

Improving Numeracy Skills Through the Application of Problem Based Learning Models Assisted by Differentiated Concrete Media in Low Class Students

Anisa Dwi Rahayu ^{1✉}, Panca Dewi Purwati², Ismi Trisnawati

^{1,2} Universitas Negeri Semarang, Indonesia

³SDN Sampangan 01 Semarang, Indonesia

Article Info

History Articles
Received:
21 July 2022
Accepted:
15 August 2022
Published:
30 September 2022

Keywords:
Cooperation
Character;
Differentiated
Concrete Media;
Elementary school;
Numeracy Skills;
Problem Based
Learning Models

Abstract

This study aims to improve numeracy skills through the application of the Problem Based Learning (PBL) model assisted by differentiated concrete media to grade 1 student at SDN Sampangan 01 Semarang. The method used is Miles and Huberman's (1994: 12) interactive analysis method which includes three activities, namely (1) data reduction, (2) data presentation, and (3) verification, in presenting data using qualitative and quantitative data. Based on the results of research and discussion it is known that students' numeracy skills have increased by up to 82%. So, it can be concluded that the application of the PBL model with the help of differentiated concrete media can improve the numeracy skills of subtraction material in grade 1 students, because with the help of differentiated concrete media students can learn in real terms and are more interested in participating in learning.

✉ Correspondence address:
Krajan Rt 06/03, Kel. Grogol, Kec. Karang Tengah, kab. Demak,
Jawa Tengah, 59561
E-mail: dwiranisa39@gmail.com

INTRODUCTION

The education system in Indonesia, Elementary School (SD) is the initial level that underlies secondary education and higher education. Elementary schools cover a variety of subject matter, one of which is mathematics (Sary and Ristiana, 2019). Mathematics is a subject that has an important position for the development of science and technology (Kurino, 2018). Ministry of Education, Culture, Research and Technology BSKAP No. 033 of 2022 concerning Content Standards for Elementary and Secondary Education Units stipulates that mathematics in elementary schools aims for students to have the ability to think logically, critically and creatively.

Studying mathematics is important for everyday life. One hope in learning mathematics is that students are able to count or have numeracy skills (Rahmi, et al., 2020). Counting skills are the introduction of mathematics related to the nature and real numbers and related to addition, subtraction, multiplication and division which are basic arithmetic operations (Romlah, Kunah, 2016). So that grade 1 elementary school students need to learn the arithmetic operation of subtraction which aims as a basis for studying further mathematical material, such as division (Toruan, 2021).

The scope of mathematics in elementary school includes several abilities. The scope of mathematics includes numbers, geometry, measurements and data processing. In number operations, one of the materials studied is subtraction arithmetic operations. Based on observations on pre-cycle activities, it is known that students' subtraction operations arithmetic skills are still very low, out of 29 students only 10 students are able to complete subtraction operations. In solving the problem students immediately get the final answer, there is no previous process, students also still have difficulty understanding subtraction operations, especially in translating word problems. This is influenced by several factors including learning carried out conventionally, learning centered on students, there is no learning media that

supports the implementation of learning and students' interest in learning is still low. This is the same as Toruan's research (2021) where in the learning process students look bored, passive and not enthusiastic so the results are less than optimal, namely out of 17 students there are only 42% who are able to do subtraction arithmetic operations. In addition, students experience difficulties when carrying out subtraction operations, because the interest, enthusiasm and curiosity of students is not optimal and the initial readiness of students is still minimal so that when the teacher delivers material students are not ready to receive lessons (Kurniasari, 2020). Difficulties in learning to count subtraction operations are caused by several factors, one of which is the intelligence of children below average (Pasiakan, 2022).

One of the factors that makes students' understanding of the concept of subtraction low is the lack of optimal use of learning media that can support students' understanding of subtraction (Nurhaeni, et al., 2019). So to overcome these problems, in the learning process takes place can use concrete learning media. Learning media is a tool, an intermediary means and conveys messages from the teacher to students (Reafani, et al., 2017). In delivering material so that students can easily understand it, appropriate learning media is needed (Toruan, 2021). The importance of learning media to provide stimulation and learning experiences as a whole and meaningful for students (Rohani, 2020). The use of learning media can have an impact on learning and communication, namely: (1) the delivery of learning becomes more standardized; (2) the learning process can be more interesting; (3) the learning process becomes more interactive; (4) the length of time needed to study can be shortened; (5) the quality of learning outcomes can be improved; (6) the learning process can be given whenever desired or needed; (7) creates a positive attitude of students towards what is learned; and (8) the role of educators can change in a more positive direction (Hasan, et al., 2021). Apart from using instructional media, one way that can be done to improve students' numeracy

skills in subtraction operations is to use the Problem Based Learning (PBL).

