Kreano 13 (1) (2022) : 113-125
KREANO
Jurnal Matematika Kreatif-Inovatif
http://journal.unnes.ac.id/nju/index.php/kreano

Scaffolding for Slow Learner Children on Integer Operations

Christina Yulia Susilo[1] and Erlina Prihatnani[2]

[1,2]Universitas Kristen Satya Wacana
Corresponding Author: 202018043@student.uksw.edu[1],
erlina.prihatnani@uksw.edu[2]

History Article
Received: January, 2022 *Accepted: April, 2022* *Published: June, 2022*

Abstract

Slow learners have lower grasping power, but that doesn't mean they don't have the same learning opportunities as children in their age group. This qualitative research aims to identify difficulties, design, and apply scaffolding to slow learners in integers. The subject is a slow learner student who is in class VIII Junior High School. Data collection techniques in this study are test, interview, and documentation. The results showed the subjects' inability to interpret the basic concepts of integers, jump count, compare integers, addition, and subtraction on integers. Scaffolding that has been successfully used to help those difficulties is scaffolding for effective handling, goal-oriented and manipulative media. The assistance provided must be contextual, concrete, logical and not in the form of instructions with long sentences. Pictures, videos, representative activities, and manipulative media that can be used repeatedly by the subject also succeeded in helping him understand the concept of integers.

Abstrak

Anak slow learner memiliki daya tangkap lebih lambat, namun bukan berarti mereka tidak memiliki kesempatan belajar yang sama seperti anak-anak pada kelompok usianya. Penelitian kualitatif ini bertujuan untuk mengidentifikasi kesulitan, merancang dan menerapkan scaffolding terhadap slow learner pada bilangan bulat. Subjek adalah siswa ABK slow learner yang berada di kelas VIII SMP Negeri 1 Salatiga. Teknik pengumpulan data dalam penelitian ini adalah teknik tes, wawancara dan dokumentasi. Hasil penelitian menunjukkan bahwa subjek mengalami ketidakmampuan memaknai konsep dasar bilangan bulat negatif, menentukan konsep hitung loncat, membandingkan bilangan bulat, melakukan operasi penjumlahan dan pengurangan bilangan bulat. Scaffolding yang berhasil membantu kesulitan ABK adalah scaffolding penanganan secara efektif, berorientasi pada tujuan serta media manipulatif. Bantuan yang diberikan harus bersifat kontekstual, konkret, logis dan tidak berupa instruksi dengan kalimat yang panjang. Gambar, video, aktivitas representatif serta media manipulative yang dapat digunakan berulang oleh subjek juga berhasil membantunya dalam memahami konsep bilangan bulat.

Keywords: *Scaffolding, Slow Learner, Integer.*

© 2022, Kreano, Jurnal Matematika Kreatif-Inovatif. UNNES
p-ISSN: 2086-2334; e-ISSN: 2442-4218
UNNES JOURNALS

INTRODUCTION

Children with special needs are children who have physical, mental, emotional, and intellectual limitations and abilities. Regulation of The Minister of National Education number 70 of 2009 regulates education for students with special needs, namely inclusive education where they participate in learning with students in general. Stoub & Peck (1995) mentioned inclusive education as a means of placing children with mild, moderate, and severe disabilities in a regular class. In line with this, on December 12, 2012, the City of Salatiga proclaimed itself as a City of Inclusive Education (Disdik Salatiga, 2017) which is then regulated in Mayor Regulation Number 11 of 2013. The regulation directs all schools in Salatiga to become inclusive schools. Through the New Student Admission (PPDB) system based on zoning, schools are required to accept children with special needs (Fjr, 2019).

Although the regulation has a good purpose, there are still many obstacles to its implementation. The main obstacle faced is the limited number of Special Assistance Teachers or shadow teachers (Dyah Anjarsari & Efendy, 2018; Fernandes, 2018; Setianingsih & Widyaningrum, 2017). The limited shadow teacher has resulted in subject teachers or teachers who do not have a special educational background becoming assistants for children with special needs. This has an impact on other problems, namely the difficulty of teachers in teaching and learning activities and the difficulties of students in participating in learning. The learning process in class is carried out in general without any adjustment to the needs and characteristics of children with special needs (Setianingsih & Widyaningrum, 2017). Some learning objectives also cannot be achieved because the teacher's time is taken up accompanying students with special needs (Fernandes, 2018). Problems not only occur during teaching and learning activities, but teachers also have difficulty in preparing teaching materials and in demonstrating tools/media repeatedly to children with special needs without assistance from a shadow teacher (Setianingsih & Widyaningrum, 2017).

