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The Effect Of The Realıstıc Mathematıcs Educatıon Model On Problem-Solvıng Abılıty And Responsıbılıty Character Of Elementary School Students

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ABSTRACT

This study aims to analyze the effect of the Realistic Mathematics Education model on elementary school students' problem-solving ability and character of responsibility. The background of this study stems from the low level of students' problem-solving performance and the need to strengthen character values within mathematics learning. The Realistic Mathematics Education model is selected because it provides contextual learning experiences that allow students to build understanding through real situations. This research employs a quantitative approach with a quasi-experimental design, specifically a pretest–posttest control group design. The subjects consist of fourth-grade students divided into a Realistic Mathematics Education learning group and a conventional learning group. Data are collected through a problem-solving ability test and a responsibility character questionnaire that have been validated and tested for reliability. The results indicate a significant difference between the two groups in both variables. Students taught using the Realistic Mathematics Education model demonstrate greater improvement compared to those who receive conventional instruction. The multivariate analysis confirms that the Realistic Mathematics Education model has a significant simultaneous effect on both research variables. These findings suggest that context-based mathematics instruction enhances thinking skills while fostering positive character development simultaneously. This study concludes that the Realistic Mathematics Education model is a practical approach for integrating cognitive development and character formation in elementary school mathematics learning.

Keywords: *Realistic Mathematics Education; problem-solving; learning responsibility; elementary school*

ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh model Realistic Mathematics Education terhadap kemampuan pemecahan masalah dan karakter tanggung jawab siswa sekolah dasar. Latar belakang penelitian ini berangkat dari rendahnya kemampuan pemecahan masalah siswa serta

perlunya penguatan karakter dalam pembelajaran matematika. Model Realistic Mathematics Education dipilih karena memberikan pengalaman belajar kontekstual yang memungkinkan siswa membangun pemahaman melalui situasi nyata. Penelitian ini menggunakan pendekatan kuantitatif dengan desain kuasi eksperimen bentuk pretest–posttest control group design. Subjek penelitian terdiri atas siswa kelas IV yang terbagi menjadi kelompok pembelajaran Realistic Mathematics Education dan kelompok pembelajaran konvensional. Data diperoleh melalui tes kemampuan pemecahan masalah dan angket karakter tanggung jawab yang telah diuji validitas serta reliabilitasnya. Hasil penelitian menunjukkan bahwa terdapat perbedaan signifikan antara kedua kelompok pada kemampuan pemecahan masalah dan karakter tanggung jawab. Siswa yang belajar menggunakan model Realistic Mathematics Education menunjukkan peningkatan yang lebih tinggi dibandingkan siswa yang mengikuti pembelajaran konvensional. Analisis multivariat membuktikan bahwa model Realistic Mathematics Education memberikan pengaruh signifikan secara simultan terhadap kedua variabel penelitian. Temuan ini menunjukkan bahwa pembelajaran matematika berbasis konteks mampu meningkatkan kemampuan berpikir dan membentuk karakter positif secara bersamaan. Penelitian ini menyimpulkan bahwa model Realistic Mathematics Education merupakan pendekatan yang efektif untuk mengintegrasikan pengembangan kognitif dan karakter dalam pembelajaran matematika di sekolah dasar.

Kata Kunci: Realistic Mathematics Education; pemecahan masalah; tanggung jawab; siswa sekolah dasar

INTRODUCTION

Mathematics learning in elementary schools plays a strategic role in developing students' logical, analytical, creative, and critical thinking skills. However, numerous studies have shown that elementary students' mathematical problem-solving abilities remain relatively low. Research indicates that students often struggle to understand problem situations, interpret information, and select appropriate solution strategies (Polya, 1981; Schoenfeld, 1985; Tambychik & Meerah, 2010). This condition aligns with the findings of Nugraheni & Marsigit (2021), who reported that mathematics instruction in elementary schools still primarily focuses on mechanical procedures, thereby failing to support the optimal development of problem-solving skills.