The PBL model is learning that uses some of the thinking abilities of students individually or in groups that aim to improve the ability to apply concepts to problems, integrating the concept of Hots Order Thinking Skills (HOTS) (Setianingsih, et al., 2017). The advantages of the PBL model are (1) students can be directly involved in the process of solving problems, so that students better understand the material being studied, (2) the strategy of the PBL model is suitable for use in learning mathematics, because it has an abstract object of study, with a consistent deductive pattern of thinking. in the system and rely on agreement (Rukinah, 2023). In implementing the PBL model there are processes that must be raised such as involvement, inquiry and investigation, performance, debriefing and discussion (Masitah, 2021).

The role of the teacher in education in Indonesia is to be able to carry out classroom management tasks well, master the material, understand the various characteristics of children and also be willing and able to use various and varied media so as to attract interest in learning and generate enthusiasm for learning in the participants. students (Sriuliani, 2016). In addition, the teacher acts as an informant, facilitator and motivator (Setyawan, 2020). The role of the teacher in the learning process is the teacher as an educator, as a teacher, as a learning resource, as a facilitator, as a guide, as a demonstrator, as a manager, as an adviser, as an innovator, as a motivator, as a coach, and as an elevator (Yestiani, Zahwa, 2020). This is in line with Masitah's research (2021), it is known that the teacher's role in implementing the PBL model, the teacher can think about several things including designing and using problems that exist in the student's environment, the teacher as a trainer in the problem solving process, self-direction and learning with friends peer.

Research that is relevant to this research is Ratti's research (2021) with the title "Application of the PBL Model to Improve the Ability of Addition and Subtraction Count

Operations for Class I students: Application of the PBL Model to improve the ability of Addition and Subtraction Count Operations for Class I students ", the results of the study show that the application of the PBL model can improve students' numeracy skills, in cycle I by 70% with a minimum value of 50 and a maximum of 95 experiencing an increase in cycle II by 90% with a minimum value of 95% and a maximum of 100, so it can be seen that increased by 20%.

Based on the explanation above, the researcher took the formulation of the research problem as follows.

How to increase numeracy skills through the application of the Problem Based Learning (PBL) model with the help of differentiating concrete media in class 1 students at SDN Sampang 01 Semarang?

METHOD

This research is a type of collaborative classroom action research. The research was conducted at SDN Sampangan 01 Semarang in the Even Semester of the 2022/2023 Academic Year. The time for conducting classroom action research was from March 15 to May 20 2023. The time for the research that the researchers had done was as follows:

- a. Cycle I : Friday, 31 March 2023
- b. Cycle II : Tuesday, 11 April 2023
- c. Cycle III : Tuesday, 18 April 2023

Design This research uses a class action research plan (Classroom Based Action Research) which refers to the Kemmis and Tagart action research model with three cycles with the stages of each cycle including planning, implementing, observing and reflecting.

The research instruments used included test guidelines, observation guidelines and field note guidelines. The data analysis technique used in this study is the interactive analysis model of Miles and Huberman (1994: 12) which includes three activities, namely (1) data reduction, (2) making data displays, and (3) making conclusions or verification. Performance indicators are performance formulations that

will be used as a reference in determining research success. Indicators of students' numeracy skills are:

1. Determine the result of the subtraction arithmetic operation
2. Turning math sentences into word problems and vice versa
3. Solve word problems in everyday life

The indicator of success in this study with the reduction material was that students' numeracy skills in the reduction material with the help of sharing concrete media could increase by a percentage of ≥ 22 students with classical mastery $> 75\%$.

RESULTS AND DISCUSSION

This research is a type of collaborative classroom action research. The research was conducted at SDN Sampangan 01 Semarang in the Even Semester of the 2022/2023 Academic Year. The time for conducting classroom action research was from March 15 to May 20 2023. The time for the research that the researchers had done was as follows:

- a. Cycle I : Friday, 31 March 2023
- b. Cycle II : Tuesday, 11 April 2023
- c. Cycle III : Tuesday, 18 April 2023

Design This research uses a class action research plan (Classroom Based Action Research) which refers to the Kemmis and Tagart action research model with three cycles with the stages of each cycle including planning, implementing, observing and reflecting.