These difficulties were also experienced by SMP N 1 Salatiga. In the 2020/2021 Academic Year, there are students with special needs, one of which is in the slow learner category. Slow learners are students with cognitive abilities below the average of children in their age group but are at a higher level than students with mental retardation (Brennan, 2018; Ediger, 2002; Watson & Rangel, 1989). Borah (2013) explained that slow learners not only have problems in mathematics and reading but also writing, sports, or dressing. They are often quiet and shy and have difficulty making friends, so they have limitations in communicating. Reddy (1997) added that slow learners not only have cognitive limitations, but also have low memory, disturbances and lack of concentration, and the inability to express ideas. These characteristics are also seen in slow learner students at SMP Negeri 1 Salatiga.

There are several obstacles in assisting slow learner students at SMP Negeri 1 Salatiga. At the beginning of the 2020/2021 Academic Year, students with special needs have received assistance from the shadow teacher. However, it will only be carried out until April 2021 due to the limited number of shadow teachers in Salatiga. Until now, the assistance of students with special needs is carried out by subject teachers assisted by BK teachers. However, not all subject teachers apply special strategies in the learning process to assist children with special needs. This is because there are many teaching hours for each subject teacher, especially when

learning is carried out using blended learning during this pandemic. In addition, subject teachers also do not have special education backgrounds and do not receive assistance on ways to assist students with special needs.

This problem also occurs in learning mathematics in the class where the students with special needs are located like in the process of learning integers. This subject matter includes positive and negative integers. These concepts have been studied for the first time at the elementary school level so that at the junior high school level, the indicator to be achieved is how to apply these concepts to solve problems with more complex levels of problems. Therefore, the teacher does not teach the basic concepts of integers but focuses on giving HOTS questions about integers. Students with special needs cannot follow the learning process because the basic concepts that should have been learned in elementary school are still not mastered. For example, students do not understand the meaning of negative integers (the relation between negative integers and positive integers) so students are unable to compare, sort and operate integers involving negative integers. The concept of integers is important to master because it is one of the prerequisites in studying other concepts such as algebra, geometry and measurement, statistics, and probability (Yorulmaz & Önal, 2017; Oktavianingtyas, 2015).

Therefore, it is necessary to provide special assistance so that students with special needs can master the basic concepts of integers including negative integers. The provision of this assistance should be based on the initial ability of the subject and refer to the characteristics of the subject to achieve the objectives so that the assistance that can be provided is in the form of scaffolding. Scaffolding is assistance made specifically for constructing student skills, and this assistance can be reduced when it is no longer needed by students (Lindstrøm & Sharma, 2011). Scaffolding is important to do because it begins with the interpretation of students' learning behaviour, and then makes decisions about what stimuli will be given, how much assistance is given, and when to intervene in it (Wood, 2001). Scaffolding can also improve the teaching and learning process for the achievement of students' self-reliance (Nurhayati, 2017).

There are five scaffolding concepts developed by Pfister (2015) namely cognitive activation, stimulating discourse, effective problem solving (handling errors productively), target orientation, and the use of manipulative media. The first aspect of scaffolding begins with the cognitive activation needed to prepare children to understand and build an understanding of a concept. One of the important things to activate this aspect is asking children to restate or summarize the matter given by the teacher about what they have done or discussed in class. Then, the interaction between teachers and students as well as students with others is very important to achieve the activation of cognitive aspects. Teachers can help understand knowledge through conversations between students. This interaction is a process of scaffolding, that is stimulative discourse. Teachers must know good and effective techniques to deal with student misunderstandings and mistakes. In handling errors productively process, the teacher can ask questions so that students can correct their mistakes independently. Teachers can also provide appropriate instructions and explanations and focus on the core content of learning in the target-oriented scaffolding process. Teachers can provide learning media to support learning activities or use manipulative media to explain facts and concepts.

Several studies have been carried out regarding the provision of scaffolding to overcome difficulties in learning mathematics, both for students with special needs and not. Jannah et al. (2019) in the research provided scaffolding assistance according to Anghileri at level 1 for the learning of mentally retarded children with number line subject matter. Then, Lei et al. (2020) provided linguistic, kinesthetic, and visual scaffolding assistance for Learning Disabilities (LD) students in learning mathematics. Further research by Prayitno et al. (2018), Larasati & Mampouw (2018), Ramadhani (2016), Susilowati & Ratu (2018), Maharani & Subanji, (2018) provided scaffolding assistance according to Anghileri according to mistakes made to regular junior high school students.

