Jurnal Bidang Pendidikan Dasar
Vol 9 No 2, June 2025, pp 197 – 210
Available at:
http://ejournal.unikama.ac.id/index.php/JBPD

Profile of conceptual understranding in subtraction among grade 2 madrasah ibtidaiyah

Muhammad Syahru Romadhon*, Wahyu Henky Irawan, Abdussakir Abdussakir

UIN Maulana Malik Ibrahim, Jl. Gajayana No. 50 Malang, East Java, 65144, Indonesia
*msyahruromadhon14@gmail.com **

Abstract: *Subtraction is a key concept in early mathematics, especially for second-grade students in Madrasah Ibtidaiyah. This study aims to analyze students' understanding of subtraction using a qualitative exploratory descriptive method. Data were collected through tests, interviews, and documentation with second-grade students of MI Islamiyah. The results show varied levels of understanding: some students applied formal strategies with place value, while others used visual aids such as line counting. Common errors were linked to misconceptions of place value and incorrect procedures. The study highlights the need for interactive learning and personalized guidance to strengthen students' conceptual mastery of subtraction.*

Keywords*: Subtraction; Conceptual understanding; Place value; Visual strategies; Mathematics education*

Introduction

Mathematics learning at elementary school level is a process of interaction between teachers and students that includes the development of thought patterns in a learning environment created by teachers in various ways, strategies, methods and approaches so that the mathematics learning process can develop optimally (Rizky & Samosir, 2022). At the elementary school level, essential concepts are instilled, one of which is the concept of counting (Setiana, Ayuningtyas, Wijayanto, & Kusumaningrum, 2021). Counting means operating numbers (Pratama & Setyaningrum, 2024). The purpose of arithmetic instruction is to equip students with the ability to process numbers and solve daily problems efficiently (Bopo, Ngura, Fono, & Laksana, 2023). Number operations taught in elementary schools, especially in counting, are divided into four, namely adding, subtracting, multiplying and dividing (Fadliansyah, 2023). Subtraction is one of the first operations introduced to grade 2 students of elementary madrasahs.

Subtraction is an important arithmetic operation used in almost all subsequent basic competencies in mathematics learning. Given the importance of this material, every student should be able to master subtraction well (Putri & Wandini, 2023). The instillation of the concept must be strong so that there are no difficulties in arithmetic skills (Dwi & Audina, 2021). Understanding and skills in doing mathematics are closely related (Romadhon, 2024). If one of the understanding and calculation skills is missed, it is difficult for students to learn happily (Faizah, Faizah, Romadhon, & Widayanti, 2023). Without a fun process, learning mathematics will feel difficult.

https://doi.org/10.21067/jbpd.v9i2.11148

In the subtraction learning process, students are given direct notation, for example (8-3= …). In fact, there are still students who do not understand the meaning of (- ,=). This also makes it difficult for students to operate subtraction (Parwadi, Susanta, & Muchlis, 2020). According to Piaget in Marinda, children's cognitive development is divided into five stages (Marinda, 2020). At the elementary school stage, students are still in the concrete operational stage (Eva, Riswari, Rahmah, Rahmawati, & Anelka, 2021). At this stage, the design and learning process need to be meaningful to students so that students are able to identify understanding of the concept of subtraction.

Based on a case study conducted by researchers on grade 2 students at MI Islamiyah, there are students who still do not understand the concept of subtracting two numbers correctly. This can be seen from the mistakes that often appear when students do subtraction, both procedurally and conceptually. This is certainly a crucial problem that needs to be investigated for its cause. Because if students have not mastered subtracting two numbers (tens number) smoothly, it is impossible for students to be able to continue subtraction at the next level.

Students' errors in calculating tens number, for example in calculating 74-55 = ... , some students answered by counting in sequence. Students subtract 7 from 5 in the tens digit first, then students subtract 4 from 5. So they write 74 - 55 = 29. This field fact is an indication that students do not yet understand the place value of a number.

Some students still used line counting for 74-55, indicating a low conceptual understanding of subtraction. The student answered correctly by counting lines. Counting using the help of lines is an early stage ability, namely counting. The stages of calculating two-digit numbers according to Duyen include counting by counting, counting with structure, then formal counting (Duyen & Loc, 2022). In grade 2 children, they should no longer do subtraction by counting backwards. Because the concept given in grade 2 has increased. At least students can subtract through formal counting, for example with the stacking counting procedure to subtract two-digit numbers (Masniah, 2021).

The results of a previous study conducted by Fauzi et al., (2021) concluded that the most common type of error in addition and subtraction operations is a conceptual understanding error. Students generally know about the stacking counting procedure. The study stated that several students answered 46 – 28 = 22. Students worked on the problem using the short stacking counting procedure. According to students, subtracting units that have a smaller value with units that have a larger value cannot be done. So they wrote 4 – 2 = 2. Followed by 6 – 8 = 8. So students wrote 46 – 28 = 22. In this study, researchers used the 2013 curriculum so that the research topic was on addition and subtraction. Meanwhile, researchers only studied the subtraction stage, because in the independent curriculum, subtraction material is a separate material.

