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Improving the Numeracy Skills of Slow Learners with Ice Cream Stick Media: Single Subject Research

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Abstract
Numeracy skills is a basic ability that is esensial for students to master, especially elementary school students. Therefore, the purpose of this study is to improve the ability to count, add, and subtract numbers 1-20 in slow learner students using ice cream stick media. This study uses quantitative experimental research on a single subject with an ABA design. The single subject in this study is a 1st-grade student of SDN Tebul 1. There are 3 data collection methods used, namely interviews, observations and tests, while the data analysis uses visual analysis consisting of two types, namely in-condition analysis and inter-condition analysis. This study concluded that ice cream stick media can improve numeracy skills in slow learner students. According to visual analysis results, slow learner students initially showed a lack of ability to perform addition and subtraction with numbers 1-20, scoring an average of 30% in the baseline phase (A1). However, after receiving intervention in phase B, which involved using ice cream sticks for learning addition and subtraction, their numeracy skills improved by 45.33%, with an average test score of 75.33% in the intervention phase (B) without any overlapping data.
Keywords: Numeracy skills, Slow Learner, Ice Cream Stick Media, Single Subject Research

1. Introduction

Elementary school education is an educational period during the growth and development of students around the age of 6-11 years (Ediyanto et al., 2023). According to Santrock, students at elementary school are beginning to master reading, writing, and arithmetic. (Ediyanto et al., 2023) . One of the basic skills that elementary school students must master is the ability to count, commonly referred to as arithmetic skills (Suri Ditria et al., 2023). According to Azlin and Iswari, the basic arithmetic calculation operations learned at the elementary school education level are about addition, subtraction, multiplication, and division (Suri Ditria et al., 2023).

Based on observations made by researchers in grade 1 of SDN Tebul 1 on Monday, October 2, 2023, 31.58% of students obtained test scores on numeracy, addition, and subtraction of numbers 1-10 below 50. Of the 19 grade 1 students who took this test, there was one student who took a very long time to answer the test questions given. When all his friends had collected the results of

the test questions, the student had not answered a single question. Even the student still did not finish writing the test questions given. From the data on the recap of formative and summative scores of mathematics subjects obtained by the researcher from the homeroom teacher, as many as four formative tests and one summative test, each of the students received a score of zero.

Based on the interview results with the grade 1 homeroom teacher, the researcher learned that a student who was slow in completing test questions did not advance to the next grade. mentioned that the student had difficulty understanding the material given but the student could communicate with him even though the response given took a little time to think. Tarjiah stated that students whose performance is below average and at risk of not moving up are usually called slow learner students (Suri Ditria et al., 2023).

Slow learners are children or students whose academic achievement is lower than average compared to their peers in one subject or all subjects. They are considered to have special educational needs but are not classified as having mental retardation or disabilities (Sakiinatullaila et al., 2020). Cooter & Cooter Jr., dan Wiley on (Sakiinatullaila et al., 2020) said that the range of IQ test scores owned by slow learner students is between 70 and 90. (Mandagani et al., 2022) explained that slow-learner students are able to learn in the same class as regular students. However, the cognitive understanding of slow-learner students is not at the same level as that of regular students.

According to Nurfadhillah, overall characteristics of slow learner students include: (1) Low or minimal concentration of focus of slow learner students; (2) Slow learner students have difficulty writing letters and numbers; (3) When slow learner students are given verbal questions, they often give answers that are slightly less in accordance with the questions given (Mandagani et al., 2022). Based on these characteristics, students who are slow to complete the test questions are classified as slow learners.

Arithmetic is part of basic mathematics subject that every student must master. Arithmetic is very well conveyed by utilizing appropriate learning media that are used while playing (Murni et al., 2023). Creative and innovative learning media is needed because according to Zuliana (2019), mathematics is abstract (Subarinah et al., 2023). Meanwhile, the level of thinking of elementary school students is still at the level of concrete thinking (Murni et al., 2023). So that learning materials can be used as a tool to provide students with an easy understanding of the content (Safitri et al., 2023).