The research instruments used included test guidelines, observation guidelines and field note guidelines. The data analysis technique used in this study is the interactive analysis model of Miles and Huberman (1994: 12) which includes three activities, namely (1) data reduction, (2) making data displays, and (3) making conclusions or verification. Performance indicators are performance formulations that will be used as a reference in determining research success. Indicators of students' numeracy skills are:

1. Determine the result of the subtraction arithmetic operation
2. Turning math sentences into word problems and vice versa
3. Solve word problems in everyday life

The indicator of success in this study with the reduction material was that students' numeracy skills in the reduction material with the help of sharing concrete media could increase by a percentage of ≥ 22 students with classical mastery $> 75\%$.

Table 4.1 Pre-cycle Numerical Ability Results

Numeracy Ability Indicator	Many Students	Percentage
Determine the result of arithmetic subtraction operation	10	34 %
Turning math sentences into word problems and vice versa	7	24 %
Solve word problems in everyday life	8	28 %
Average	9	29 %

The results of the assessment in the table can be seen that the number of students who complete is less than the number of students who have not completed. Of the 29 students who completed as many as and who have not completed. The average value obtained by class 1 students in the subtraction material is. To overcome these problems, researchers tried to

solve the problem by trying to apply some concrete media to improve students' numeracy skills in subtraction material. Based on the data obtained, the percentage of pre-cyclical arithmetic skills that was completed was 29% and that which had not been completed was 71%. This can be seen in the following diagram 4.1.

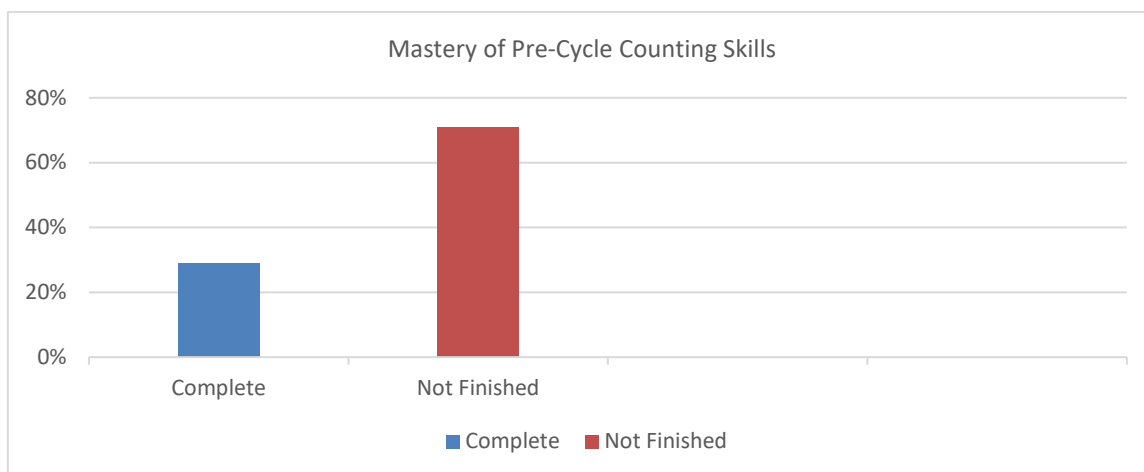


Diagram 4.1 Graph of Completeness of Pre-Cycle students

Cycle I

Observation of Cycle I was carried out when the learning process was in progress. Observations were made based on learning activities carried out by researchers during the

learning process in accordance with the RPP (Learning Implementation Plan). The data on students' numeracy skills in subtraction operations after being given action in cycle I are as follows.

Table 4.2 Results of the Ability to Count Cycle I

Numeracy Ability Indicator	Many Students	Percentage
Determine the result of arithmetic subtraction operation	15	51 %
Turning math sentences into word problems and vice versa	10	34 %
Solve word problems in everyday life	9	31 %
Average	12	42 %

From the results of the data above, it can be seen that there were 15 students who were able to fulfill the indicator "Determining the results of arithmetic subtraction operations" with a percentage of 51%, there were 10 students who were able to fulfill the indicator "Turning mathematical sentences into story questions and vice versa" with a percentage of 31 % and there were 9 students who were able to fulfill the indicator "Solve word problems in everyday life" with a percentage of 34%. On average, 11 students were able to meet the criteria for indicators of numeracy skills in subtraction

operations in cycle I with a percentage of 42%. The average percentage of indicators for the ability to count in the reduction material is 75% of the number of students, so it can be concluded that the students' numeracy skills in the reduction material in cycle I have not yet reached completeness. Based on the data obtained, the percentage of pre-cyclical arithmetic skills that was completed was 42% and that which had not been completed was 58%. This can be seen in the following diagram 4.3.