Conducted an exploration of students' errors in addition and subtraction. In the qualitative descriptive study, it was stated that many students were unable to do short-order arithmetic, because students did not understand the concept of place value (Dianita & Romadhon, 2024; Hadiyani, Romadhon, & Susilawati, 2025; Ningrum, Rofiki, Romadhon, & Derajat, 2024). From several studies mentioned above, there is one similarity that the

difficulty faced by students in subtraction is a lack of conceptual understanding, so it is necessary to study students' conceptual understanding, especially in subtraction material (Ananda, Irawan, & Abdussakir, 2024).

The existence of mathematics learning, especially subtraction, provides the ability to solve problems in everyday life. In line with this opinion, problem-solving ability is one of the 21st century skills (Sigiyuwanta, Mustiningsih, & Nurabadi, 2024). Therefore, the learning that is designed must be able to develop students' problem-solving abilities (Darmawan & Airlanda, 2021). Problem-solving ability is very important in mathematics, not only for people who study or learn mathematics, but also for people who will apply it in other fields of study and in everyday life (Ananda et al., 2024).

The importance of learning that encourages students' problem-solving abilities is expected to be able to build students' mathematical knowledge (Hendri & Kenedi, 2018). The impact is the ability to solve problems in everyday contexts and students are able to adjust various strategies in solving problems (Yasa, 2017).

From the explanation above, it can be seen the importance of analyzing students' conceptual understanding and problem solving abilities, to plan learning that is in accordance with student characteristics in addition and subtraction materials. So that a comprehensive analysis of students' conceptual understanding and problem solving abilities is needed. Therefore, the researcher conducted a study by examining students' understanding in the process of working on subtraction of grade 2 students of elementary madrasah.

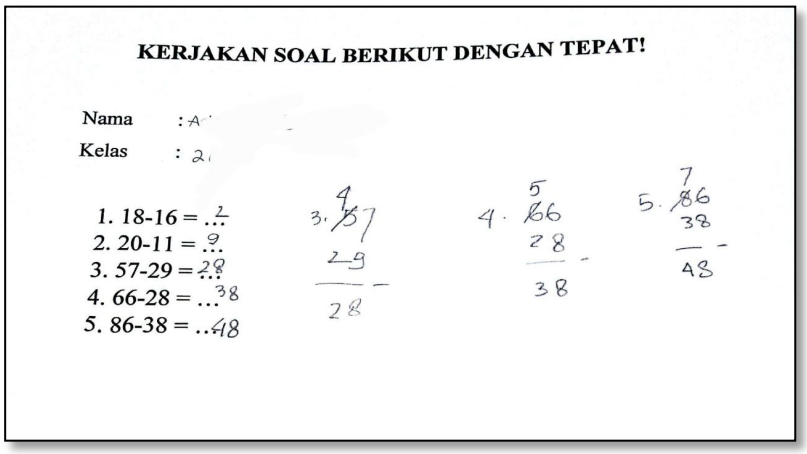
Method

This study uses a qualitative approach and the type of research used is descriptive exploratory (Cresswell & Guetterman, 2019). The researcher uses a descriptive exploratory type because in this study the data produced is in the form of narrative data related to students' subtraction problems obtained from data in the form of student answer sheets. The researcher then continued the interview activity with the students concerned to further identify students' understanding of subtraction. The data collection methods used in this study were tests, interviews and documentation. The test conducted in this study was a descriptive test consisting of 5 questions. The test was conducted to determine the understanding of the concept in solving subtraction problems in grade 2 students at MI Islamiyah. The research subjects were 1 class with a total of 30 students. The sampling of this study was based on purposive sampling and the sample used by the researcher was 4 people according to the consideration of the highest and lowest scores and the students' ability to solve subtraction problems. The purpose of this selection was not to generalize to the entire population, but rather to obtain contrasting cases that illustrate different patterns of problem-solving strategies, thereby allowing an in-depth analysis of students' mathematical thinking (Romadhon, Febrianti, Rahmawati, Derajat, & Aprilia, 2024).

Results and Discussion

In the research activity, the researcher distributed test instruments to 30 students to carry out cognitive tests. Based on findings in the field, as many as 4 students experienced difficulties and the remaining 26 students did not experience difficulties. Based on these field findings, the researcher chose 4 samples as a comparison to determine the understanding of the concept of subtraction of grade 2 students. The four samples were 2 students who had a score of 100 but had different ways of working on subtraction problems, and 2 students who had a score of 40 who also had different ways of working on subtraction problems. The following are the results of the study.

Students with a score of 100 but working on problems using the backward and short-order methods. In subject 1, students are able to work on problems using two methods. The method used is by counting backwards and the short stacking method. The results of the findings of the students' work are presented in Figure 1.


KERJAKAN SOAL BERIKUT DENGAN TEPAT!