One of the mathematics learning media, especially about arithmetic, that can be used is an ice cream stick. Based on the results of the study (Safitri et al., 2023) in a journal which discusses the numeracy skills of grade 2 students using ice cream sticks stated that Ice cream sticks can be used as an effective tool for teaching addition and subtraction to second grade students. The study found that the average post-test score in the small group was 93.75, while in the large group it was 94.21.

The statement of Safitri's research results is in line with the results of the research (Ediyanto et al., 2023) in a journal that discusses the numeracy skills of deaf students using ice cream stick media which states that ice cream stick media can help improve the numeracy skills of deaf students where after being given the intervention they obtained a post-test score of 80%-93% which previously they only got a pre-test score in the range 60%-40%.

Based on the various problems that have been disclosed above, the researcher is interested in using ice cream sticks as a medium to improve the numeracy skills of slow learners that the researcher found in the 1st grade of SDN Tebul 1. Another reason why the ice cream stick media researchers chose to be used as research is because ice cream sticks are now very popular children's toy, cheap and easy to get.

This research is important because it focuses on only one research subject, namely slow learner students so that they can understand more specifically the improvement of numeracy skills after being given an intervention in the form of learning using ice cream stick media. This research is in line with Murni's statement that arithmetic is perfect to convey by utilizing appropriate learning media while playing (Murni et al., 2023). So, this study aims to improve the numeracy skills of slow learner students using ice cream stick media.

2. Methods

2.1. Research design

The study utilized quantitative experimental research on a single subject, often referred to as single subject research.(Istiqomah et al., 2022). The process of experimental testing involves evaluating the impact of specific controlled treatments, in this study, namely numeracy skills. This single-subject research was selected because it focused on a unique group, specifically individuals categorized as slow learners (Istiqomah et al., 2022).

The design of this single subject research uses ABA design. ABA design is a single subject research design with reversal (Widodo et al., 2021). According to Datiilo, Koscinski & Gast, and Stringfield, reversal is very important in ABA design research as it reinforces researchers that the intervention or treatment given to the subject actually has an effect without any influence from other factors (Widodo et al., 2021).

This single subject research consists of two variables, namely the independent variable (X) and the bound variable (Y). The independent variable (X) in this study is arithmetic learning with ice cream stick media, while the bound variable (Y) in this study is numeracy skills. The following is the design of ABA single subject research that the researcher made to facilitate the data collection process.