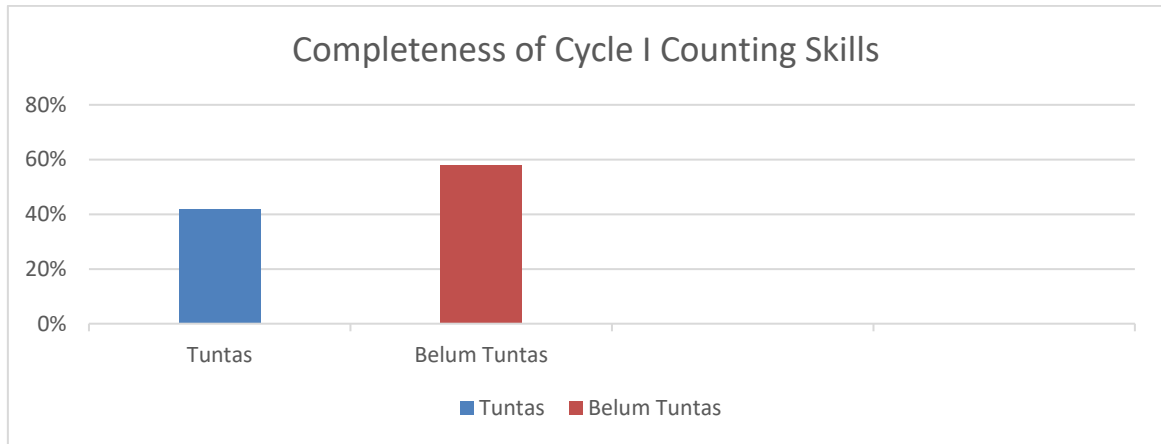


Diagram 4.2 Cycle I Student Completeness Graph

Cycle II

Observation of Cycle II was carried out when the learning process was in progress. Observations were made based on learning activities carried out by researchers during the

learning process in accordance with the RPP (Learning Implementation Plan). The data on students' numeracy skills in subtraction operations after being given action in cycle II are as follows.

Table 4.3 Results of the Ability to Count Cycle II

Numeracy Ability Indicator	Many Students	Percentage
Determine the result of arithmetic subtraction operation	22	76 %
Turning math sentences into word problems and vice versa	21	72 %
Solve word problems in everyday life	20	69 %
Average	21	72 %

From the results of the data above, it can be seen that there were 22 students who were able to fulfill the indicator "Determining the results of arithmetic subtraction operations" with a percentage of 76%, there were 21 students who were able to fulfill the indicator "Turning mathematical sentences into story questions and vice versa" with a percentage of 72 % and there were 20 students who were able to fulfill the indicator "Solve word problems in everyday life" with a percentage of 69%. On average, 21 students were able to meet the criteria for

indicators of numeracy skills in subtraction operations in cycle II with a percentage of 72%. The average percentage of indicators for the ability to count in the reduction material is 75% of the number of students, so it can be concluded that the students' numeracy ability in the reduction material in cycle II has not yet reached completeness. Based on the data obtained, the percentage of counting skills in cycle II that was completed was 72% and 28% that had not been completed. This can be seen in the following diagram 4.4.