From various previous studies, this research has a different focus, namely identifying the difficulties of slow learner students in integer subject matter which includes the meaning of negative integers (which are associated with positive integers), the concept of skip counting, comparing integers, and basic operations of addition and subtraction of integers. This study not only identifies difficulties in this regard but also designs and provides scaffolding based on Pfister's theory as a follow-up to identifying difficulties experienced by students with special needs. The provision of scaffolding is expected to help students understand the basic concepts of integers so that students can achieve the indicators set at the junior high school level. This scaffolding is given based on an analysis of the student's initial abilities, characteristics and needs so that the right scaffolding pattern is found. It is hoped that this will inspire math teachers who also get students with special needs in the slow learner category when teaching integers at the junior high school level.

METHODS

This study obtained qualitative data in the form of a description of the process of providing scaffolding based on the difficulties faced by slow learners in integer operations that were carried out in-depth, so the research was classified as a case study qualitative research. The stages in this research are as follows. 1) Selecting research subjects with the criteria of 8th-grade slow learner students with special needs at SMP Negeri 1 Salatiga which is a recommendation from the teacher, is willing to be the subject of research gets permission from parents and can be invited to communicate. 2) Conduct initial observations when the subject learns integers and a diagnostic test to know the subject's initial ability to the integer's subject matter. 3) Analyze the subject's problems and difficulties based on test results accompanied by interviews. 4) Develop a plan of action for providing scaffolding which is the guideline for researchers in providing scaffolding to the subject. 5) Provide scaffolding to the research subject accompanied by structured interviews and recordings to be used as the basis for data collection and analysis.

The data analysis technique used in this research is data reduction, data display and conclusion drawing. In data reduction, the researcher selects, categorizes, discards unnecessary, and summarizes the data so that data is simpler than the rough data obtained in the field. The data analyzed are all the results of the study, in the form of the subject's test answer sheets, interview results and documentation. After reducing the data, the next thing to do is display the data. The data is presented in the form of a descriptive matrix regarding 1) the characteristics of the subject's case which includes the subject's initial ability, 2) the scaffolding process given, 3) the results of the

subject's final test after being given scaffolding. The last stage in the data analysis process is concluding. Conclusions are drawn after verifying/validating the data and presented in the form of a narrative.

The validity of the data was tested by triangulation including time triangulation, method triangulation, theory triangulation and focus group discussions. Time triangulation is used to check the subject's ability with interviews at other times. Triangulation method is used to compare the information from the data obtained from the test method to the data obtained from the interview method. Theory triangulation is used to compare the results of research to other theories. Focus group discussions were conducted with mathematics teacher, guidance and counseling teacher and the principal of SMP Negeri 1 Salatiga to avoid misunderstandings by researchers.

RESULTS AND DISCUSSION

Research Results

The given scaffolding uses the principle of effective handling. That is, an investigation is carried out on the subject's ability and inability on a concept, identifying the causal factors and aiding based on the inability by considering the causal factors and checking whether the objectives/targets of the scaffolding process have been achieved. The types of assistance provided are in the form of cognitive activation, stimulative discourse, handling errors productively, target-oriented, and the use of manipulative media. This assistance is given based on the subject's inability to learn integers involving positive and negative numbers. Following are the results of the ability analysis and the provision of scaffolding based on the inability of the subject.

Concept of Kinds of Integers

The subject had been able to read and distinguish between positive and negative numbers. However, the subject could not explain the meaning of negative integers when associated with positive integers. This can be seen in the following conversation.

P : What's the difference between "1" and "(-1)"?
S1 : One is positive, the other is negative
P : Is there a relation between both numbers?
S1 : I don't know

Based on this answer, the scaffolding given to the subject is to show that negative integers are a negation of positive integers in the following way.

Show with stepping motion. For example, if the number 2 represents 2 steps to the right, then the number (-2) represents 2 steps to the left; if the number 2 represents two steps forward, then the number (-2) represents two steps backward. From this assistance, the subject had been able to show the meaning of the number (-5) with five steps to the left and the number 5 with five steps to the right.

Provide illustrations of examples of object positions through pictures (see Figure 1). If the number 10 represents the position of the aircraft 10 meters above sea level, then (-10) represents the position of the submarine 10 meters below sea level. From this assistance, the subject can state that if the number 8 represents the position of the bird 8 meters above sea level, then (-8) represents the position of the fish 8 meters below sea level.