In this context, the Realistic Mathematics Education (RME) model has emerged as a widely recommended alternative approach. RME emphasizes that learning should begin with contexts close to students' real-life experiences through a process of mathematization that progresses from concrete to abstract (Freudenthal, 2002; Gravemeijer, 1994). Learning activities that use real contexts as the starting point have been shown to enhance conceptual understanding, higher-order thinking, and student achievement (Dinglasan & Ching, 2022; Laurens et al., 2018; ÜREDİ & DOĞANAY, 2023). In Indonesia, several studies have also demonstrated that RME is effective in helping students connect mathematical concepts with everyday situations (Rusiyanti et al., 2022; Wijaya, 2008).

Research conducted by Khairizka & Wandini (2024) article on elementary students' mathematical problem-solving skills reveals that students still struggle to interpret problems involving fractions, indicating the need for instructional models that offer more contextual and meaningful learning experiences. The second article shows that an open-ended RME-based approach can improve students' mathematical thinking skills through independent

exploration and group discussion. These findings reinforce the relevance and adaptability of RME for meeting the needs of elementary mathematics education.

Furthermore, mathematics learning is not only aimed at developing cognitive abilities but also at fostering character. The national curriculum highlights the importance of strengthening the Profil Pelajar Pancasila, which includes the character of responsibility. Responsibility in mathematics learning is reflected in students' discipline in submitting tasks, active participation in discussions, respect for peers' ideas, and accountability for both individual and group work processes and outcomes (Erlisnawati et al., 2020; Rahayu et al., 2020). However, several studies indicate that students' responsibility character still requires reinforcement through instructional models that provide space for active participation and reflection (Efendi & Ningsih, 2020; Suzana et al., 2021).

RME holds significant potential for fostering responsibility because it emphasizes group work, discussion, problem exploration, and reflection on individual and group performance. Such activities encourage students to assume roles, maintain commitment, and complete tasks independently and cooperatively (Ermawati et al., 2021; Lickona, 1996). Therefore, RME contributes not only cognitively but also affectively.

Moreover, methodological reviews indicate that studies examining the simultaneous influence of instructional models on both cognitive abilities and character development remain limited. Previous research has tended to focus on a single variable, either problem-solving skills or character, making a simultaneous investigation of problem-solving ability and responsibility essential. This study also aligns with the direction of Indonesian educational policy, which emphasizes meaningful, contextual, and character-oriented learning.

Based on these considerations, this study aims to analyze the effect of the Realistic Mathematics Education model on the problem-solving abilities and sense of responsibility of elementary students. The findings of this study are expected to contribute theoretically to the development of context-based mathematics learning models and practically to guiding teachers in designing learning activities that integrate cognitive and character aspects in a balanced manner.

METHODS

Type and Design

This research is quantitative because the data collected consisted of numerical scores obtained from tests and questionnaires, which were then analyzed using inferential statistics to test the hypotheses. The main objective of the study was to examine the effect of the Realistic Mathematics Education (RME) learning model on students' mathematical problem-solving ability and their responsibility character.

This study employed a quantitative approach with a quasi-experimental design, specifically a pretest–posttest control group design. This design was selected because in real school settings, it is generally not feasible to randomly assign students fully into experimental and control groups (Scher et al., 2015).

The independent variable (X) was the RME instructional model. The dependent variables were (Y_1) students' mathematical problem-solving ability and (Y_2) students' responsibility

character. The study investigated the effect of the instructional model on these two dependent variables, both simultaneously and separately.

The research procedures consisted of: (1) Preparation, developing RME learning materials (lesson plans, student worksheets, and learning media), pilot-testing the instruments, and coordinating with the school and classroom teacher; (2) Implementation, administering pretests and initial responsibility measurements to both groups before treatment, followed by several instructional meetings using the RME model in the experimental group and conventional instruction in the control group; and (3) Analysis, collecting and analyzing pretest and posttest data.

Data analysis included: (1) prerequisite tests of normality and homogeneity to ensure the assumptions for further analysis were met; (2) independent-samples t-tests to compare the posttest means of the experimental and control groups for each dependent variable; (3) gain analysis (e.g., N-gain) to measure improvement from pretest to posttest in problem-solving ability; (4) multivariate analysis (MANOVA) to determine the simultaneous effect of the instructional model on both dependent variables (Ntumi, 2021); and (5) a significance level of $\alpha = 0.05$.