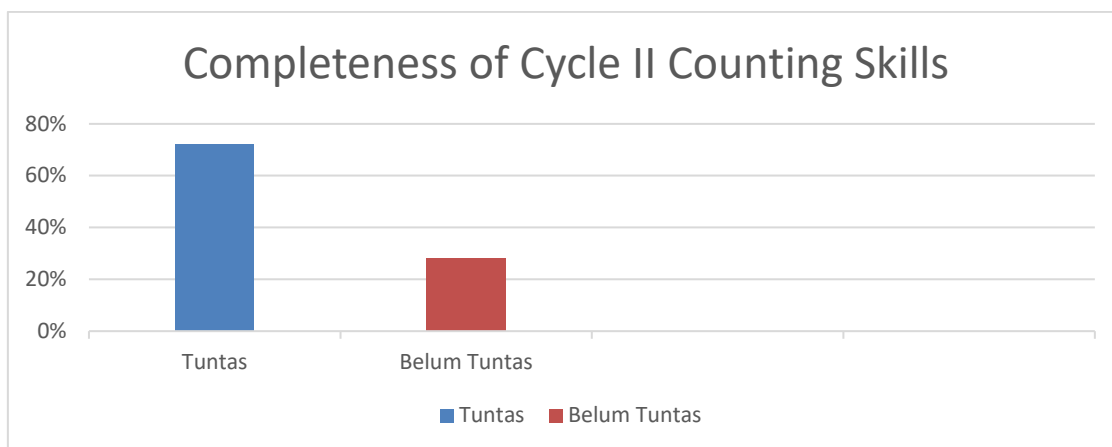


Diagram 4.3 Cycle II Student Completeness Graph

Cycle III

Observation of Cycle III was carried out when the learning process was in progress. Observations were made based on learning activities carried out by researchers during the

learning process in accordance with the RPP (Learning Implementation Plan). The data on students' numeracy skills in subtraction operations after being given action in cycle III are as follows.

Table 4.4 Results of the Ability to Count Cycle III

Numeracy Ability Indicator	Many Students	Percentage
Determine the result of arithmetic subtraction operation	26	89 %
Turning math sentences into word problems and vice versa	24	83 %
Solve word problems in everyday life	22	76 %
Average	24	82 %

From the results of the data above, it can be seen that there were 26 students who were able to fulfill the indicator "Determining the results of subtraction operations" with a percentage of 89%, there were 24 students who were able to fulfill the indicator "Turning mathematical sentences into story questions and vice versa" with a percentage of 83 % and there were 22 students who were able to fulfill the indicator "Solve word problems in everyday life" with a percentage of 76%. On average, students who were able to meet the criteria for indicators

of numeracy skills in subtraction operations material in cycle III were 24 students with a percentage of 82%. The average percentage of indicators for the ability to count in the reduction material is 75% of the number of students, so it can be concluded that the students' numeracy skills in the reduction material in cycle III have reached completeness. Based on the data obtained, the percentage of pre-cyclical arithmetic skills that was completed was 82% and 18% that had not been completed. This can be seen in the following diagram 4.5.

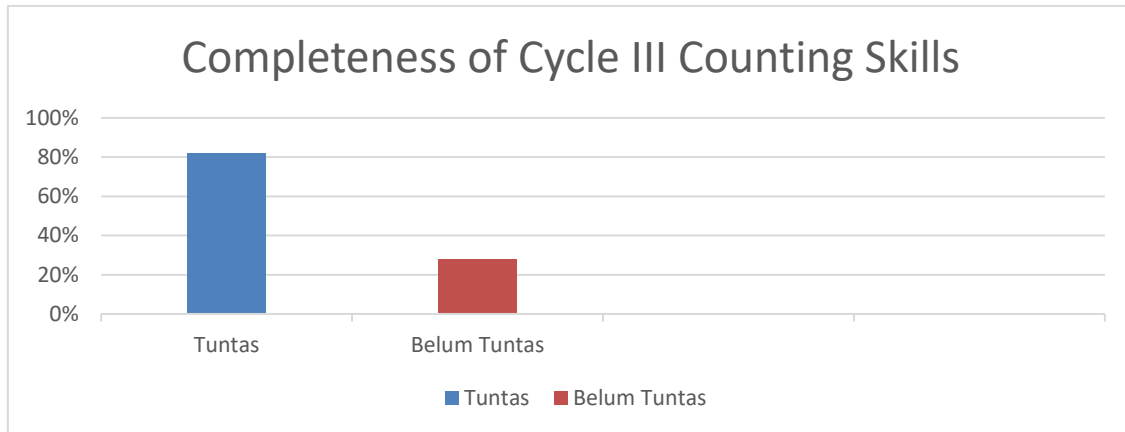


Diagram 4.4 Completeness of Cycle III Counting Skills

Discussion

The research results obtained included students' numeracy skills and students' cooperative character values which were carried out in three cycles, namely cycle I, cycle II, and cycle III. The discussion in this study includes the meaning of research findings and the implications of research results.

1. Discussion of Research Results

This classroom action research was conducted to determine the increase in

numeracy skills of first grade students at SDN Sampang 01 Semarang through the application of the Problem Based Learning (PBL) model with the help of differentiated concrete media. The increase in students' numeracy skills can be seen from the pre-cycle to Cycle III. This can be seen from the achievement table of the results of the research on numeracy skills in the subtraction arithmetic operations of the first graders of SDN Sampangan 01 Semarang below.

