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The Use of Stamp Games to Improve Addition and Subtraction Skills in Students with Mild Intellectual Disability: Single Subject Research

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Abstract

This study aimed to determine the effectiveness of the stamp game in improving addition and subtraction skills of a student with an intelligence quotient (IQ) score of 50, categorized Mild Intellectual Disability. The research employed a quantitative descriptive method using a Single Subject Research (SSR) experimental approach. The study applied a reversal A-B-A design consisting of Baseline -1 (A1), intervention (B), Baseline -2 (A2) phases. Data were collected through tests, observation, and interviews. The participant was an eighth-grade student at an inclusive public junior high school in Tasikmalaya, selected through purposive sampling. Data were analyzed using visual graphical analysis within and between conditions across 18 sessions the findings showed an increase in the mean level from 7.42% in Baseline-1 (A1) to 63.43% during the intervention phase and further increased to 85.25% in Baseline-2 (A2). Data stability reached at least 85% within conditions and remained stable across conditions. The level change increased by 57% from Baseline-1 (A1) to intervention and by 20% from intervention to Baseline-2. The overlap percentage was 0%, indicating no data overlap. These results suggest that the Stamp Game is Effective in improving addition and subtraction skills in students with mild intellectual disability the improvement was maintained during the Baseline-2 (A2) phase, indicating that the effect persisted even after the intervention was withdrawn.

Keywords: Addition and subtraction operation skills, Mild intellectual disability, Single subject research, Stamp game

INTRODUCTION

Education plays a vital role in helping students face the complex challenges of the educational world. To prepare students, education must be able to reach and accommodate the diverse needs of students, including those who have difficulty learning addition and subtraction due to cognitive barriers experienced by students with Intelligence Quotient (IQ) scores far below average. Inclusive and responsive education to student needs is a step towards realizing equal learning opportunities without exception and enabling them to develop according to their potential. This aligns with the explanation of Arini et al. (2024) that the inclusive education paradigm acknowledges the diversity of students, emphasizing that different students must not only be accepted, but also given the opportunity and encouragement to adapt to student needs such as specific obstacles of difficulty in addition and subtraction operations.

Every student has an equal

opportunity to develop, including those with IQs far below average. This aligns with Sustainable Development Goal (SDG) 4 and is supported by the OECD in its Education at a Glance initiative. (2024) which emphasizes that equal distribution and quality of education for students with intellectual disabilities can be achieved if education is able to provide appropriate support for students with IQs far below average. This shows that students with IQs far below average need to be given equality, opportunities, empathy, thus ensuring that no one is left behind, including providing support in the form of special strategies or interventions for students who have difficulty in addition and subtraction operations (Unicef, 2022) . Based on the Indonesian Health Survey (SKI) (2023) the prevalence of school-aged children (5-17) with disabilities that focus on intellectual disabilities in Indonesia reaches 1% nationally, an estimated 650,000 children and based on the West Java Provincial Statistics Agency (BPS) there are 11,835 children who are included in the focus on intellectual intelligence (IQ) (Badan Pus. Stat. Indones. Provinsi Jawa Barat, 2022). Thus, to prevent this prevalence shows an urgency that requires a special and in-depth strategy in the form of targeted interventions.

As a science that is very urgent in everyday life and in the world of education, mathematics is a science that has different properties and characteristics from other disciplines. This is because mathematics is based on a systematic mindset, a high level of abstraction so that strong basic skills are needed, especially basic skills of addition and subtraction operations which are important as the main provision in understanding the concept of continuous mathematics. Thus, without mastering the basic skills of addition and subtraction operations, it is difficult to develop mathematical abilities well. In line with the explanation of Siregar et al . (2023) addition and subtraction operations are important concepts that must be mastered to support understanding the concept of continuous mathematics.

Mastering basic addition and subtraction skills is an important foundation. According to Gusteti & Neviyarni (2022), mathematics plays a role in developing basic skills, particularly addition and subtraction skills. Therefore, it requires a strategic approach tailored to students' needs and support to help them overcome difficulties in understanding addition and subtraction. Therefore, regarding functional skills such as addition and subtraction skills, this is crucial to ensure that students can function independently in their environment optimally.

Students with Mild Intellectual Disability generally have limitations in intellectual functioning and adaptive

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behavior that affect their academic abilities. The Diagnostic and Statistical Manual of Mental Disorders, 5th edition (American Psychiatric Association, 2022) defines Mild Intellectual Disability as a developmental disorder characterized by significant limitations in intellectual and adaptive functioning that emerge during development. Individuals with IQ scores below 70 require more concrete, structured, and repetitive learning support. Subjects were identified based on a preliminary study during FKIP EDU, including diagnostic assessments and observations of mathematics teachers, homeroom teachers, and parents.