Data and Data Resource

The research was conducted at SDN Tambaksawah Sidoarjo. The population consisted of all fourth-grade students. Two classes were selected as the sample: one class served as the experimental group (using the Realistic Mathematics Education model), and the other served as the control group (using conventional instruction).

Data collection technique

The instruments used in this study were 1) An essay-type mathematical problem-solving test was developed according to problem-solving indicators, including understanding the problem, planning a solution, carrying out the solution, and evaluating the result and 2) A responsibility character questionnaire using a Likert scale, covering indicators such as discipline in completing tasks, punctuality, independence, and accountability in individual and group work. The instruments were subjected to content validity testing through expert judgment and reliability testing using statistical methods.

RESULTS AND DISCUSSION

The study involved two classes: an experimental class taught using the Realistic Mathematics Education (RME) model and a control class taught using conventional instruction. Before the intervention, both groups took pretests measuring problem-solving ability and responsibility character. After six sessions, both groups took posttests with the same instruments.

In total, 30 students participated across the two instructional models (RME and conventional). Each group received pretests and posttests on the two variables: mathematical problem-solving ability and responsibility character.

Table 1. Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre Test	30	44	50	46.80	1.584
Post Test	30	66	85	74.70	6.894
Pre-Responsibility	30	3.0	3.2	3.067	.0661
Post-Responsibility	30	3.4	45.0	14.297	17.7685
Valid N (listwise)	30				

The mean posttest scores for problem-solving ability and responsibility character were higher in the RME group than in the conventional group, indicating that RME was more effective in improving both outcomes.

Shapiro–Wilk normality tests showed that all data were normally distributed (Sig. > 0.05). Levene's test indicated homogeneous variances for both problem-solving ability (Sig. = 0.184 > 0.05) and responsibility character (Sig. = 0.167 > 0.05). The data, therefore, met the prerequisites for t-tests.

Table 2. Independent-samples t-test

Variabel	t-hitung	Sig. (2-tailed)	Keterangan
Post_Problem	3.87	0.001	Signifikan
Post_Responsibility	4.12	0.000	Signifikan

P-values <0.05 indicate significant differences between the RME and conventional groups on both variables. Thus, implementation of RME yielded higher learning outcomes on both cognitive and affective aspects.

The results show that implementing the Realistic Mathematics Education (RME) model significantly improved elementary students' mathematical problem-solving ability and responsibility character. Although both groups improved after instruction, the gains in the RME group were consistently higher than those in the conventional group. This suggests that context-oriented learning rooted in students' experiences fosters deeper conceptual understanding and encourages positive changes in attitudes toward learning.

The improvement in problem-solving further indicates that realistic contexts in RME serve as an essential bridge between concrete experiences and abstract mathematical representations. Lessons that begin with contextual problems enable students to relate mathematical concepts to everyday experience. The process of mathematization from horizontal to vertical cultivates students' ability to analyze, plan strategies, and evaluate the solutions they produce.

Beyond cognitive outcomes, the findings also reveal a significant enhancement in responsibility character following RME implementation. This indicates that context-oriented and collaborative activities can foster positive character values. Students engaged in RME learn to value each member's role, carry out tasks with discipline, and take responsibility for their work products.

The observed interplay between thinking skills and responsibility suggests that cognitive and affective aspects of learning are inseparable. Meaningful learning not only increases knowledge but also shapes attitudes and values. When students understand the meaning of a concept and see its relevance to daily life, intrinsic motivation to learn rises, bringing with it a

sense of responsibility for both process and outcomes. In this way, RME supports a holistic view of education that integrates intellectual and moral development.

The findings of this study indicate that the implementation of the Realistic Mathematics Education (RME) model has a significant effect on elementary students' mathematical problem-solving ability and responsibility character. This outcome is consistent with the core principles of RME, which emphasize that real-life contexts serve as meaningful starting points for learning, enabling students to construct mathematical concepts through a gradual process of mathematization from informal to formal thinking (Gyan, 2013; Panhuizen, 2003). When students engage in contextual learning activities, their ability to comprehend problem situations improves, thereby facilitating the formulation of appropriate solution strategies.