Figure 1. Illustration of the relation between positive and negative numbers

Put a pair of cards on the string given a certain partition (to show units) as a replacement of the number line symbol. Example, placing a card with number 2 at a point (Figure 2a) and placing a card with number (-2) in the corresponding position (Figure 2b). From this assistance, the subject had been able to place number cards to show the numbers 4 and (-4) as shown in Figure 3.

Figure 2a. illustration of position of number 2 on a number line

Figure 2b. illustration of position of number 2 and -2 on a number line

Fugure 3. The subject response in placing number cards

Based on this description, it can be concluded that the appropriate scaffolding for the subject who experience misunderstandings about the meaning of negative and positive numbers is manipulative media scaffolding in the form of card pairs media on a string given a certain partition (to show units) as a replacement of number line symbols, representation using stepping motions, as well as pictures. This scaffolding had succeeded in helping the subject in understanding the concept of integer relations.

Doing the Skip Counting Concept of Integer

Complete the line number in order. The subject had been able to sort the sequence of positive and negative integers. This can be seen from the success of the subject in sorting the cards written with integers between -10 and 10 in the correct order as shown in Figure 4.

Figure 4. The subject sorts the cards in integers

The researcher placed the card with the number "0" and the subject can continue with the card with the number "1", "2" and so on until the number "10". After that, it is continued by placed cards that read "(-1)", "(-2)", and so on until "(-10)" from closest to zero and further away. This is done based on the subject's memorization of the sequence of positive integers, namely from 1, 2, 3, and so on.

Complete the line number with skip counting. The subject had been able to do the concept of skip counting if it is known two positive numbers as well as positive and negative numbers are next to each other. The strategy used by the subject in solving this problem is to write down the sequence of numbers and give across on the number that was skipped, as shown in Figure 5. In visualizing the number line, the subject used a ruler to describe the number that was skipped.

Figure 5. The subject's skip counting strategy

However, if it is known that negative integers are positioned next to each other (Figure 6), the subject had not been able to. The subject's initial ability is shown in Figure 7.

Figure 6. Skip counting problem if it is known that two negative integers are positioned next to each other

Figure 7. The subject's skip counting ability if it is known that two negative integers are positioned next to each other

o help the subject, *scaffolding* is given by asking questions such as "how many skip counts used in this question?". The subject already knows that the question uses skip counting by three. However, the subject considered the number -1 to be 0 so that the number to the right of -1 is the opposite of -4, which is 4. Then the subject was asked to rework using the strategy that was done previously, namely by write down the sequence of numbers and give a cross on the number that was skipped. This assistance was successful in assisting the subject in finding where the error was and being able to correct it.

Based on this description, it can be concluded that *scaffolding* that was successfully given to the subject who did not understand the skip counting concept was target-oriented *scaffolding* by providing questions and instructions that focused the subject on the skip counting concept.

Comparing Integers.

The subject had been able to compare positive and negative integers. In comparing these two kinds of numbers, the subject had learned that in finding the smallest number one only needs to look at negative numbers and ignore positive numbers. However, the subject is still unable to compare between positive integers and negative integers.

Comparing positive numbers. The subject had been able to compare positive numbers with the same digits. In comparing these numbers, the subject looked at the first digit of the number of each answer choice. The smallest first digit of the number was chosen by the subject to look for the smallest number. However, when each answer choice had different digits, the subject had not been able to compare them correctly. As can be seen in Figure 8 that the subject only paid attention to the first digit of the number without paid attention to the number of digits of each answer choice.

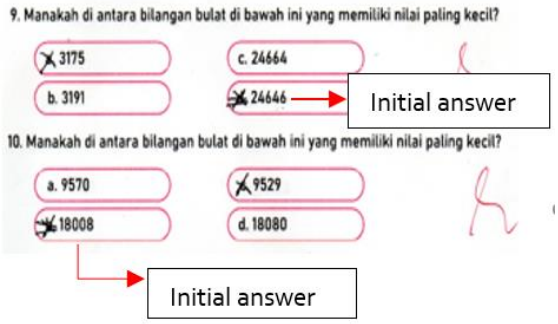

Figure 8. The subject's ability to compare positive integers

Based on these answers, the researcher aided by asking several questions such as "How did you do this? Why choose D instead of C? What's the difference between each option?" After being given *scaffolding*, the researcher asked for responses from the subject to conclude what needs to be considered when comparing integers. The answer given by the

subject is to pay attention to the number of digits and the first digit of the number.

Comparing negative numbers. Based on the answers from the subject in Figure 9, the subject had not been able to compare negative numbers. The subject only chose the smallest number from the answer choices provided regardless of the value and kinds of the number.