A preliminary study conducted on an eighth-grade student at an inclusive public junior high school in Tasikmalaya showed difficulty performing basic addition and subtraction operations. Based on an assessment using the Wechsler Intelligence Test conducted by a professional psychology bureau, the student obtained an IQ score of 50, which is included in the category of intellectual disability. Observations and interviews with teachers and parents showed that the student had difficulty performing addition and subtraction operations.

A meta-analysis study by Carbonneau et al . (2024) stated the positive impact of concrete manipulative if they are specifically and appropriately guided for groups of students with needs or in this study students with indication of Mild Intellectual Disability. Thus, aids or teaching aids can enable students to see and touch in real life, so that students can understand abstract concepts more easily through the transition from concrete teaching aids and bridge the difficulties of addition and subtraction operations.

Concrete aids, such as the Stamp Game, play a crucial role in overcoming the obstacles or difficulties experienced by students with IQ indications of Mild Intellectual Disability in addition and subtraction. Therefore, the use of concrete aids in the form of Stamp Game intervention is an appropriate solution to bridge the gap in weak addition and subtraction operations.

This is because based on Piaget's mental development theory that students learn from the concrete to the abstract stage, Stamp Game functions as a concrete medium that helps subjects visualize addition and subtraction operations, after this treatment is obtained, subjects are gradually able to internalize so they can move towards the abstract.

This study offers novelty by presenting a new innovative contribution exploring and integrating approaches using Stamp Games specifically as an intervention to assist in improving addition and subtraction skills in students with indications of Mild Intellectual Disability. The novelty element lies in the clear emphasis on students with

indications of Mild Intellectual Disability, which has not been the subject of research on a similar topic in Junior High Schools in Tasikmalaya. This study covers the needs that are challenging for students with indications of Mild Intellectual Disability with intervention using Stamp Games can improve addition and subtraction skills. Previous research according to Hastiani & Utami (2024)shows that Stamp Games can help children understand place value, the use of Stamp Games can be used as a method used to help children calculate addition.

Furthermore, according to Ranti Novianti (2021) The Stamp Game is an effective tool for teaching arithmetic, specifically addition and subtraction, to students who struggle with basic arithmetic. A concrete teaching aid, the Stamp Game offers a viable alternative for addressing the difficulties of addition and subtraction. The use of the Stamp Game as a specific intervention is still limited. Focusing on its use has shown a positive and direct impact on students with low IQ and mental retardation.

Thus, inclusive education can bridge the real challenges faced by students with Mild Intellectual Disability according to the research objectives analyzing the use of Stamp Games to Improve Addition and Subtraction Operation Skills in students with Mild Intellectual Disability.

METHOD

The research method used in this study is an experimental method that focuses on a single subject target or the This study employed a Single Subject Research (SSR) method with an ABA reversal design. The purpose of selecting the ABA reversal design was to examine the functional relationship between the intervention and the target behavior by comparing Baseline (A1), intervention (B), and withdrawal phases (A2). Is to evaluate how effective the use of Stamp Game is in improving addition and subtraction operation skills. This study uses a quantitative approach by applying the Single

Subject Research method. Single Subject Research (SSR) focuses on one individual to observe behavior in depth. Through Single Subject Research, researchers will modify the given behavior or target behavior. Single-subject research uses an experimental approach. Each subject is exposed to a control condition known as the Baseline phase and an intervention condition (Epstein & Dallery, 2022). The Single Subject Research method can observe changes or improvements over time, and if changes are desired at the next time or day (Widodo et al ., 2021).

The Single Subject Research method allows for Drawing strong conclusions about factors that may influence interventions on the dependent variable is possible because the study employed

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an experimental procedure that included Baseline and intervention stages (Widodo et al ., 2021; Prahmana, RCI, 2021). The technique used in selecting this sample is based on the Single Subject Research (SSR) method, or single-subject research focused on individuals with specific behaviors. In this study, the subject selection method was based on specific considerations and was not randomly selected. In this study, the subject selection was carried out using a purposive sampling technique.