Nama : A

Kelas : 2

1. 18-16 = ..2
2. 20-11 = ..9
3. 57-29 = ..28
4. 66-28 = ...38
5. 86-38 = ..48

Figure 1. Results of Subject 1st work

To find out students' understanding of the concept, the researcher conducted an interview with subject 1. The following is an excerpt from the interview results with subject 1:

Researcher	*: How do you do these questions?*
Subject 1	*: Some use the countdown method and some use the borrowing method, sir.*
Researcher	*: What number is counting down?*
Subject 1	*: Number 1 and 2*
Researcher	*: Why count down?*
Subject 1	*: Because the numbers were close to the small numbers, Sir, in the end I counted backwards.*
Researcher	*: How is that done?*
Subject 1	*: 18-16 is 18 kept in my mouth then I counted backwards using my hands 17,16,15,14, then until I stopped at 16 then I found the answer 2.*
Researcher	*: What about number 2?*
Subject 1	*: yes sir, 20-11 is 20 kept in my mouth then I counted backwards using my hands 19,18,17,16, then until I stopped at 11 then found the answer 9.*

In the findings, students appear to understand the concept of subtraction. This is because students are able to choose the right method when working on problems with adjacent numbers and small values. The researcher continues the process of extracting information to work on the next problems.

Researcher	*: What about the other things, son?*
Subject 1	*: use the borrowing method, sir.*
Researcher	*: Which number uses the borrowing method?*
Subject 1	*: Number 3,4 and 5*
Researcher	*: Why calculate it using the borrowing method?*
Subject 1	*: Because the bottom number is big, in the end I borrowed the front one.*
Researcher	*: Which one is the front, son?*
Subject 1	*: The tens number digit.*
Researcher	*: How to do it?*
Subject 1	*: The way is 57-29, the seven is smaller than nine, so borrow the front, the front is 5, the number 5 is crossed out so it becomes 4 and the number 7 becomes 17. 17-9 is 8. Then the number 4 is subtracted from 2 to become 2. Then the answer becomes 28.*
Researcher	*: How do you do numbers 4 and 5?*
Subject 1	*: Same here, sir, I borrowed it too.*
Researcher	*: Who taught you the short way?*
Subject 1	*: Teacher and mom.*

In the findings, students appear to understand the concept of subtraction using the short stacking method. This is because students already understand how to write numbers in the units column, tens number, and then subtract starting from the units column. The reason students choose the short stacking method is because in the subtracted number (subtractor), the unit digit is greater than the unit digit of the number being subtracted (the larger number). In situations like this, the short stacking method is usually easier and more efficient to do subtraction by borrowing from the column next to it (Nada & Romadhon, 2024; Saputro, 2023).

Problem solving carried out by students is actually looking for efficiency in solving problems. This is in line with Piaget's cognitive development theory which states that children at this stage begin to realize that there are various ways to achieve the same goal, and they will choose the easiest and fastest way (Nainggolan & Daeli, 2021). In addition, the subject is also able to think logically and systematically, and can perform number operations (Susanti, 2020). This activity is shown by students who are able to classify numbers based on place value (Fauzi et al., 2021; Romadhon & Rosadi, 2024). Students also choose a short-order method to show their ability to think logically by analyzing the structure of the question and choosing the most appropriate method. (Romadhon, 2024).

The findings indicate that subject 1 was able to clearly explain the subtraction process using the short stack method. This shows that students can not only do calculations, but also understand the concept behind the method. The subject's ability to explain the process in detail indicates that he not only memorized the steps of the algorithm, but also understood the concept behind it (Fan & Bokhove, 2014). This supports the constructivist view which

emphasizes the importance of building students' conceptual understanding through active experiences (Al Abri, Al Aamri, & Elhaj, 2024). In other words, the subject has succeeded in constructing his own understanding of short compound subtraction.

Students with a score of 100 but working on problems using the line counting method**.** In subject 2, students were able to work on the questions using only one method. The method used was by counting backwards. The results of the students' work are presented in Figure 2.

Figure 2. Results of Subject 2nd work

To find out the students' understanding of the concept, the researcher conducted an interview with subject 2. The following is an excerpt from the interview results with subject 2:

Researcher	*: How do you do these questions?*
Subject 2	*: Use the line calculator, sir.*
Researcher	*: Which number counts using lines?*
Subject 2	*: Everything*
Researcher	*: Why calculate subtraction using lines?*
Subject 2	*: Subject 2 just smiled.*
Researcher	*: Why are you smiling?*
Subject 2	*: That's all I can do.*
Researcher	*: Do you have difficulty with subtraction?*
Subject 2	*: I can but I'm confused.*

In the findings, students were still confused about the concept of subtraction. Because students were confused about subtraction, students ended up using lines to work on the problems. The researcher continued the process of extracting information from subject 2 regarding how to calculate subtraction carried out by students.