Table 4.5 Achievement of Numerical Ability Research Results

No.	Numeracy Ability Indicator	Pra-Cycle	Cycle I	Cycle II	Cycle III
1.	Determine the result of arithmetic subtraction operation	34%	51 %	76 %	89 %
2.	Turning math sentences into word problems and vice versa	24%	34 %	72 %	83 %
3.	Solve word problems in everyday life	28%	31%	69 %	76 %
Average		29%	42 %	72 %	82 %

Based on these data, it shows that the implementation of learning improvements carried out during these 3 cycles shows an increase in students' numeracy skills. Here's the description.

Indicators of students' numeracy skills

1) Determine the result of the subtraction arithmetic operation

The indicator "determines the results of the subtraction operation" shows the achievement in the pre-cycle of 34%, the first cycle increased to 51%, the second cycle increased to 76% and the second cycle increased to 89%. From the pre-cycle to cycle III, the KKM was completed in cycle II.

2) Changing math sentences into word problems and vice versa

The indicator "turning math sentences into story problems and vice versa" shows the achievement in pre-cycle of 24%, cycle I increased to 34%, cycle II increased to 72% and cycle II increased to 83%. From starting pre-cycle to cycle III, starting to complete the KKM in cycle III.

3) Solve word problems in everyday life

The indicator "solving story problems in everyday life" shows an achievement in pre-cycle of 28%, cycle I increased to 31%, cycle II increased to 69% and cycle II increased to 76%. From starting pre-cycle to cycle III, starting to complete the KKM in cycle III.

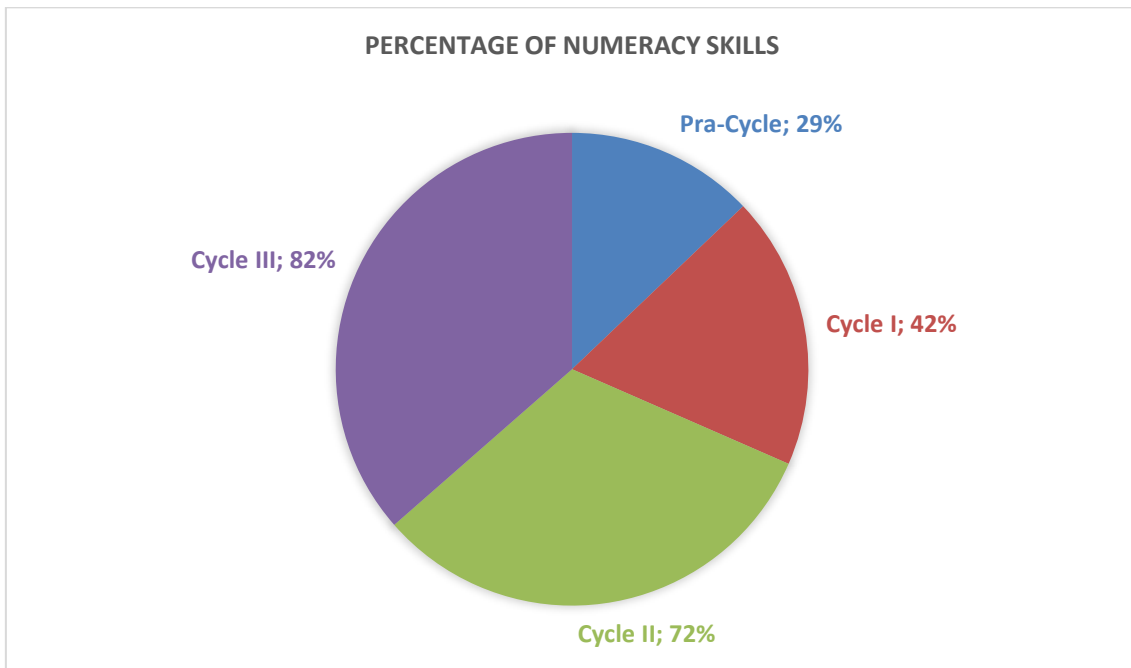


Diagram 4.5 Percentage of Numeracy Skills

Based on the diagram above, it is known that there is an increase in the percentage of completeness of students' numeracy skills starting from pre-cycle increases in cycle I, cycle II, and cycle III. The increase in the percentage of students' numeracy skills before being given action was as much as 29% incomplete, then in cycle I it was obtained 42% incomplete, cycle II increased to 72% incomplete, and in cycle III increased to 82% completed. The average increase in numeracy skills from pre-cycle to cycle III is 13.25%.