Table 1 Research Phases In A-B-A Design

Phase	Session	Description
Baseline-1 (A1)	7	No intervention; addition and subtraction tests administered
Intervention (B)	7	Implementation of the Stamp Game
Baseline-2 (A2)	7	Withdrawal of the Stamp Game

Baseline-1 (A1) phase, in this phase according to Susanto, Takeuchi & Nakata, Prahmana Baseline is the condition experienced before being given any treatment on the behavior that is the target of the study. In the Baseline -1 (A1) phase in this study, the Stamp Game intervention has not been received in this case the measurement is carried out through addition and subtraction operation tests. Intervention phase (B), in this condition it is an intervention condition, in the intervention condition it is the provision of special behavior or treatment applied to the subject.

Baseline phase -2 (A2), in this condition is the condition of returning after intervention. In this condition is an iteration of the Baseline phase -1 (A1), but with the condition that students have been given intervention in the form of using the Stamp Game to the subject. This phase or condition aims to see whether there is a change after the intervention is given and then released whether it returns to the original condition or not. In the Baseline condition -2 (A2) to see the effectiveness of the intervention in improving addition and subtraction operation skills.

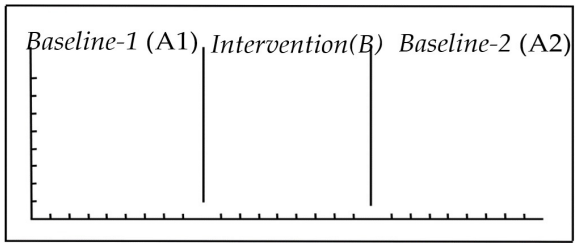

Figure 1 A-B-A Revelsal Design in Single Subject Research

The data collection technique in this study was adapted to the Single Method. Subject Research (SSR). This research uses research instruments, namely tests, observation guidelines, interview guidelines. In this study, the test was used to measure the additional operation skills of students with Mild Intellectual Disability. Observations were carried out by the researcher on the subjects during the learning process. Subsequent interviews were used as qualitative data to strengthen and explain the findings of the

results quantitative analysis in research. The data analysis technique in Single Subject Research method is also known as visual inspection. According to Sunanto in the book Single Subject Research by Prahmana (2021)the visual inspection method is a commonly used approach to analyze data in the form of tables and figures. Prahmana, RCI (Prahmana, 2021) in the book Single Subject Research theory and its implementation explains the components of analysis in conditions and between conditions (1) Length of conditions, indicating the number of sessions, namely how long the Baseline and intervention conditions are carried out.

The number of sessions in both Baseline and intervention can be stopped if the data stability and the desired directional trend are achieved; (2) Estimation of directional trends, data showing an increasing, decreasing, or flat trend is determined by the Split Middle method looking at the median of the data points; (3) Data stability 15%, stability indicates the size of the range or degree of deviation of a data, data is said to be stable if not less than 85% of the data is still above and below the mean level , it is said to be stable; (4) Data trace, describes the pattern of data movement between sessions and shows trends such as estimated direction tendencies; (5) Stability level and range, data can be seen in the calculation of stability tendencies and; (6) Changes in level (a condition), changes in level indicate changes in data in a condition, if the data improves then a (+) sign is given. Meanwhile, analysis between conditions is measured through 4 indications, including: (1) Changes in direction tendencies and their effects, determined by taking data from analysis in conditions; (2) Changes in stability tendencies can be determined by looking at the tendencies in conditions, in the Baseline phase 1 (A1) to intervention (B) the change is called stable to stable; (3) Changes in level (between conditions), by determining the difference in determining the direction of improvement (+) and; (4) Overlap data , data can be determined by looking at the upper and lower limits in the Baseline condition 1 (A1), then calculate the data points in an intervention condition (B) that overlap in the Baseline condition 1 (A1) and condition Baseline condition 2 (A2) overlap in the intervention condition (B).

RESULT AND DISCUSSION

Based on the research, the addition and subtraction operation skills test scores Baseline 1 (A1), Intervention (B), Baseline 2 (A2) The hypothesis in this study is "whether the use of Stamp Game can effectively improve addition and subtraction operation skills in Mild Intellectual Disability students " Hypothesis testing is carried out through

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analysis stages, including analysis components in conditions that must be observed and analyzed, data changes in certain conditions, and analysis between certain conditions.

The measurement results in the Baseline 1 (A1) phase above that have been presented, the results of the APM subject's addition and subtraction operation skills test show that the score and percentage of correct answers tend to be low in each session in the Baseline 1 (A1) phase. The correct score is only in the percentage range of 7% to 10%, the data tendency in Baseline 1 (A1) is relatively flat and there is no development or change until the 7th session. The results of the data in graph 4.1 in the Baseline 1 (A1) phase above, data collection from the 1st session to the 7th session was stopped because it had met the data stability criteria, namely 85.7%, the small test score results indicate the natural condition of the subject who has not yet developed and has difficulty in addition and subtraction operation skills.