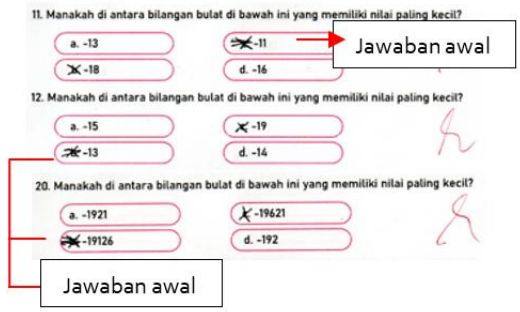

Figure 9. The subject's error in comparing negative numbers

Based on these answers, assistance was provided by providing help questions. "How did you do this?", "Are you sure?" From these questions, the subject realized that the mistake was not seeing that these numbers were negative. The subject had understood that when looking for the smallest number among negative numbers is to look for the largest number, but the subject was less careful and only looked at the first digit of the number and did not pay attention to the number of digits. After being given *scaffolding*, the subject was able to correct the mistakes and solved other problems of the same type correctly.

Based on the description, it can be concluded that the *scaffolding* that was successfully given to the subject who did not understand the concept of comparing integers, included *scaffolding* for handling effectively (handling errors productively) by asking questions so that students could find out their mistakes independently and *scaffolding* target-oriented by providing questions, instructions, and explanations that focused student's attention to the concept of comparing integers.

Addition of Integers

The subject had been able to calculate the result of an addition of similar kinds of integers (between two positive numbers and two negative numbers). An example of the subject's answer to this can be seen in Figure 10.

Figure 10. The subject's ability to calculate the addition of similar kinds of integers through Quizizz

As for the addition of two numbers with different kinds (positive with negative and vice versa), the subject had not been able to. This can be seen in the subject's answers to the questions presented in Figure 11. The subject was still calculating it when adding up two positive numbers, namely by adding up the numbers. It shows that the subject still does not understand how to calculate addition in integers, especially the addition of different kinds of integers.

Figure 11. The subject's ability to calculate the addition of different kinds of integers through Quizizz

Based on the mistakes made by the subject, assistance was given in the form of Yin Yang Integer (Yin Yang Bilangan Bulat/YYBB) media which can be seen in

Figure 12a. This media uses logical steps and can construct the subjects knowledge of addition operations. This media consists of white and black yin yang. White yin yang represents a value of 1 (Figure 12b) while black yin yang represents a value of -1 (Figure 12c). Each white and black yin yang pair represents a value of "0", as shown in Figure 12d. The concept of addition that is emphasized in this media is the concept of adding something.

Figure 12a. Scaffolding Media Yin Yang Integers (YYBB)

Figure 12b. The meaning of white yin yang is 1

Figure 12c. The meaning of black yin yang is -1

Figure 12d. The meaning of yin yang pair is 0

The subject was given a video using YYBB media to calculate 3 + (-2) with the following explanation. (1) Put as many pairs of yin yang integers as possible as in Figure 13a.; (2) Condition YYBB to show the number 3 as shown in Figure 13b; (3) Add 2 black yin yang as an illustration of the number (-2) so that the condition looks like in Figure 13c; then (4) Count the number of unpaired yin yang. In this case, the result is 1 because there is only one white yin yang that is not paired.

Figure 13a. Initial conditions of YYBB

Figure 13b. Condition of YYBB when showing a value of 3

Figure 13c. Condition of YYBB after adding 2 black yin yang

After being given a video about the use of YYBB, the subject had been able to practice it independently and had been able to interpret addition as the concept of adding. With the use of YYBB media, it had also been able to help the subject to calculate the addition of both the addition of the similar or different kinds. After being given this media, the subject had been able to correct the mistakes and could work on other questions of the same type correctly.

Based on this description, it can be concluded that *scaffolding* that was successfully given to subjects who had difficulty calculating the addition of integers was video and manipulative media such as Yin Yang Integers (YYBB).

Subtraction of Integers

The subject had been able to calculate the subtraction of two positive numbers by subtracting the larger number by the smaller number. This can be seen in the answers of the subjects in Figure 14.

Figure 14. The subject's ability to calculate subtraction of similar kinds

While in other subtraction of similar kinds, the subject had not been able to. As seen in Figure 15, the subject only calculated the difference between two numbers given in the problem. This inability was also found when the subject calculated the subtraction of different kinds. This can be seen in the subject's answers to the questions in Figure 16. Assistance is provided in the form of Yin Yang Integer (YYBB) media which can be seen in Figure 17 based on the subject's initial ability.