Researcher *: How do you calculate the lines in subtraction to solve these problems?*
Subject 2 *: I'll make lines first, sir. There are 10 lines for each one (1 line). If the question has 18 lines, I'll make 10 lines above it and 8 lines below it.*
Researcher *: How to do the subtraction?*
Subject 2 *: Number 1 is 18 minus 16, which means the method is 18 lines, then I put 16 lines below it, then I found 2 without lines. That means the answer is 2.*
Researcher *: Everyone uses the line drawing method?*
Subject 2 *: Yes sir, all of them use lines.*
Researcher *: Is there another way to do subtraction?*
Subject 2 *: Yes sir.*
Researcher *: What way?*
Subject 2 *: Borrow it, but I'm confused, sir.*

The research findings show that subject 2 successfully completed the subtraction problem correctly, but chose to use a visualization strategy with lines. This preference indicates that subject 2 is still in the stage of building a strong conceptual understanding of subtraction, especially in the context of borrowing (Safitri, Zakiah, & Sumantri, 2024). The use of lines as a visual aid is in line with constructivist learning theory which emphasizes the importance of building understanding through active experience (Arafah, Sukriadi, & Samsuddin, 2023). Subject 2 is in the process of constructing his own understanding of subtraction in a way that is most meaningful to him.

Choice to use lines can also be linked to Piaget's theory of cognitive development. At the concrete operational stage, children tend to think concretely and require visual representations to understand abstract concepts (Arifin & Sulistyowati, 2020). The lines created provide a concrete visual representation of the subtraction process, making it easier for subject 2 to visualize the operation (Romli, Sesanti, & Triwahyuningtyas, 2020).

However, to solve more complex problems, the use of algorithms such as the short-order method will be more efficient. Therefore, it is important for subject 2 to be guided gradually to be able to switch from a visual strategy to an algorithmic strategy (Cholifah, 2021). This transition process is in line with the concept of the zone of proximal development proposed by Vygotsky (Mulyasari, Abdussakir, & Rosikhoh, 2021). This concept refers to the gap between what a child can do on his/her own and what he/she can do with the help of others such as teachers or tutors (Nurramadhani, Kumala, & Permana, 2021). With guidance, subject 2 can go beyond his/her current abilities and master the short stacking method and make it easier for students to solve subtraction problems.

Students with a score of 40 but working on questions using the short-form method. In subject 3, students worked on the questions using the short-order method. However, the students' work was wrong and only 2 questions were correct. The results of the students' work are presented in Figure 3.

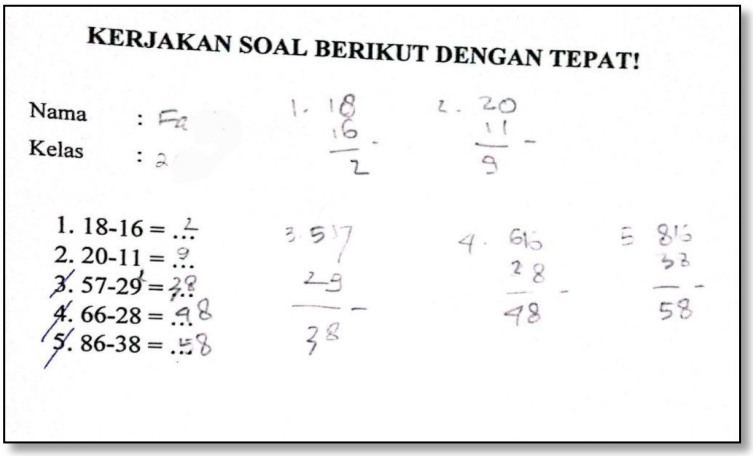


Figure 3. Results of Subject 3rd work

To find out the students' understanding of the concept, the researcher conducted an interview with subject 3. The following is an excerpt from the interview results with subject 3:

Researcher	*: How do you do these questions?*
Subject 3	*: Use the stacked method, sir.*
Researcher	*: Which number counts using the stacking method?*
Subject 3	*: Everything*
Researcher	*: Why calculate using the stacking method?*
Subject 3	*: The teacher taught me that.*
Researcher	*: Why are the answers to numbers 3 to 5 wrong?*
Subject 3	*: Don't know.*
Researcher	*: How to do it?*
Subject 3	*: Number 1 first, right, sir?*
Researcher	*: Yes, starting from number 1, how do you do it?*
Subject 3	*: Number 1 is easy sir, 18 minus 16 means 2 Number 2 is 20 minus 11 which means nine. Number 3 is 57 minus 29, which means 5 is subtracted from 2 to get 3. Then seven is subtracted from 9, because it can't be, which means seven becomes 17 minus nine to get 8. So the answer is 38.*
Researcher	*: How about numbers 4 and 5?*
Subject 3	*: Same method, sir.*

The results of the study showed that there was a disparity in the calculation abilities of subject 3 (Huang, 2023). Although the subject was able to solve the first two problems correctly, significant errors occurred in the problems involving larger tens number. Although subject 3 finds it easy to calculate, good calculation ability does not always guarantee strong conceptual understanding. Strong conceptual understanding is essential for solving more complex mathematical problems. (Friantini et al., 2020). Further analysis showed that this error was most likely caused by a misconception regarding the place value of numbers (Romadhon, Padil, & Tharaba, 2024).