The results of the measurements in the intervention phase (B) above that have been presented, the results of the addition and subtraction operation skills test of the APM subjects showed an increase in scores and percentages with an acquisition of 50%, with an overall average of 63.43%, this shows an increase from the Baseline phase 1 (A1) with an overall average of 7.42%. The development of the APM subjects was seen in session 1 with a correct score of 16 with a percentage of 53%, then gradually up to session 7 reaching 67%. From the results of the intervention phase data (B) although the average percentage of APM subjects has not reached 100%, this condition can be understood considering the characteristics of the research subjects. The main focus in the study was not on achieving the maximum score but rather on changes in the data tendency towards a more positive and desired direction, with an average percentage of 63.43% already showing significant development if we look at the initial conditions in the Baseline phase 1 (A1).

The measurement results in the Baseline phase 2 (A2) above which have been presented, the results of the addition and subtraction operation skills test for APM subjects showed improved and stable performance, obtaining correct results of 24 to 26 questions out of 30 questions with a percentage level of 87%. This shows a good improvement for the subject and shows meaningful results.

Figure 2 shows the results of the comparative percentage of the three phases, in the first phase Baseline 1 (A1) the APM subject showed a performance condition that tended to be low, with an average percentage of correct answers of 7.42% and had not yet reached the optimal level, this indicates that the subject was experiencing obstacles in mastering

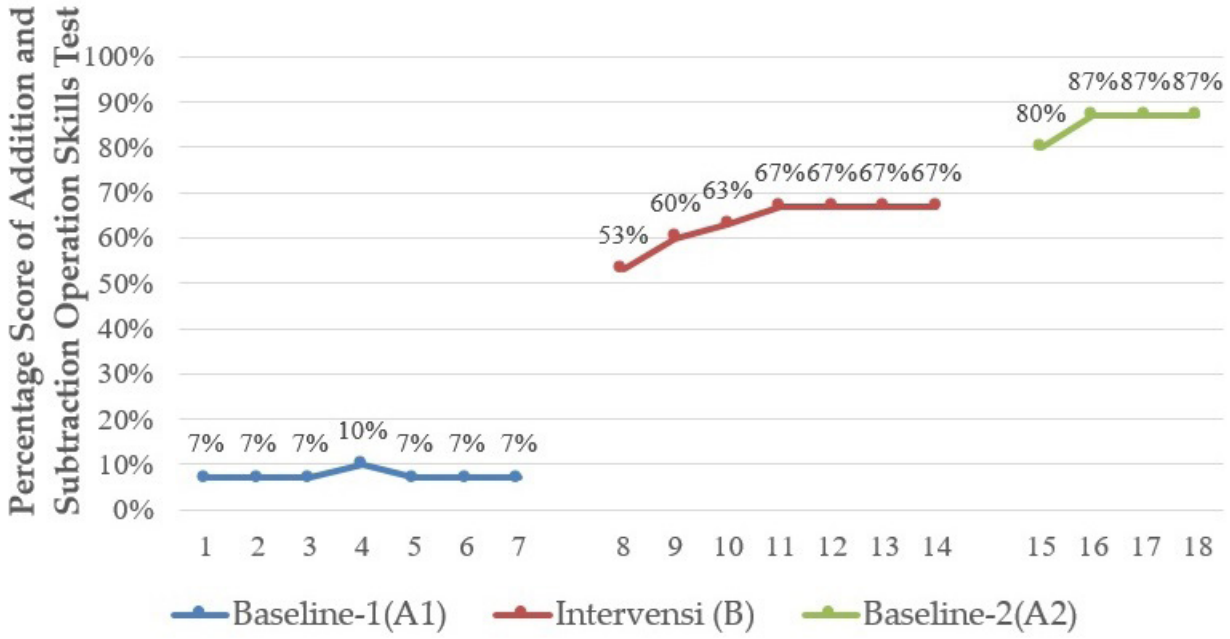

Figure 2 Comparative Analysis of Percentage Test Scores for Baseline Phase 1 (A1), Intervention (B), Baseline 2 (A2)

addition and subtraction operations. In the second phase, the intervention phase (B) showed an increase, in accordance with changes in the expected or positive direction with an average percentage of correct answers of 63.43%, thus the effectiveness of the Stamp Game. Improve addition and subtraction operation skills. In the third phase, namely Baseline 2 (A2), the subject was able to maintain consistency with an average correct answer percentage of 85.25% because the purpose of Baseline 2 (A2) was to see whether the subject returned to the original level after being given the intervention or not. Overall, the graph in the above figure illustrates the trend of increasing addition and subtraction operation skills in Mild Intellectual Disability students.