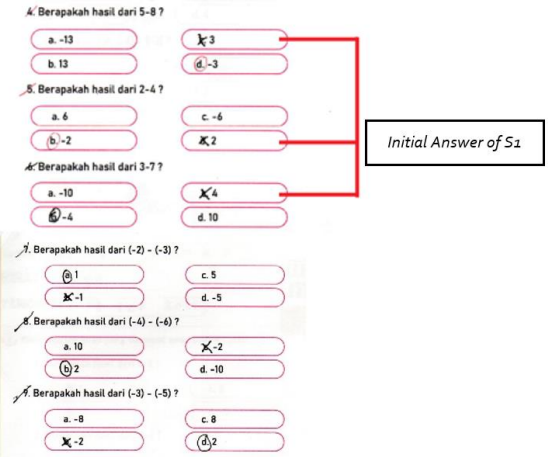

Figure 15. The subject's ability to calculate other types of subtraction of similar kinds

Figure 16. The subject's ability to calculate the subtraction of different kinds of integers

Figure 17. Scaffolding Media Yin Yang Integer (YYBB)

Without the need for a re-explanation of how the YYBB media works, the subject had been able to independently use the media to calculate the subtraction of integers. This is because the subject had been able to use YYBB to solve the addition of integers with the correct concept. So that when solving the subtraction of integers, the subject could think analogously, only changing the subtraction process by taking yin yang as the opposite form of the addition process which must add yin yang.

With the help of YYBB, the subject had also been able to correct the mistakes and could understand how to operate the subtraction of integers. It is proven that the subject could work on other questions with the help of YYBB independently and appropriately.

Based on the description, it can be concluded that the *scaffolding* that was successfully given to the subject who had difficulty calculating the subtraction of integers was the manipulative media *scaffolding* in the form of Yin Yang Integers.

Discussions

The inability experienced by the subject includes understanding the concept of positive and negative integers, the concept of skip counting, comparing integers, adding, and subtracting integers which in this case is in line with research that has been carried out by Aziz *et al* (2016), Labuem (2020) and Mumpuniarti (2017).

Based on the answers from the subjects, it was found that *scaffolding* that succeeded in helping overcome the difficulties of students with special needs in integer subject matter was scaffolding for handling errors productively/effectively, target-oriented, and manipulative media. *Scaffolding* handling errors productively/effectively helps in comparing integers. Target-oriented *scaffolding* succeeded in overcoming the subject's difficulties in understanding skip counting and comparing integers. Meanwhile, manipulative media *scaffolding* succeeded in overcoming the subject's difficulties in the concept of integers, calculating addition and subtraction of integers.

The subject has relatively short attention spans and a lack of concentration. This is one of the characteristics of a slow learner. The subject could not concentrate on instructions or assistance that are only in the form of words but need contextual, concrete, and logical assistance. The logic in question is like the concept of addition by adding something and subtraction by taking something. In this case, the subject only requires meetings with a short duration but is carried out regularly. With logical assistance given to the addition of integers, the subject did not need to be re-explained about how the media work. But the subject had found it independently, based on an analogous way of thinking. Short but periodic duration can also improve the memory of the subject. This is in line with the theory of Reddy (1997) and (Khabibah, 2017) about how to teach slow learners based on their characteristics.

Therefore, from the various assistances used to help overcome the difficulties of children with special needs, it was found that the subject tended to more easily understand the concepts conveyed through pictures and videos. With the help of *PowerPoint* assisting in understanding the meaning of negative and positive numbers, the subject could easily understand the meaning of positive and negative numbers. Likewise, when given a video using the Yin Yang Integer (YYBB) media, the subject could easily understand and immediately practice it correctly. This is under the theory of Dasaradhi (2016) that audiovisual assistance is one method that can help improve the learning abilities of slow learner children.

Not only with the help of audio-visual, but the use of manipulative media could also help overcome the difficulties of the subject in operations of integers subject matter. The manipulative media used in this study to help overcome the subject's difficulties is the Yin Yang Integer (YYBB) media. YYBB had helped the subject in understanding the concept of addition and subtraction of integers. Several researchers have researched on the use of media to improve children with special needs' abilities in the operations of integers. Among them are research belonging to Azizah (2012); Jannah et al. (2019); and Rusdiana et al. (2019). This is also under the theory presented by Hoffman (2015) that manipulative media can be used to help slow learner children in understanding mathematics.