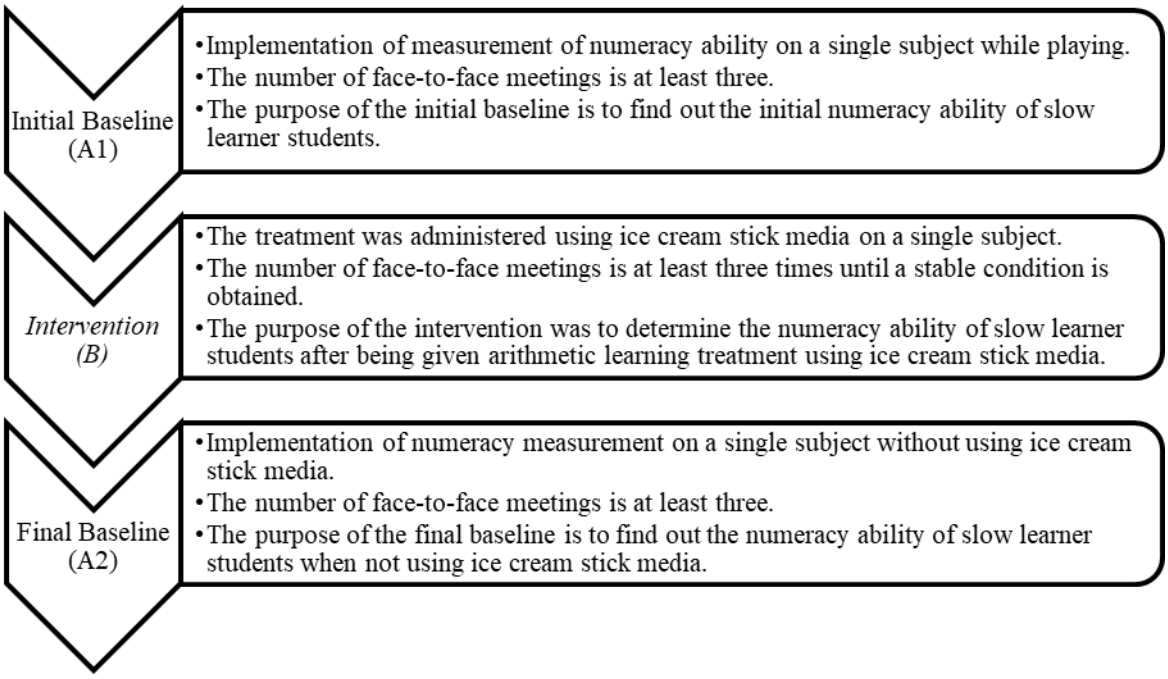

Figure 1. ABA single subject research design

2.2. The subject of research

The subject of this study used a single subject, namely students in the slow learner category taken from grade 1 of SDN Tebul 1, Kwanyar District, Bangkalan Regency, East Java. The slow learner category's single subject was selected after initial observations on October 2 and October 17, 2023. The researcher also used a test of addition and subtraction of numbers 1-10 to select students in the slow learner category. Then the results of the initial observations are identified to find the expected research subjects.

2.3. Data collection

There are three types of the data collection methods in this study, namely through interviews, observations, and tests. The interview was conducted to find out the characteristics of the research subjects for this case, namely slow learner students. The researcher conducted interviews with parents and homeroom teachers of grade 1 of SDN Tebul 1. Parents and homeroom teachers were select to be interviewed because homeroom teachers and parents best understood the habits and character of the research subjects in daily life (Istiqomah et al., 2022).

The observation begins at the start of the study when searching for a research subject. It then continues with the observation of the initial baseline phase, the intervention phase, and finally the second or final baseline phase. The purpose of the observation is to understand the behaviors of the research subjects by monitoring and recording all of their actions. This helps to identify the indications that the researcher aims to achieve. In this study, the researcher used three indicators of observation, namely: (1) The research subjects were enthusiastic during the learning process; (2) The research subject understands the instructions and materials provided by the researcher; (3) The research subject is capable of answering the researcher's questions.

Data collection method through the test was carried out to measure the numeracy skills of the research subjects, namely slow learner students in knowing the counting, addition and subtraction of numbers 1-20. The test indicators to be achieved in the research that the researcher will conduct are: (1) Students can calculate and write down the numbers 1-20; (2) Students are able to understand the concept of arithmetic, addition and subtraction; (3) Students are able to solve the number 1-20 scoring problems correctly; (4) Students can solve the problem of reducing the number 1-20 correctly.

2.4. Data analysis techniques

The researcher in this study used the split-half analysis method.There are two types of split half method analysis, namely analysis under conditions and analysis between conditions (Widodo et al., 2021). There are six components of the analysis under conditions: condition length, estimated direction trend, stability trend, data trail trend, stability and range level, and the last is level change. Meanwhile, in the analysis between conditions, there are five components: the number of variables changed, changes in directional trends, changes in stability trends, changes in levels, and the last is overlap data. Before conducting visual analysis or split-half analysis, researchers use graph data to analyze data on a single research subject.

3. Result and Discussion

3.1. Results

This research was conducted at SDN Tebul 1. The results of the single subject research data with the ABA design were analyzed using visual analysis using graph data. The results of the numeracy test, addition and subtraction of numbers 1-20 carried out at each meeting or session can be presented in table 1 which is divided into three parts, namely the results of the numeracy test in the initial baseline phase (A1) which was carried out in 4 sessions, the results of the numeracy test in the intervention phase (B) which was carried out in 15 sessions, and the results of the numeracy test in the final baseline phase (A2) which was carried out in 5 sessions.