Subject 3 seems to have not fully mastered the concept of place value, so he has difficulty in regrouping or borrowing when faced with more complex numbers. This shows that although subject 3 finds it easy to count, his conceptual understanding still needs to be strengthened, especially in the context of larger tens number. (Usep, Wirahardja, Safarin, Rahmawat, & Susetyo, 2023). The error made by subject 3 indicates a fundamental misunderstanding of the place value of numbers. (Trisnawati, Kusuma, & Yulianto, 2023). The concept of place value is an important foundation in understanding arithmetic operations. (Amaliah & Indrawati, 2022). When students do not understand place value correctly, they will have difficulty in performing arithmetic operations that involve grouping numbers by units number, tens number, hundreds number, and so on. (Setyawan & Diplan, 2019).

Students with a score of 40 but working on problems using the backward counting method. In subject 4, students worked on the questions using the backward counting method. However, the students' work was wrong and only 2 questions were correct. The results of the students' work are presented in Figure 4.

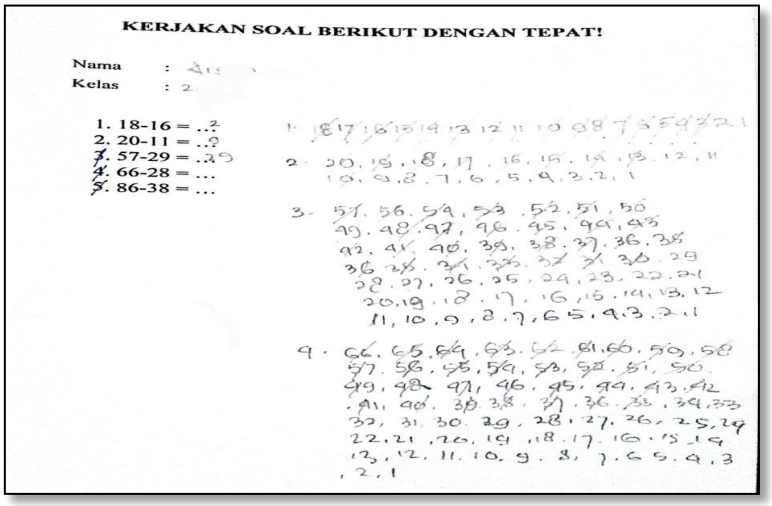


Figure 4. Results of Subject 4th work

To find out the students' understanding of the concept, the researcher conducted an interview with subject 4. The following is an excerpt from the interview results with subject 4:

Researcher : How do you do these questions?
Subject 4 : Counting backwards sir.
Researcher : Which number counts using the backward counting method?
Subject 4 : Everything
Researcher : Why count down?
Subject 4 : I can't use the stacking method.
Researcher : Why are the answers to numbers 3 to 5 wrong?
Subject 4 : There are so many numbers, sir, that it won't be finished.
Researcher : Does that mean you need a long time when you do it?
Subject 4 : Yes sir.
Researcher : How do you do it?

Subject 4 : Number 1 is easy, Sir, 18 minus 16 means I write 18,17,16,15, and so on until 1. Then I calculated, Sir, the number is 18 minus 16 means 2.
Researcher : How about number 2?
Subject 4 : Same method, sir.
Researcher : How about number 3?
Subject 4 : Same here sir, but I haven't finished.

Subject 4 showed a unique strategy in solving subtraction problems, namely by manually counting backwards from the larger number to the smaller number. Although this strategy can produce correct answers for simple problems, it is less efficient and has the potential to cause errors in more complex problems (Widyatma & Ramadhani, 2024). The use of manual backward counting strategy indicates that subject 4 has problems in mastering the concept of serial subtraction. The backward counting strategy is less efficient, especially when dealing with large numbers or problems that involve several calculation steps (Yuliana, 2015). This was proven when students only managed to work on the first two questions, which were close in number.

The problem expected by subject 4 could be caused by several factors, such as a lack of understanding of place value, difficulty in visualizing the subtraction process abstractly, or a lack of practice in using the sequential subtraction algorithm. If students do not understand the concept of place value well, they will have difficulty in regrouping or borrowing (Fauzi et al., 2021; Romadhon, Padil, & Zuhriyah, 2024). If students have difficulty visualizing the subtraction process, they will have difficulty using the nested subtraction algorithm so that students look for alternatives by counting backwards (Devi, 2019). Students such as subject 4, need to be guided personally to be able to solve subtraction problems using various techniques. Given that subtraction will be used continuously at various levels.

Conclusion

Based on the results of the study, it can be concluded that the understanding of the concept of subtraction among grade 2 madrasah ibtidaiyah students shows significant variations. While some students are able to apply formal calculation methods through an understanding of place value, others rely more on visual strategies such as line counting. Common errors are mostly related to misconceptions about place value and inaccuracies in applying formal subtraction procedures. To address these issues, teachers need to implement more interactive, concrete, and experience-based learning strategies and provide personalized guidance to help students overcome specific difficulties, particularly in borrowing within place value, so that students can build a stronger conceptual foundation and be better prepared for more advanced mathematical concepts.