Hypothesis testing is carried out through stages of analysis including components of analysis in conditions that must be observed and analyzed data changes in a particular condition, there are 6 components including: condition length, estimated directional tendency, stability tendency, data trace, stability level and range, level changes. Analysis between conditions includes changes in trends and their effects, changes in stability, level changes, data overlap. The following are the stages of analysis in conditions and between conditions.

Based on the results of the analysis within conditions and analysis between conditions that have been analyzed in the research results section, the use of Stamp Game has a positive impact on the development of addition and subtraction operation skills for APM subjects.

The results of the analysis of the estimated trend direction from the Table

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Figure 2 Summary of Analysis Data in the Condition of Addition and Subtraction Operation Skill Test

Summary of Analysis Data in the Condition of Addition and Subtraction Operation Skill Test			
Condition	**Baseline 1(A1)**	**Intervention(B)**	**Baseline 2(A2)**
Condition Length	7	7	4
Directional Tendency Estimation	(=)	(+)	(+)
Data Stability	Variables 0%	Variables 71.4%	Stable 100%
Data Trace	(=)	(+)	(+)
Stability Level and Range	Stable 7% - 10%	Stable 53% - 67%	Stable 80% - 87%
Level Change	7% - 10% (=3)	53% - 67% (+14)	80% - 87% (+7)
Summary of Data Analysis s Between Conditions of Addition and Subtraction Operation Skills Test			
Changes in direction of trend and its effects	(=) (+)	(+)	(+)
Changes in Stability Tendency	Stable to stable		
Level Change	67% - 10% (+57)	87% - 67% (+20)	
Overlap percentage	0%		

2 above were obtained when the Baseline phase 1 (A1) had a flat trend, while the intervention phase and Baseline 2 (A2) had an upward trend. The estimated trend direction of the addition and subtraction operation test in the Baseline phase 1 (A1) had a flat trend only in the range of 2-3 correct numbers, so it was symbolized by (=). In the intervention phase (B) and Baseline phase 2 (A2) the trend increased, this indicated a change, so the trend was symbolized by a positive sign (+). The data from the addition and subtraction operation skills test showed stability in each phase, namely in the Baseline phase 1 (A1) 85.7%, in the intervention phase (B) 85.7%, and the Baseline phase 2 (A2) 100% in accordance with the desired data stability of not less than 85%.

Furthermore, the data trace shows a relatively stable and consistent trend pattern, Baseline 1 (A1) is flat and constant, marked with the symbol (=), intervention (B) and Baseline 2 have an increase marked with the symbol (+), this indicates an upward trend without any decrease in scores during that phase. shows a stable 85.7% in the range of 7% -10%, the intervention phase (B) shows a stable 85.7% in the range of 53% -67%,

the Baseline phase 2 (A2) shows a stable 100% in the range of 80% -87%. the results of changes in levels from the smallest percentage difference and the highest percentage between phases show that in the Baseline phase 1 (A1) with a difference of 3, indicating a significant increase in the session, so it does not show a trend development showing a flattening, so it is symbolized (=). In the intervention phase (B) if it is set aside by 14, it shows an increase in the session until the last session so that the trend is upward and is symbolized with (=). In the Baseline phase 2 (A2) with a difference of 7, it shows that when the intervention is stopped in each upward trend, it is symbolized (+).

Data analysis between conditions, changes in the direction of trends and their effects on addition and subtraction operation skills showed a positive direction. In the comparison of the Baseline phase 1 (A1) conditions to the intervention phase, the data tended to change towards an increase which indicated a positive effect after the subjects were given treatment using the Stamp Game.

Changes in the stability trend in the intervention phase conditions against Baseline 1 (A1), indicate that stability remains stable to stable, in the sense that there is no significant change in the stability trend between the Baseline 1 (A1) and intervention (B) phases. In the Baseline 2 (A2) conditions against intervention (B), changes in the trend still indicate stable to stable stability.

