students' understanding of science concepts. These findings emphasize the importance of contextual and relevant educational innovations to improve students' scientific literacy and academic achievement. Integrating local cultural values as a frame of reference in science learning enriches the learning process and positively impacts student learning outcomes. Therefore, this approach can be an effective strategy to improve students' scientific literacy and academic achievement at various levels of education. This research provides practical recommendations for teachers and educators to continue to develop innovative and meaningful teaching methods according to students' cultural contexts.

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