References

Al Abri, M. H., Al Aamri, A. Y., & Elhaj, A. M. A. (2024). Enhancing Student Learning Al Abri, M. H., Al Aamri, A. Y., & Elhaj, A. M. A. (2024). Enhancing Student Learning Experiences Through Integrated Constructivist Pedagogical Models. *European Journal of Contemporary Education and E-Learning*, *2*(1), 130–149.

Amaliah, N. R., & Indrawati, D. (2022). Pengembangan Permainan COBRA (Congklak Berbasis Android) Sebagai Media Pembelajaran Materi Nilai Tempat Bilangan untuk kelas 2 SD. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, *10*(3), 544–547.

Ananda, E. R., Irawan, W. H., & Abdussakir, A. (2024). Strategi Meningkatkan Partisipasi Siswa dalam Pembelajaran Berhitung Matematika Melalui Penggunaan Game Edukasi Kartu Pintar. *Al-Madrasah: Jurnal Ilmiah Pendidikan Madrasah Ibtidaiyah*, *8*(3), 1238–1252.

Arafah, A. A., Sukriadi, S., & Samsuddin, A. F. (2023). Implikasi teori belajar konstruktivisme pada pembelajaran matematika. *Jurnal Pendidikan MIPA*, *13*(2), 358–366.

Arifin, B. W., & Sulistyowati, P. (2020). Implementasi Pendidikan Karakter Melalui Kemampuan Pedagogik Guru di Dalam Pembelajaran Siswa Kelas V di SDN Model Kota Malang. *Prosiding Seminar Nasional PGSD UNIKAMA*, *4*(1), 363–372.

Bopo, G., Ngura, E. T., Fono, Y. M., & Laksana, D. N. L. (2023). Peningkatan Kemampuan Numerasi dengan Media Pembelajaran Papan Pintar Berhitung pada Anak Usia 6-7 Tahun. *Jurnal Ilmiah Pendidikan Citra Bakti*, *10*(3), 468–480.

Cholifah, I. (2021). Penggunaan Media Ular Tangga Tematik (ULGATIK) untuk Meningkatkan Hasil Belajar dan Aktivitas Siswa Kelas IIA SDN 1 Landungsari. *Jurnal Bidang Pendidikan Dasar*, *5*(2), 145–154.

Cresswell, J. W., & Guetterman, T. C. (2019). *Educational Research Planning, Conducting, And Evaluating Quantitative And Ualitative Research* (6th ed.). Michigan: Pearson Education, Inc. Retrieved from https://www.ptonline.com/articles/how-to-get-better-mfi-results

Darmawan, Y., & Airlanda, G. S. (2021). Meta analisis model pembelajaran problem based learning terhadap hasil belajar kognitif di sekolah dasar. *Jurnal Bidang Pendidikan Dasar*, *5*(1), 42–52.

Devi, M. M. Y. (2019). *Analisis kesulitan belajar siswa kelas II pada materi penjumlahan di Madrasah Ibtidaiyah Negeri 4 Tulungagung*. Universitas Islam Negeri Maulana Malik Ibrahim.

Dianita, E., & Romadhon, M. S. (2024). Studi Komparatif: Hakikat Bahan Ajar Modul dan LKPD pada Mata Pelajaran IPS dan PPKN di Sekolah Dasar. *Jurnal Ilmiah Madrasah*, *1*(2).

Duyen, N. T. H., & Loc, N. P. (2022). Developing Primary Students' Understanding of Mathematics through Mathematization: A Case of Teaching the Multiplication of Two Natural Numbers. *European Journal of Educational Research*, *11*(1), 1–16.

Dwi, D. F., & Audina, R. (2021). Analisis Faktor Penyebab Kesulitan Belajar Matematika Kelas IV Sekolah Dasar Negeri. *Cybernetics: Journal Educational Research and Social Studies*, 94–106.

Eva, N., Riswari, A. A., Rahmah, A. N., Rahmawati, A. N., & Anelka, R. L. (2021). Asesmen Kesulitan Belajar Akibat Kecanduan Gadget pada Anak Usia Sekolah Dasar berdasarkan Pandangan Perkembangan Kognitif Piaget. *Seminar Nasional Psikologi Dan Ilmu Humaniora (SENAPIH)*, *1*(1), 1–7.

Fadliansyah, F. (2023). Meningkatkan Kemampuan Operasi Hitung Pembagian Bilangan Cacah Dengan Metode Drilling Pada Siswa Kelas IV Sdit Alam Nurul Islam. *KRAKATAU (Indonesian of Multidisciplinary Journals)*, *1*(1), 226–232.

Faizah, M., Faizah, P. N., Romadhon, M. S., & Widayanti, R. (2023). Development of

montessori based-multiplication props for elementary school. *Auladuna: Jurnal Pendidikan Dasar Islam*, *10*(2), 233–246.

Fan, L., & Bokhove, C. (2014). Rethinking the role of algorithms in school mathematics: A conceptual model with focus on cognitive development. *ZDM*, *46*, 481–492.