Baseline condition 1 (A1) to the intervention phase (B) there was an increase from 10% to 67% with a difference of 57% this change is marked with a (+) sign, which indicates that the addition and subtraction operation skills of APM subjects improved when given intervention. Furthermore, in the intervention condition (B) to Baseline 2 (A2) there was a further increase from 67% to 87% with a difference of 20%, this increase is marked with a (+) sign. B/A1 is read as the change in the intervention phase (B) against the Baseline phase 1 (A1) and A2/B is read as the change in the Baseline 2 phase (A2) against the intervention.

The intervention point data (B) is within the Baseline 1 (A1) range, which is 0%, thus indicating that there is no overlap between the Baseline 1 (A1) and intervention phases (B). The smaller the overlap percentage, the better the effect of the Stamp Game intervention on APM subjects.

Based on the results of the analysis within the conditions and the analysis between the conditions that have been analyzed above, it is concluded that the addition and subtraction operation skills have changed towards the expected conditions, the changes are shown through an increasing trend, a level of stability that meets the stability criteria of 85%, positive level changes, low percentage overlap

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results between the Baseline phase 1 (A1) and the intervention phase (B).

CONCLUSION

Based on the results it can be concluded that the use of Stamp Game is effective in improving the skills of addition and subtraction operations in students with indications of Mild Intellectual Disability . The results of data acquisition show positive changes in the desired direction from the Baseline phase 1 (A1), intervention (B) which is characterized by an increase in the test score of addition and subtraction operations of correct answers, an upward trend, data stability that reaches the desired stability of 85%, significant level changes in the occurrence of changes in increase, low data overlap, then which is then maintained in the Baseline phase 2 (A2) there is no decrease without Stamp Game intervention treatment. From the results obtained, the findings show that after being given the intervention of using Stamp Game, the skills of addition and subtraction operations in Mild Intellectual Disability students have increased and the intervention effect remains even though the intervention has been stopped. Thus, the research objectives are achieved and the hypothesis states that Stamp Game is effective in improving the skills of addition and subtraction operations in students with Mild Intellectual Disability

REFERENCES

Arini, E., Attamami, A., & Primagraha, U. (2024). Pentingnya pendidikan inklusi bagi anak tunagrahita. 8(1), 251–261.

Badan Pusat Statistik Indonesia Provinsi Jawa Barat. (2022). Badan Pusat Statistik Indonesia Provinsi Jawa Barat.

Carbonneau, K. J., Marley, S. C., & Selig, J. P. (2013). A meta-analysis of the efficacy of teaching mathematics with concrete manipulatives. Journal of Educational Psychology, 105(2), 380–400. https://doi.org/10.1037/a0031084

Epstein, L. H., & Dallery, J. (2022). Harvard Data Science Review Special Issue 3: Personalized (N-of-1) Trials The Family of Single-Case Experimental Designs License: Creative Commons Attribution 4.0 International License (CC-BY 4.0) Harvard Data Science Review Special Issue 3: Personali. 3, 1–21.

Florentina Nining Hastiani, adnani budi utami. (2024). Stamp Game Intervention to Overcome Numeracy Difficulties in Slow Learner Children. Himalayan Journal of Humanities and Cultural Studies, 4.

Gusteti, M. U., & Neviyarni. (2022). Teach cognitive and metacognitive strategies to support learning and independence. Jurnal Ilmiah Pendidikan Matematika, Matematika Dan Statistika, 3(3), 170–184. https://doi.org/10.4324/9781003175735-15

Ministry of Health. (2023). Indonesian Health Survey. Thematic Report SKI 2023, 965.

Novianti, R. (2021). Pengaruh Media Stamp Game Dalam Meningkatkan Kemampuan Berhitung Anak

Diskalkulia. Universitas Negeri Malang, 54–62.

OECD report. (2024). Equity in education and the labour market Findings from Education at a Glance 2024. 107, 42.

Prahmana, R. C. I. (2021). Single Subject Research (teori dan implementasinya: suatu pengantar). In Journal of Chemical Information and Modeling (Vol. 53, Issue 9).

Siregar, A., Rahmayani, Z., & Safira, N. (2023). Penjumlahan, Pengurangan, Pembagian, Perkalian Pada Operasi Bilangan Bulat. Innovative: Journal Of Social Science Research, 3, 6248–6259.

Widiatmika, K. P. (2023). Penyandang disabilitas. In Etika Jurnalisme Pada Koran Kuning : Sebuah Studi Mengenai Koran Lampu Hijau (Vol. 16, Issue 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

 DOI : http://doi.org/10.35719/mass.v7i1.239