CONCLUSIONS

Scaffolding in the form of handling errors productively, target-orientation, and the use of manipulative media successfully helped the students with special needs to understand the meaning of negative integers (the relation between negative integers and positive integers), doing skip counting, comparing, ordering, and doing addition and subtraction operations involving positive and negative integers. The characteristics of *scaffolding* that are successful in helping are contextual, concrete, logical and not in the form of

instructions with long sentences. The subject only needs meetings with the teacher for a short but periodic duration followed by independent activities by students with special needs to repeatedly use media (pictures, videos, and manipulative media) or interesting evaluation instruments (Quizziz) outside of class hours.

Based on the results of this study, teachers should minimize direct explanation assistance and switch to brief explanations recorded in the form of the video so that students with special needs can access it repeatedly. In addition, the construction of concepts should be contextual, concrete, logical and not just information that must be accepted and memorized by students.

This study had only been applied to children with special needs in the slow learner category on integers subject matter in junior high school. It is hoped that other studies can be carried out to provide *scaffolding* for students with special needs in the slow learner categories for other topics/subject matters. Thus, it can further enrich the references of mathematics teachers who face slow learner students with special needs in their mathematics learning.

REFERENCES

Aziz, A. N., Sugiman, S., & Prabowo, A. (2016). Analisis Proses Pembelajaran Matematika pada Anak Berkebutuhan Khusus (ABK) Slow Learner di Kelas Inklusif. *Kreano, Jurnal Matematika Kreatif-Inovatif*, *6*(2), 111-120.

Azizah, N. (2012). *Peningkatan Prestasi Belajar Matematika Materi Penjumlahan Bilangan Bulat dengan Menggunakan Media Red and White Stick pada Anak Berkebutuhan Khusus*. [Doctoral Dissertation] Universitas Sebelas Maret Surakarta.

Borah, R. R. (2013). Slow learners: Role of teachers and guardians in honing their hidden skills. *International Journal of Educational Planning & Administration*, *3*(2), 139-143.

Brennan, W. K. (2018). *Shaping the education of slow learners*. Routledge.

Dasaradhi, K., Rajeswari, C. S. R., Mistress, H., & Badarinath, P. V. S. (2016). 30 Methods to Improve Learning Capability in Slow Learners. *IJELLH, International Journal of English Languange, Literature, and Humanities*, *4*(2), 556-570

Disdik Salatiga. (2017). *Tentang Inklusif*.

Anjarsari, A.D.; Efendy, M; Sulthoni (2018). The Implementation of Inclusion Education Assistance for Elementary, Junior High, and Senior High School in Sidoarjo Regency. *Jurnal Pendidikan Inklusi*, *1*(2), 91-104.

Ediger, M. (2002). *Reading and the Slow Learner* [opinion paper]. ERIC Reproduction Suplied. Retrieved from https://files.eric.ed.gov/fulltext/ED469152.pdf

Fernandes, R. (2018). Adaptasi Sekolah Terhadap Kebijakan Pendidikan Inklusif. *Jurnal Socius: Journal of Sociology Research and Education*, *4*(2), 119. https://doi.org/10.24036/scs.v4i2.16

Fjr. (2019, May). *Walikota: Semua Sekolah Menuju Sekolah Inklusif*. Retrieved from: https://salatiga.go.id

Helmina, W. (2017). Pengaruh Penggunaan Media Manipulatif Terhadap Hasil Belajar Matematika Siswa Kelas V Sekolah Dasar. *Jurnal Pendidikan Dan Pembelajaran Khatulistiwa*, 6(4), 1-10.

Hoffman, R. I. (2015). The Slow Learner—Changing His View of Math. *The bulletin of the National Association of Secondary School Principals*, *52*(327), 86-97.

Jannah, U. R., Saleh, H., & Wahidah, A. (2019). Scaffolding untuk Pembelajaran Matematika di Kelas Inklusi. *Jurnal Kajian Pendidikan Matematika*, *5*(1), 61–72.

Khotimah, H. (2019). Analisis Kebijakan Permendiknas No . 70 tahun 2009 Tentang Sekolah Inklusi. *Realita: Jurnal Penelitian dan Kebudayaan Islam*, *70*, 75–84.

Labuem, S. (2020). Kemampuan Komunikasi Matematis Tulis Slow Learner dalam Memecahkan Masalah Operasi Hitung Bilangan Bulat. *Jurnal Pendidikan Matematika Jargaria*, *1*(1), 1-12.