Fauzi, I., Mauhibah, R., & Jupri, A. (2021). Learning Designs for the Addition and Subtraction of Two-Digit Numbers based on Realistic Mathematics Education Principles Using Snakes and Ladders Game. *Al Ibtida: Jurnal Pendidikan Guru MI*, *8*(1), 32. https://doi.org/10.24235/al.ibtida.snj.v8i1.7741

Friantini, R. N., Winata, R., Annurwanda, P., Suprihatiningsih, S., Annur, M. F., & Ritawati, B. (2020). Penguatan konsep matematika dasar pada anak usia sekolah dasar. *Jurnal Abdimas Bina Bangsa*, *1*(2), 276–285.

Hadiyani, V. P., Romadhon, M. S., & Susilawati, S. (2025). Landasan-Landasan dalam Pembelajaran Tematik. *Jurnal Ilmiah Madrasah*, *2*(1).

Hendri, S., & Kenedi, A. K. (2018). Pengembangan perangkat pembelajaran matematika berbasis discovery learning untuk meningkatkan kemampuan pemecahan masalah siswa kelas VIII SMP. *Jurnal Inspirasi Pendidikan*, *8*(2), 10–24.

Huang, S. (2023). Developing a Tool for Measuring Student Orientations with Respect to Understanding in Mathematical Learning. *North American Chapter of the International Group for the Psychology of Mathematics Education*.

Marinda, L. (2020). Teori perkembangan kognitif Jean Piaget dan problematikanya pada anak usia sekolah dasar. *An-Nisa Journal of Gender Studies*, *13*(1), 116–152.

Masniah, M. (2021). Meningkatkan Prestasi Belajar Siswa Pada Pelajaran Tematik Materi Berhitung Pengurangan Dengan Teknik Meminjam Menggunakan Metode Penugasan Pada Siswa Kelas II SD Negeri 3 Mendawai Tahun Pembelajaran 2020/2021. *JURISTEK*, *9*(1), 387–392.

Mulyasari, D. W., Abdussakir, A., & Rosikhoh, D. (2021). Efektivitas pembelajaran etnomatematika “permainan engklek” terhadap pemahaman konsep geometri siswa sekolah dasar. *Jurnal Tadris Matematika*, *4*(1), 1–14.

Nada, S. A., & Romadhon, M. S. (2024). Implementasi Pembelajaran Sains berbasis Discovery Learning materi siklus air di MI Perwanida Blitar. *AKSELERASI: Jurnal Pendidikan Guru MI*, *5*(2), 141–148. Retrieved from https://akselerasi.uinkhas.ac.id/index.php/aksel/article/view/666/90

Nainggolan, A. M., & Daeli, A. (2021). Analisis teori perkembangan kognitif Jean Piaget dan implikasinya bagi pembelajaran. *Journal of Psychology Humanlight*, *2*(1), 31–47.

Ningrum, D. E. A. F., Rofiki, I., Romadhon, M. S., & Derajat, L. S. (2024). Development Environmental Textbook Based Ecopedagogy to Increase Environmental Awareness of PGMI Students. *ELEMENTARY: Islamic Teacher Journal*.

Nurramadhani, A., Kumala, F., & Permana, I. (2021). STEAM-based project learning: the effect to middle school’s student’s collaboration competences. *Journal of Physics: Conference Series*, *2098*(1), 12038. IOP Publishing.

Parwadi, P., Susanta, A., & Muchlis, E. E. (2020). Analisis Kesalahan Siswa Dalam Menyelesaikan Soal Matematika Materi Pecahan Kelas Vii Smp Negeri 16 Kota Bengkulu. *Jurnal Penelitian Pembelajaran Matematika Sekolah (JP2MS)*, *4*(3), 442–454. https://doi.org/10.33369/jp2ms.4.3.442-454

Pratama, L. D., & Setyaningrum, W. (2024). Algoritma berhitung Blija Ì ,h pada masyarat Madura di Kabupaten Probolinggo: Alternatif pendekatan pembelajaran operasi bilangan. *PYTHAGORAS: Jurnal Matematika Dan Pendidikan Matematika*, *13*(2), 203–213.

Putri, D. A., & Wandini, R. R. (2023). Analisis Kesulitan Belajar Siswa Sekolah Dasar Kelas ll Pada Materi Penjumlahan dan Pengurangan SD IT Hidayatul Jannah. *Jurnal Pendidikan Tambusai*, *7*(3), 29941–29946.

Rizky, M. A., & Samosir, K. (2022). Menggunakan model pembelajaran kooperatif tipe numbered head together dan tipe think pair share di kelas viii smp negeri 2 babalan. *Inspiratif*, 10–20.

Romadhon, M. S. (2024). *Pengembangan LKPD berbasis etnomatematika pada motif batik pamiluto ceplokan Gresik dengan pendekatan matematik realistik Indonesia materi bangun datar Kelas IV di MIN 3 Malang*. Universitas Islam Negeri Maulana Malik Ibrahim.