Based on the description of the data it is evident that there is an increase in students' numeracy skills. The improvement of students' numeracy skills has met the criteria determined by the researcher, namely the completeness of the class is said to be complete if the number of students who achieve the KKM reaches 75% of the total number of students. So it can be

concluded that this research was successful because the two research variables showed improvement and the targets set in each cycle had been achieved.

This increase in numeracy skills means that the Problem Based Learning model is effective for learning mathematics with subtraction operations because in this model learning requires students to be active in learning by finding and investigating solutions to a problem. In addition, different concrete media is applied because it is in accordance with the characteristics of grade 1 students and students' learning profiles.

Implications of Research Results

The results of classroom action research conducted by the teacher using the Problem Based Learning model assisted by concrete media differentiation in subtraction material in

class I SDN Sampang 01 Semarang is an increase in students' numeracy skills. By using the Problem Based Learning (PBL) model, students can think critically and solve problems given by the teacher so that their numeracy skills can be maximized. In learning mathematics the previous reduction material students did not understand the material, so the researchers applied the PBL model and differentiation concrete media to get the result that students could understand the reduction material. However, teachers also need to pay attention to class conditions so that learning can run smoothly and effectively and pay attention to how students are while participating in learning, and teachers must understand when students feel very excited and when students feel bored.

The teaching actions carried out by the teacher and the behavior of students in learning mathematics using subtraction operations using the Problem Based Learning (PBL) model assisted by differentiated concrete media provide an overview of the extent to which students' numeracy skills are in learning mathematics with subtraction operations. Submission of problems related to the real life of students given by the teacher can improve students' numeracy skills, while the application of the PBL model improves students' numeracy skills so that students are motivated and happy to learn.

CONCLUSION

Based on the results of classroom action research by applying the Problem Based Learning (PBL) learning model with the help of differentiated concrete in Class I of SDN Sampang 01 Semarang, data obtained from observations of numeracy skills was 40% (the difference between the results of observations of work character cycle III and cycle I). This can be interpreted that the skills of students have increased from cycle I to cycle III. This increase has fulfilled the criteria determined by the researcher, namely the learning completeness of at least ≥ 22 students with mastery $\geq 75\%$.

REFERENCES

- Hasan, M., Milawati, M., Darodjat, D., Harahap, T. K., Tahrim, T., Anwari, A. M., ... & Indra, I. (2021). Media Pembelajaran. [Http://Eprints.Unm.Ac.Id/20720/1/Media%20pembelajaran%202.Pdf](http://Eprints.Unm.Ac.Id/20720/1/Media%20pembelajaran%202.Pdf)
- Kurniasari, L. (2020). Peningkatan Kemampuan Berhitung Operasi Pengurangan Dengan Pendekatan Pendidikan Matematika Realistik Indonesia (PMRI) In *Social, Humanities, And Educational Studies (Shes): Conference Series* (Vol. 3, No. 3, Pp. 1506-1511). [Https://Jurnal.Uns.Ac.Id/Shes/Article/Download/56963/33605](https://Jurnal.Uns.Ac.Id/Shes/Article/Download/56963/33605)
- Kurino, Y. (2018). Problem Solving Dapat Meningkatkan Hasil Belajar Siswa Pada Materi Operasi Penjumlahan Dan Pengurangan Bilangan Bulat di Kelas V Sekolah Dasar. *Jurnal Cakrawala Pendas*, 4(1). [Https://Unma.Ac.Id/Jurnal/Index.Php/Cp/Article/Download/706/718](https://Unma.Ac.Id/Jurnal/Index.Php/Cp/Article/Download/706/718)
- Masitah, M. (2021). Upaya Meningkatkan Hasil Belajar Matematika Menggunakan Strategi Problem Based Learning Siswa Kelas 1 SDN 3 Sakra Selatan Kecamatan Sakra Semester Ii Tahun Pelajaran 2020/2021. *Paedagogy: Jurnal Ilmu Pendidikan Dan Psikologi*, 1(2), 210-217. [Https://Www.Jurnalp4i.Com/Index.Php/Paedagogy/Article/Download/888/893](https://Www.Jurnalp4i.Com/Index.Php/Paedagogy/Article/Download/888/893)
- Nurhaeni, N., Pranata, O. H., & Respati, R. (2019). Pengaruh Media Kartu Bilangan Terhadap Pemahaman Siswa Mengenai Operasi Pengurangan Bilangan Bulat. *Pedadidaktika: Jurnal Ilmiah Pendidikan Guru Sekolah Dasar*, 6(1), 58-67. [Https://Ejournal.Upi.Edu/Index.Php/Pedadidaktika/Article/Download/12598/8853](https://Ejournal.Upi.Edu/Index.Php/Pedadidaktika/Article/Download/12598/8853)
- Pasiakan, M. (2022). Peningkatan Kemampuan Operasi Pengurangan Melalui Penggunaan Media Balok *Cuisenaire* Pada Anak Tunagrahita Kelas III di SLB Negeri 1 Gowa. [Http://Eprints.Unm.Ac.Id/22519/1/Ma](http://Eprints.Unm.Ac.Id/22519/1/Ma)