Table 1. The result of slow learner students' numeracy skills test scores

Phase	Date	Score
Initial Baseline (A1)	February 19, 2024	20
	February 23, 2024	40
	February 26, 2024	40
	March 1, 2024	20
Intervention (B)	March 4, 2024	50
	March 8, 2024	70
	March 11, 2024	90
	March 15, 2024	90
	March 22, 2024	70
	March 25, 2024	80
	March 29, 2024	80
	April 1, 2024	80
	April 4, 2024	80
	April 6, 2024	70
	April 8, 2024	80
	April 11, 2024	70
	April 13, 2024	70
	April 15, 2024	70
	April 18, 2024	80
Final Baseline (A2)	April 20, 2024	70
	April 22, 2024	60
	April 25, 2024	60
	April 27, 2024	60
	April 29, 2024	60

Table 1 is a table of the results of measuring the numeracy skills, summing and subtracting numbers 1-20 of slow learner students which were carried out 24 times. The initial baseline condition (A1) shows that the scores obtained by slow learner students are still low, namely 20, 40, 40, 20. The intervention condition (B) was shown that the scores obtained by slow-learner students increased. Specifically, the scores were 50, 70, 90, 90, 70, 80, 80, 80, 70, 80, 70, 70, 70, 80.Then in the final baseline condition (A2), the score of slow learner students decreased slightly, namely 70, 60, 60, 60, 60. As for making it easier to see the increase and decrease in the results of the numeracy score of slow learner students, you can see the graph in the following figure 2.

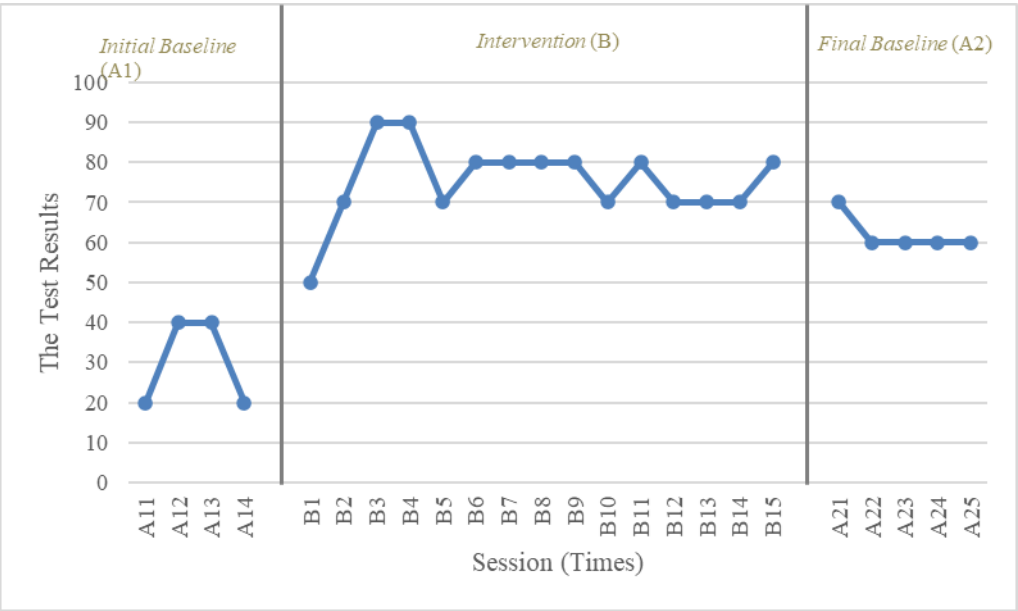

Figure 2. Graph of slow learner students' numeracy skills test scores

3.1.1. Analysis under conditions

The analysis under condition was carried out to analyze data changes in each condition in this case, namely in the three phases, including the initial baseline phase (A1), the intervention phase (B), and the final baseline phase (A2). The components analyzed were 6, namely condition length, estimated direction trend, stability trend, trail trend data, stability and range level, and the last is level change. The results of the analysis in three phases can be seen in table 2.