Romadhon, M. S., Febrianti, A. H., Rahmawati, I. N. I., Derajat, L. S., & Aprilia, C. D. (2024). Profile of Religious Moderation at Madrasah Ibtidaiyah Negeri 3 Malang. *ICIED:International Conference on Islamic Education*, 488–496. Malang: Faculty of Tarbiyah and Teaching Training. Retrieved from https://conferences.uin-malang.ac.id/index.php/icied/article/view/3180/1592

Romadhon, M. S., Padil, M., & Tharaba, M. F. (2024). Classroom Management Approaches For Management Students In Learning Process. *Ar-Rosikhun: Jurnal Manajemen Pendidikan Islam*, *3*(3), 186–195.

Romadhon, M. S., Padil, M., & Zuhriyah, I. A. (2024). Strategy Strengthening Quality Management in Madrasah through Quality Cost. *Ar-Rosikhun: Jurnal Manajemen Pendidikan Islam*, *4*(1), 50–61.

Romadhon, M. S., & Rosadi, R. I. M. (2024). Eksplorasi Konsep Geometri Pada Medalion Geometris Candi Kidal. *Math Educa Journal*, *8*(1), 35–46. Retrieved from http://ejournal.uinib.ac.id/jurnal/index.php/matheduca

Romli, A. A., Sesanti, N. R., & Triwahyuningtyas, D. (2020). Pengembangan Ensiklopedia Bangun Ruang Berbasis Etnomatematika Untuk Siswa Kelas V SDN 1 Tawangrejeni Seminar Nasional PGSD UNIKAMA Pendahuluan Pendidikan adalah suatu cara yang terdiri dari tiga dimensi diantaranya individu , masyarakat atau komunitas na. *Seminar Nasional PGSD UNIKAMA*, *4*, 531–536.

Safitri, S. R., Zakiah, L., & Sumantri, M. S. (2024). Survei Keterampilan Berhitung Penjumlahan Dan Pengurangan Siswa Kelas Rendah Di Sd Pada Pembelajaran Matematika. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *9*(2), 282–293.

Saputro, B. A. (2023). Desain Bahan Ajar Operasi Hitung Untuk Meminimalisir Kesulitan Siswa SD Dalam Melakukan Penjumlahan dan Pengurangan Dengan Cara Bersusun Pendek Dan Bersusun Panjang. *Potlot Publisher*, 72–89.

Setiana, D. S., Ayuningtyas, A. D., Wijayanto, Z., & Kusumaningrum, B. (2021). Eksplorasi etnomatematika Museum Kereta Kraton Yogyakarta dan pengintegrasiannya ke dalam pembelajaran matematika. *Ethnomathematics Journal*, *2*(1), 1–10.

Setyawan, D., & Diplan, D. (2019). Penerapan Metode Pembelajaran ELF Mcbride menggunakan Teknik Hitung Cepat terhadap Hasil Belajar Matematika. *Jurnal Bidang Pendidikan Dasar*, *3*(1), 52–61.

Sigiyuwanta, R., Mustiningsih, M., & Nurabadi, A. (2024). Analysis of problems in planning and organizing independent curriculum in madrasah ibtidaiyah: teacher's perspective. *Jurnal Bidang Pendidikan Dasar*, *8*(2), 163–174.

Susanti, Y. (2020). Pembelajaran matematika dengan menggunakan media berhitung di sekolah dasar dalam meningkatkan pemahaman siswa. *Edisi*, *2*(3), 435–448.

Trisnawati, T., Kusuma, V. V., & Yulianto, D. (2023). Efektivitas Metode Tutor Sebaya Berbasis Youtube dalam Meningkatkan Kemampuan Number Sense Matematis Siswa ditinjau dari Perbedaan Jenis Kelamin pada Materi Bilangan. *Jurnal Lebesgue: Jurnal Ilmiah*

Pendidikan Matematika, Matematika Dan Statistika, *4*(1), 7–22.

Usep, U., Wirahardja, I. S., Safarin, W., Rahmawat, S., & Susetyo, B. (2023). Penggunaan Strategi Pembelajaran Kooperatif Melalui Eksperimen Dalam Pembelajaran Komposisi dan Dekomposisi Bilangan Bagi Anak Slow Leaner. *Inspirasi Dunia: Jurnal Riset Pendidikan Dan Bahasa*, *2*(4), 88–109.

Widyatma, Y. V., & Ramadhani, A. D. H. (2024). Analisis Kemampuan Pemecahan Masalah Matematis pada Materi Bilangan dan Aljabar Siswa Kelas IV SDN 4 Piji. *Jurnal Pendidikan Dan Pembelajaran*, *3*(01), 335–349.

Yasa, A. D. (2017). Penguasaan Konsep dan Keterampilan Pemecahan Masalah Setelah Diajarkan Dengan Pendekatan Keterampilan Proses. *Jurnal Bidang Pendidikan Dasar*, *1*(1), 69–80.

Yuliana, E. (2015). Pengembangan Soal Open Ended pada Pembelajaran Matematika untuk Mengidentifikasi Kemampuan Berfikir Kreatif Siswa. *Prosiding Seminar Nasional Pendidikan Matematika (SNAPTIKA)*, 165–172.