The improvement in problem-solving abilities among students taught with RME aligns with various international studies demonstrating that context-based mathematics instruction enhances conceptual understanding and cognitive flexibility (Bakker, 2004; Fosnot & Dolk, 2001; Van Reeuwijk, 2001). Other research also shows that mathematical activities involving real-world problem exploration promote deeper, more reflective, and critical thinking (Fosnot & Dolk, 2001; Gellert, 2004). Within the Indonesian context, studies by (Saregar et al., 2016), (Arifin, 2020) similarly confirm that contextual approaches strengthen students' conceptual comprehension and problem-solving skills in elementary mathematics learning.

These findings are further reinforced by two studies published. The first article, Khairizka & Wandini (2024), which examined students' difficulties in solving fraction problems, revealed that challenges stemmed from the lack of contextual learning, resulting in students' inability to model mathematical situations properly. The second article, (Dirmansyah & Febriandi, 2023) Ermawati et al. (2021),demonstrated that open-ended, RME-based instruction enhances higher-order thinking skills through structured group discussions and reflection. Together, these findings highlight the crucial role of real-life contexts and collaborative learning as foundational components for improving problem-solving competence.

Beyond cognitive outcomes, this study also found a significant improvement in responsibility character among students who learned through RME. This finding aligns with research indicating that cooperative and project-based mathematical activities provide opportunities for students to actively participate and take responsibility for their learning processes (Althof et al., 2006; Berkowitz & Bier, 2005; Lovat & Toomey, 2009). Mathematical activities within RME—such as group work, contextual exploration, and presentation of results—encourage students to organize tasks, adhere to group norms, and carry out their assigned roles responsibly (Elias et al., 1997; Wentzel & Miele, 2016).

Conceptually, the relationship between problem-solving ability and responsibility character can be explained through theories of motivation and self-regulation. Students who find personal relevance and meaningfulness in learning activities tend to display higher intrinsic motivation, which in turn enhances their sense of responsibility for the learning process (Zimmerman, 2000). Contextual learning that demands autonomous exploration also fosters discipline, initiative, and persistence (Schunk & Greene, 2018) Therefore, mathematical activities embedded in RME not only strengthen cognitive skills but also cultivate positive learning dispositions.

The findings of this study are also consistent with broader empirical evidence showing that instructional models emphasizing meaningful learning activities yield dual impacts on cognition and character development (Aningsih et al., 2022; Zulkardi & Kohar, 2018). In RME, students are required not only to solve problems but also to understand the meaning behind contexts, articulate their reasoning, and evaluate their work. These experiences serve as important mechanisms for developing sustainable responsibility character.

Compared to conventional instruction—which tends to be teacher-centered and transmission-oriented—RME offers richer learning opportunities. Traditional teaching often positions students as passive recipients of information, limiting their ability to construct meaning from mathematical concepts (Slavin, 2014). Such an approach restricts the development of problem-solving ability and responsibility. In contrast, RME encourages active participation, facilitates connections between mathematical ideas and real-life experiences, and nurtures self-regulation skills essential for task completion.

Thus, the results of this study confirm that RME is not only an effective model for improving mathematical competence but also a valuable approach for fostering positive character development in students. The integration of progressive mathematization and social interaction within RME creates a comprehensive and meaningful learning experience that aligns with national educational priorities emphasizing literacy, numeracy, and character. This reinforces the potential of RME as a strategic pedagogical model for elementary mathematics instruction that supports holistic student development.

CONCLUSION

Based on the results and discussion, the Realistic Mathematics Education (RME) model has a positive and significant effect on improving elementary students' mathematical problem-solving ability and responsibility character. RME, emphasizing real-world contexts, exploratory activities, and reflection, creates meaningful learning experiences and encourages students to think critically, creatively, and systematically when solving mathematical problems. Collaborative interactions and group-based activities within RME also nurture responsibility, discipline, and awareness of students' roles and obligations in learning. These findings reinforce the view that cognitive development and character formation are inseparable in elementary education. Therefore, RME can be recommended as a strategic approach to mathematics instruction in elementary schools because it integrates thinking skills and character formation in a balanced way, in line with national education policy that emphasizes the strengthening of the Pancasila Student Profile.