Table 2. Summary of the results of analysis under conditions

Condition	A1	B	A2
Condition Length	4	15	5
Estimated Direction Trend	→	↘	↘
Stability Trend	Variable 0%	Stable 80%	Stable 80%
Data Trail Trend	→ (=)	↘ (–)	↘ (–)
Stability and Range Level	variable $\frac{20-40}{(0)}$	Stable $\frac{50-90}{(+30)}$	Stable $\frac{60-70}{(-10)}$
Level Change	$\frac{20-20}{(0)}$	$\frac{80-50}{(+30)}$	$\frac{70-60}{(-10)}$

3.1.2. Analysis between conditions

In the analysis between conditions, five components need to be analyzed. The five components include the number of variables changed, changes in direction trends, changes in stability trends, changes in levels, and overlap data. The number of variables which were changed was one, namely the ability to count, the addition and subtraction operations of 1-20 slow learner students. The analysis compared two conditions: the initial baseline phase (A1) and the intervention (B), and the intervention phase (B) and the final baseline phase (A2). The results of the visual analysis between conditions can be seen in table 3.

Table 3. Summary of the results of analysis between conditions

Condition Comparison	A1/B/A2 (1 : 2 : 3)
The Number of Variables Changed	1
Changes in Direction Trends	(=) (−) (−)
Changes in Stability Trends	Variable to Stable to Satble
Changes in Levels	$\frac{20-50}{(+30)}$ and $\frac{80-70}{(-10)}$
Overlap Data	0% and 20%

3.2. Discussion

This research was conducted with the aim of improving the ability to count, add and subtract numbers 1-20 in slow learner students using ice cream stick media. The research conducted is quantitative experimental research on a single subject, also known as single subject research, with an ABA design. There are three instruments used to collect data in this study, namely interview guidelines aimed at homeroom teachers and parents of slow learner students, observation guidelines, and test questions.

The results of the interview were conducted to find out the characteristics and habits of slow learner students so that it was easier for researchers to interact with these slow learner students. Meanwhile, the results of the numeracy test were analyzed visually using graphs and observation results as support for the test results to monitor the development of the behavior of the research subjects during continuous learning.

The results of interviews conducted with homeroom teachers and parents of slow learner students, information was obtained that slow learner students are a type of child who is quiet and difficult to

communicate with, especially with new people. The homeroom teacher said that the slow learner student found it difficult to imitate or repeat the words exemplified by the teacher and did not dare to interact with many people. This is in line with Chauhan who stated that one of the characteristics of slow learner students is that it is difficult to convey ideas, remember messages and listen to instructions (Wulandari & Prasetyaningrum, 2018).

The researcher conducted four initial baseline phase (A1) meetings to observe the addition and subtraction abilities of numbers 1-20, an average percentage of 30% was obtained, which showed that the enthusiasm in participating in learning, understanding of instructions and materials, and the ability to answer questions about the addition and subtraction operations of the numbers 1-20 of the slow learner students were not good.

The results of observation in the intervention phase (B) with 15 meetings obtained an average percentage of 75.17% which showed that the enthusiasm of slow learner students was good in participating in learning to count, add and subtract numbers 1-20 with ice cream stick media. The ability of slow learners to know the clues and materials as well as the ability to answer questions from the test questions given by the researcher has improved by the initial baseline phase (A1).

Meanwhile, the average percentage observation results in the final baseline phase (A2) was 63.5%, which showed that the enthusiasm of slow learner students was quite good in participating in the learning of arithmetic, summarizing, and subtracting numbers 1-20. The ability of slow learners to understand clues and material as well as the ability to answer questions from the test questions given by the researcher was good but the count of slow learner students using ice cream sticks decreased slightly in the intervention phase (B).

The research tests were conducted in three phases: the initial baseline phase (A1), the intervention phase (B), and the final baseline phase (A2). The average percentage of consecutive test results was as follows: 30% in the initial phase (A1), indicating a lack of numeracy skills in slow learner students; 75.33% in the intervention phase (B), showing improvement to a good level after treatment; and 62% in the final phase (A2), indicating a decrease to a sufficient level from the previous intervention phase (B). This shows that the intervention provided by the researcher has a positive impact, namely it can improve the numeracy skills that was initially lacking to be good. Then, after no intervention was given, the numeracy skills of slow learner students decreased slightly.