- rselina%20pasiakan%20%281745042024%29.Pdf
- Rahmi, H., Saputra, J., Desriati, W., & Fatmawati, F. (2020). Peningkatan Kemampuan Berhitung Siswa Kelas Ii Dengan Menggunakan Sempoa Aritmatika Di Sekolah Dasar. *Madani: Indonesian Journal Of Civil Society*, 2(2), 50-56.
<https://ejournal.pnc.ac.id/index.php/madani/article/download/148/131>
- Ratti, R. (2021). Penerapan Model PBL Untuk Meningkatkan Kemampuan Operasi Hitung Penjumlahan Dan Pengurangan Siswa Kelas I: *Application Of The PBL Model To Improve The Ability Of Addition And Subtraction Count Operations For Class I Students*. *Neraca: Jurnal Pendidikan Ekonomi*, 6(2), 42-49.
<https://journal.umpr.ac.id/index.php/neraca/article/download/2643/1960>
- Reafani, S. L., Fatmawati, F., & Irdamurni, I. (2018). Media Puzzel Kartu Angka Meningkatkan Kemampuan Operasi Pengurangan Bagi Anak Diskalkulia. *Jurnal Pendidikan Kebutuhan Khusus*, 2(1), 13-18.
<https://jpkk.pj.unp.ac.id/index.php/jpkk/article/download/93/6>
- Rohani, R. (2020). Media Pembelajaran. <http://repository.uinsu.ac.id/17641/1/diktat%20media%20pembelajaran%20n aik%20pangkat.pdf>
- Romlah, M., Kurniah, N. & W. (2016). Peningkatan Kemampuan Berhitung Anak Melalui Kegiatan Bermain Sempoa. 1(2), 72–77.
- Rukinah, R. (2023). Peningkatan Kemampuan Berhitung Penjumlahan Dan Pengurangan Melalui Strategi Problem Based Learning:(Penelitian Tindakan Kelas Pada Siswa Kelas 2 SDN Kasomalang VIII Kecamatan Kasomalang Tahun 2022/2023). *Jpg: Jurnal Penelitian Guru Fkip Universitas Subang*, 6(1), 88-96.
<http://www.ejournal.unsub.ac.id/index.php/jpg/article/download/1625/1316>
- Sary, R.M., & Ristiana. (2019). Pembelajaran Keliling Dan Luas Bangun Datar Menggunakan Metode Matematika Gasing. *JHM (Journal Of Honai Math)*, 2 (2), 143-150.
- Setianingsih, E. S. & Rais, R. 2017. *Diktat Strategi Belajar Mengajar*. Semarang.
- Srimuliani, N. (2016). Upaya Meningkatkan Kemampuan Operasi Hitung Penjumlahan Dan Pengurangan Bilangan Bulat Siswa Sd Kelas Iv. *Basic Education*, 5(6), 528-535.
<https://journal.student.uny.ac.id/index.php/pgsd/article/viewfile/1240/1116>
- Setyawan, A., Sholihah, A., Rita, S. M., Alfiya, N., & Nurfajri, R. A. (2020). Peran Guru Dalam Pembelajaran SD Pangpong. *Prosiding Nasional Pendidikan: LPPM IKIP PGRI Bojonegoro*, 1(1).
<https://prosiding.ikipgribojonegoro.ac.id/index.php/prosiding/article/download/1096/412>
- Toruan, N. L. (2021). Meningkatkan Hasil Belajar Matematika dengan Menggunakan Metode Demonstrasi dan Media Potongan Lidi. *Jurnal Global Edukasi*, 4(4), 247-252.
<http://jurnal.goretanpena.com/index.php/jge/article/download/595/532>
- Yestiani, D. K., & Zahwa, N. (2020). Peran Guru Dalam Pembelajaran Pada Siswa Sekolah Dasar. *Fondatia*, 4(1), 41-47.
<https://ejournal.stitpn.ac.id/index.php/fondatia/article/download/515/425>