REFERENCES

Althof, W., Berkowitz, & Marvin W. (2006). Moral Education and Character Education: Their Relationship and Roles in Citizenship Education. *Journal of Moral Education*.

Aningsih, Zulela, M. S., Neolaka, A., Iasha, V., & Setiawan, B. (2022). How is the Education Character Implemented? The Case Study in Indonesian Elementary School. *Journal of Educational and Social Research*, *12*(1), 371–380. https://doi.org/10.36941/jesr-2022-0029

Arifin, M. (2020). Strategi Pembelajaran Numbered Head Together (NHT) dalam Meningkatkan Minat Belajar Siswa Pada Materi Statistika. *Didactical Mathematics*, *2*(2), 10. https://doi.org/10.31949/dmj.v2i2.2074

Bakker, A. (2004). *Design research in statistics education : on symbolizing and computer tools*. Utrecht University.

Berkowitz, M., & Bier, M. (2005). *What Works in Character Education?* www.characterandcitizenship.org.

Dinglasan, J. L., & Ching, D. A. (2022). Realistic Mathematics Education Approach on Improving Problem-Solving Skills of Students. *The Research Probe*, *2*(2), 88–96.

Dirmansyah, M. R., & Febriandi, R. (2023). Meningkatkan Kemampuan Problem Solving Matematika Siswa Sd Melalui Implementasi Model Problem Based Learning. ***Jurnal Elementaria Edukasia***, *6*(4), 2135–2144. https://doi.org/10.31949/jee.v6i4.7591

Efendi, R., & Ningsih, A. R. (2020). *Pendidikan Karakter di Sekolah*. CV. Penerbit Qiara Media. www.google.com

Elias, M. J., Zins, J. E., Weissberg, R. P., Frey, K. S., Greenberg, M. T., Haynes, N. M., Kessler, R., Schwab-Stone, M. E., & Shriver, T. P. (1997). *Promoting Social and Emotional Learning*. ASCD (Association for Supervision and Curriculum Development). http://www.ascd.org.

Erlisnawati, Sapriya, & Budimansyah, D. (2020). The Elementary School Students' Responsibility Character Analysis. *International Journal of Scientific & Technology Research*, *9*(03), 4874–4877. https://doi.org/10.1016/S0742

Ermawati, I. R., Setianingrum, D., & Maurina, M. (2021). Efektivitas E-Learning Materi Persamaan Bessel Menggunakan Schoology pada Fisika Matematika untuk Melatih Karakter Mahasiswa. *Jurnal Ilmiah Pendidikan Fisika*, *5*(2), 186. https://doi.org/10.20527/jipf.v5i2.2860

Fosnot, C. T., & Dolk, M. (2001). *Developing Efficient Computation With Minilessons is an excerpt from Young Mathematicians at Work: Constructing Number Sense, Addition, and Subtraction*.

Freudenthal, H. (2002). *Revisiting Mathematics Education*. Kluwer Academic Publishers.

Gellert, U. (2004). Didactic Material Confronted with the Concept of Mathematical Literacy. *Journal Educational Studies in Mathematics*, *55*(1/3).

Gravemeijer, K. P. E. (1994). *Developing Realistic Mathematics Education*. Freudenthal Institute.

Gyan, J. (2013). *Mathematisation - Vertical and Horizontal*.

Khairizka, W. I., & Wandini, R. R. (2024). An Open-Ended Based Realıstıc Mathematıcs Learnıng Approach To Students' Creatıve Mathematıcal Thınkıng Abılıtıes. ***Jurnal Elementaria Edukasia,*** *7*(2), 2759–2771. https://doi.org/10.31949/jee.v7i2.9652

Laurens, T., Batlolona, F. A., Batlolona, J. R., & Leasa, M. (2018). How does realistic mathematics education (RME) improve students' mathematics cognitive achievement? *Eurasia Journal of Mathematics, Science and Technology Education*, *14*(2), 569–578. https://doi.org/10.12973/ejmste/76959

Lickona, T. (1996). Eleven Principles of Character Education. *Journal of Moral Education*.

Lovat, T., & Toomey, R. (2009). *Values Education and Quality Teaching*. Springer.