In addition, in single subject research, the test results carried out by the researcher are analyzed visually with the help of graphs. Visual analysis is divided into two, namely analysis in conditions and analysis between conditions. In the initial baseline phase (A1), slow learner students lacked the ability to perform basic addition and subtraction of numbers 1-20. However, after receiving intervention in phase B, which involved learning to add and subtract numbers 1-20 using ice cream stick media, the numeracy skills of slow learner students improved. Both within and between

conditions, the visual analysis results showed this improvement. Then in the final baseline phase (A2) it decreased slightly. This final baseline phase (A2) is a reinforcement that using ice cream stick media can improve slow learner students' ability to count, add, and subtract numbers 1-20.

4. Conclusion

Based on the results of single subject research on improving numeracy skills in slow learner students using ice cream stick media, it can be concluded that: "Ice cream stick media can improve the ability to count, add and subtract numbers 1-20 in slow learner students".

6. References

Ediyanto, E., Liesdiawati, L., Sunandar, A., & D. Hastuti, W. (2023). Changes in Numeracy Skills of Deaf Students at Malang Special Primary School in Mathematics Learning using Ice Cream Stick Media. *Pegem Journal of Education and Instruction*, *13*(4). https://doi.org/10.47750/pegegog.13.04.03

Istiqomah, I., Yuliani, R., Ekawati, R., & Widodo, S. A. (2022). Number recognition development with number card: Single subject research. *International Journal of Evaluation and Research in Education*, *11*(3), 1171–1182. https://doi.org/10.11591/ijere.v11i3.22662

Mandagani, D. E., Zain, ;, Khusnaini, N., Nur, ;, Aryati, I., Prasetyo, S., & Kamala, I. (2022). Karakteristik dan Proses Pembelajaran Siswa Slow Learner. *At-Tarbawi: Jurnal Pendidikan, Sosial Dan Kebudayaan*. https://doi.org/10.32505/tarbawi.v9i1.4136

Murni, D., Mudjiran, M., & Mirna, M. (2023). Analisis Terhadap Kreativitas dan Inovasi Guru dalam Membuat Media Pembelajaran Matematika Sekolah Dasar. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *7*(2), 1118–1128. https://doi.org/10.31004/cendekia.v7i2.2066

Safitri, A., Makki, M., Hidayati, V. R., & Fauzi, A. (2023). PENGEMBANGAN MEDIA STIK ES KRIM UNTUK KEMAMPUAN BERHITUNG PENJUMLAHAN DAN PENGURANGAN KELAS II SDN 2 LEMBUAK, KABUPATEN LOMBOK BARAT. *Pendas : Jurnal Ilmiah Pendidikan Dasar*, *08*.

Sakiinatullaila, N., K, F. D., Priyanto, M., Fajar, W., & Ibrahim, I. (2020). Penyebab Kesulitan Belajar Matematika Anak Berkebutuhan Khusus Tipe Slow Learner. *Jurnal Pendidikan Matematika (Kudus)*, *3*(2), 171. https://doi.org/10.21043/jmtk.v3i2.7471

Subarinah, S., Prayitno, S., Novitasari, D., & Wahyu Triutami, T. (2023). Pelatihan dan pendampingan pengimplementasian alat peraga kopermatik bagi guru sekolah dasar.

Rengganis Jurnal Pengabdian Masyarakat, *3*(1), 140. https://mathjournal.unram.ac.id/index.php/Rengganis/index

Suri Ditria, I., Iswari, M., Taufan, J., & Arnez, G. (2023). Efektivitas Media Batang Cuisenaire Untuk Meningkatkan Kemampuan Operasi Pengurangan Pada Anak Slow Learner. *Jurnal Penelitian Pendidikan Kebutuhan Khusus*, *11*(2).

Widodo, S. A., Kustantini, K., Kuncoro, K. S., & Alghadari, F. (2021). Single Subject Research: Alternatif Penelitian Pendidikan Matematika di Masa New Normal. *Journal of Instructional Mathematics*, *2*(2), 78–89. https://doi.org/10.37640/jim.v2i2.1040

Wulandari, S., & Prasetyaningrum, S. (2018). Media Stamp Game untuk Meningkatkan Kemampuan Berhitung Anak Slow Learner di Sekolah Dasar. *Psympathic : Jurnal Ilmiah Psikologi*, *5*(2), 131–148. https://doi.org/10.15575/psy.v5i2.2977