Larasati, Y., & Mampouw, H. L. (2018). Pemberian Scaffolding untuk Menyelesaikan Soal Cerita Materi Perbandingan Senilai dan Berbalik Nilai. *Math Didactic: Jurnal Pendidikan Matematika*, *4*(1), 47–56. https://doi.org/10.33654/math.v4i1.85

Lei, Q., Morita-mullaney, T., & Tzur, R. (2020). Instructional Scaffolds in Mathematics Instruction for English Learners With Learning Disabilities: An Exploratory Case Study. *Learning Disabilities: A Contemporary Journal*, *18*(1), 123-144.

Lindstrøm, C., & Sharma, M. D. (2011). Teaching physics novices at university: A case for stronger scaffolding. *Physical Review Special Topics - Physics Education Research*, *7*(1), 1–14. https://doi.org/10.1103/PhysRevSTPER.7.010109

Maharani, I. P., & Subanji, S. (2018). Scaffolding Based on Cognitive Conflict in Correcting the Students' Algebra Errors. *International Electronic Journal of Mathematics Education*, *13*(2), 67–74. https://doi.org/10.12973/iejme/2697

Mumpuniarti, M. (2017). Challenges Faced by Teachers in Teaching Literacy and Numeracy for Slow Learners. *Journal of Sustainable Development*, *10*(3), 243. https://doi.org/10.5539/jsd.v10n3p243

Nurhayati, E. (2017). Penerapan scaffolding untuk pencapaian kemandirian belajar siswa. *Jurnal Penelitian Pendidikan Dan Pengajaran Matematika*, *3*(1), 21–26.

Oktavianingtyas, E. (2015). Media Untuk Mengefektifkan Pembelajaran Operasi Hitung Dasar Matematika Siswa Jenjang Pendidikan Dasar. *Pancaran*, *4*(4), 207–218.

Pfister, M., Moser Opitz, E., & Pauli, C. (2015). Scaffolding for mathematics teaching in inclusive primary classrooms: a video study. *ZDM - Mathematics Education*, *47*(7), 1079–1092. https://doi.org/10.1007/s11858-015-0713-4

Prayitno, A., Kaka, R., & Hamid, A. (2018). *Pemberian Scaffolding Berdasarkan Kesalahan Matematika*. *3*(2), 161–172.Ramadhani, A. N. (2016). Analisis Kesalahan Siswa Kelas VIII SMP pada Materi Aljabar serta Proses Scaffolding-nya. *JURNAL SILOGISME : Kajian Ilmu Matematika Dan Pembelajarannya*, *1*(1), 11. https://doi.org/10.24269/js.v1i1.243

Reddy, G. L. (1997). *Slow learners: Their psychology and instruction*. Discovery Publishing House.

Republik Indonesia. (2009). Permendiknas RI No 70 tahun 2009 mengenai Pendidikan Inklusif. Jakarta.

Rusdiana, R., Miftahul Jannah, S., Erni Pratiwi, V., & Soemantri, S. (2019). Penguatan Konsep Operasi Bilangan Bulat Pada Siswa Inklusi Melalui Media Matryk (Math Story Book). *Inteligensi: Jurnal Ilmu Pendidikan*, *1*(2), 28-38.

Salatiga. (2013). Peraturan Walikota No 11 Tahun 2013 mengenai penyelenggaraan pendidikan inklusif.

Setianingsih, E. S., & Widyaningrum, A. (Oktober, 2017). Evaluasi Pendidikan Inklusi Tingkat SMP di Jawa Tengah. *Seminar Hasil-Hasil Penelitian 2017 Universitas PGRI Semarang, p. 775-783.*

Staub, D., & Peck, C. A. (1995). What Are the Outcomes for Nondisabled Students? *Educational leadership*, *52*(4), 36-40.

Susilowati, P. L., & Ratu, N. (2018). Analisis Kesalahan Siswa Berdasarkan Tahapan Newman Dan Scaffolding Pada Materi Aritmatika Sosial. *Mosharafa: Jurnal Pendidikan Matematika*, *7*(1), 13-24.

Watson, D. L., & Rangel, L. (1989). Don't Forget the Slow Learner. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, *62*(6), 266–268. https://doi.org/10.1080/00098655.1989.10114069

Wood, D. (2001). Scaffolding, contingent tutoring, and computer-supported learning. *International Journal of Artificial Intelligence in Education*, *12*(3), 280–293.

Yorulmaz, A., & Önal, H. (2017). Examination of the Views of Class Teachers Regarding the Errors Primary School Students Make in Four Operations. *Universal Journal of Educational Research*, *5*(11), 1885–1895. https://doi.org/10.13189/ujer.2017.051105