Ntumi, S. (2021). Reporting and Interpreting Multivariate Analysis of Variance (MANOVA): Adopting the Best Practices in Educational Research. *ASERS Publishing*, *12*(14). https://doi.org/https://doi.org/10.14505/jres.v12.14.05

Nugraheni, L. P., & Marsigit, M. (2021). Realistic mathematics education: An approach to improve problem solving ability in primary school. *Journal of Education and Learning (EduLearn)*, *15*(4), 511–518. https://doi.org/10.11591/edulearn.v15i4.19354

Panhuizen, M. V. D. H. (2003). The didactical use of models in realistic mathematics education: An example from a longitudinal trajectory on percentage. *Educational Studies in Mathematics*, *54*.

Polya, G. (1981). *Mathematical Discovery (On Understanding, Learning, and Teaching Problem Solving)*. Library of Congress.

Rahayu, D., Sutama, Narimo, S., & Fathoni, A. (2020). The Character Education in Learning Mathematics at Elementary School. *International Journal of Innovative Science and Research Technology*, *5*(7). www.ijisrt.com

Rusiyanti, R. H., Zulkardi, Putri, R. I. I., & Somakim. (2022). Developing RME-based lesson study for learning community in the learning environment of high school mathematics teachers. *Journal on Mathematics Education*, *13*(3), 499–514. https://doi.org/10.22342/jme.v13i3.pp499-514

Saregar, A., Latifah, S., & Sari, M. (2016). Efektivitas Model Pembelajaran CUPs: Dampak Terhadap Kemampuan Berpikir Tingkat Tinggi Peserta Didik Madrasah Aliyah Mathla'ul Anwar Gisting Lampung. *Jurnal Ilmiah Pendidikan Fisika Al-Biruni*, *5*(2), 233–244. https://doi.org/10.24042/jpifalbiruni.v5i2.123

Scher, L., Kisker, E., & Dynarski, M. (2015). *Analytic Technical Assistance and Development Designing and Conducting Strong Quasi-Experiments in Education*.

Schoenfeld, A. H. (1985). *Mathematical problem solving*. Academic Press.

Schunk, D. H., & Greene, J. A. (2018). *Handbook of Self-Regulation of Learning and Performance* (2nd ed.). Routledge Taylor & Francis Group.

Slavin, R. E. . (2014). *Educational psychology : theory and practice*. Pearson.

Suzana, Y., Sabaruddin, Maharani, S., & Abidin, Z. (2021). Mathematics Learning Through Character Education Based on Integrated Thematic Learning: A Development of Learning Materials. *Infinity: Journal of Mathematics Education*, *10*(2), 301–318. https://doi.org/10.22460/infinity.v10i2.p301-318

Tambychik, T., & Meerah, T. S. M. (2010). Students' difficulties in mathematics problem-solving: What do they say? *Procedia - Social and Behavioral Sciences*, *8*, 142–151. https://doi.org/10.1016/j.sbspro.2010.12.020

ÜREDİ, P., & DOĞANAY, A. (2023). Developing the Skill of Associating Mathematics with Real Life Through Realistic Mathematics Education: An Action Research. *Kuramsal Eğitimbilim*, *16*(2), 394–422. https://doi.org/10.30831/akukeg.1214339

Van Reeuwijk, M. (2001). *From Informal to Formal, Progressive Formalization an Example on "Solving Systems of Equations."*

Wentzel, K. R., & Miele, D. B. (2016). *Handbook of Motivation at School* (second). Routledge Taylor & Francis Group.

Wijaya, A. (2008). *Design Research in Mathematics Education: Indonesian Traditional Games as Means to Support Second Graders' Learning of Linear Measurement*. Utrecht University.

Zimmerman, B. J. (2000). Self-Efficacy: An Essential Motive to Learn. *Contemporary Educational Psychology*, *25*(1), 82–91. https://doi.org/10.1006/ceps.1999.1016

Zulkardi, Z., & Kohar, A. W. (2018). Designing PISA-Like Mathematics Tasks in Indonesia: Experiences and Challenges. *Journal of Physics: Conference Series*, *947*(1). https://doi.org/10.1088/1742-6596/947/1/012015