Improving Numeracy Skills through Snake and Ladder Games in Grade IV Students of SD Negeri Rantewringin

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Abstrak

Penelitian ini bertujuan untuk mendeskripsikan keterlaksanaan pembelajaran menggunakan permainan ular tangga dan mengetahui hasil pelaksanaan pembelajaran pada keterampilan berhitung pada siswa kelas IV SD Negeri Rantewringin. Penelitian ini menggunakan penelitian kualitatif dengan jenis penelitian tindakan kelas. Penelitian dilakukan di SD Negeri Rantewringin dengan jumlah siswa sebanyak 138 orang, sedangkan sampel yang digunakan adalah kelas IV yang berjumlah 18 anak. Teknik pengumpulan data yang digunakan adalah dokumentasi, lembar observasi, dan hasil penilaian formatif. Analisis data dilakukan dengan reduksi data dan FGD. Hasil penelitian menunjukkan bahwa pembelajaran dengan permainan ular tangga atau ular tangga yang dilakukan sesuai skenario pembelajaran akan berdampak sangat baik terhadap kemampuan berhitung siswa. Dampak baik ini dapat dilihat dari data pra siklus atau kondisi awal nilai kemampuan berhitung rata-rata 66 dan ketuntasan belajar 38%, pada siklus I hasil belajar rata-rata meningkat menjadi 83 dan ketuntasan meningkat drastis menjadi 83%, dan pada akhir siklus II rata-rata pembelajaran menjadi 90 dan ketuntasan belajar maksimal 100%. Berdasarkan data tersebut disimpulkan bahwa pembelajaran dengan permainan ular tangga terlaksana dengan baik dan berdampak sangat baik terhadap kemampuan berhitung siswa kelas IV SD Negeri Rantewringin. Penelitian ini hanya membahas tentang pelaksanaan pembelajaran dan dampaknya terhadap aspek kognitif, diharapkan penelitian kedepannya dapat memperluas pengamatan dampak pembelajaran.

Kata kunci: *Belajar*, *Ular Tangga*, *Kemampuan*, *Berhitung*.

Abstract

This study aims to describe the implementation of learning using snake and ladder games and determine the results of learning implementation on numeracy skills in grade IV students of SD Negeri Rantewringin. This study used qualitative research with a type of classroom action research. The study was conducted at SD Negeri Rantewringin with a total of 138 students, while the sample used was grade IV which amounted to 18 children. The data collection techniques used are documentation, observation sheets, and formative assessment results. Data analysis was carried out by data reduction and FGD. The results showed that learning with snake and ladder games or snakes and ladders carried out according to learning scenarios would have a very good impact on students' numeracy abilities. This good impact can be seen from the pre-cycle data or initial conditions the average numeracy ability value is 66 and learning completeness is 38%, in cycle I the average learning outcome increases to 83 and completeness increases dramatically to 83%, and at the end of cycle II the average learning becomes 90 and the maximum learning completeness is 100%. Based on these data, it was concluded that learning with snake and ladder games was carried out well and had a very good impact on the numeracy ability of grade IV students of SD Negeri Rantewringin. This study only discusses the implementation of learning and the impact on cognitive aspects, it is hoped that future studies can expand the observation of the impact of learning.

Keyword: *Learning*, *Snake And Ladder*, *Ability*, *Numeracy*.

INTRODUCTION

The development of technology in the increasingly uncontrolled digital era as it is today has an impact on changing the demands of education to be of higher quality. Quality education is reflected in good learning and gives independence to students and teachers. In this case, the competence of teachers and students must continue to be improved in order to be able to follow and utilize technological sophistication to facilitate daily life (Nawafilah & Masruroh, 2020; Yanti et al., 2021).

Literacy and numeracy skills are the main things that must be mastered by the Indonesian people. However, the fact is, the literacy ability of Indonesian students is still classified as a low category. According to OECD literacy in mathematics, about 71% of participants were taught not to reach the minimum level of mathematics competence (Istighfarah & Ngayuningtyas, 2017)

In addition, based on the Education report card, the condition of the numeracy ability of students of SDN Rantewringin is still in the low category. New students are able to solve numeracy problems in the simplest form of understanding or level.

This situation is a challenge for education in Indonesia to promote the improvement of numeracy literacy of students in order to realize a generation of nations that are adaptive to the times. In learning activities, it is expected to maximize the innovation of numeracy literacy activities (Fajri et al., 2023).

Fourth grade students are still happy with play activities, they will be easier to learn if carried out while playing (Cahyono, 2017). They have not been able to learn by quietly listening to the teacher's explanation. Games that are known to children today are android-based games, while traditional games are not many who play them anymore. Even though this traditional game is a cultural property in the form of local wisdom that must be preserved.

Based on this thinking, one of the most appropriate alternative problem solving is to do traditional games in learning to improve numeracy literacy skills (Astuti & Alaby, 2019).

Numeracy ability according to Han Susanto (https://ejournal.unikama.ac.id) is the ability to apply the concept of numbers and calculation operation skills in everyday life and the ability to explain information around him (Muqdamien et al., 2021).

Numeracy skills are very important so that students can apply mathematical knowledge to overcome daily life greeting problems. Almost in all areas of life requires numeracy skills. If students have good numeracy literacy skills, it will be easier to overcome problems.

In Deborah Danisa (https://www.detik.com) explained that numeracy strengthening can be done in steps; 1) provide an influential tool in the development of numeracy, 2) build an environment that supports a growth mindset about numeracy, 3) implementation strategies in the academic environment, 4) be applied in school programs, 5) emphasize the importance of modeling and reasoning processes when solving problems.

One of the steps applied to strengthen numeracy ability is by implementing a strategy to strengthen numeracy ability in the academic environment. One of them is the provision of games full of numeracy. The traditional game of snakes and ladders is one of the games that strongly supports strengthening numeracy skills (Pradani et al., 2015).

(Marlina, 2014) explains that traditional games are one of the cultural results that exist in the community that has been inherited by their ancestors, which develops over time in a society in which there are various groups from old to young, rich poor, women and men without any difference.

Ancestral heritage games that are played using simple tools or even without tools. This game is very useful to make children (students become more creative, think critically and quickly respond, develop social and emotional intelligence (Sari & Pramono, 2014).

As explained by (Diana et al., 2020) the benefits of traditional games include; 1) children become creative, 2) can be used as intellectual therapy, 3) develop children's interpersonal emotional intelligence, 4) develop children's logical intelligence, 5) develop children's spiritual intelligence.

The traditional game applied in this discussion is the traditional game of snakes and ladders. Explained by A. Wati in https://ummaspul.e-journal.id that the game of snakes and ladders is a game played by 2 or more people using dice and there are boxes and pictures of ladders and snakes.

According to (Aela et al., 2023)) snake and ladder is the basic development of Hindu performances in teaching morals and religion, especially to children.

Furthermore, Ranee discussed the advantages and disadvantages of snake and ladder media. The advantages are: 1) attracting students' attention in learning while playing; 2) cultivate 5 student learning motivations; 3) create a pleasant atmosphere in learning; 4) stimulate students in solving simple problems; 5) Snakes and ladders can also stimulate aspects of the development of language knowledge and social knowledge. While the weaknesses are; 1) takes more time to explain to students; 2) snakes and ladders are developed only on certain materials; 3) noise arises because students do not pay attention to the rules of the game; 4) Difficulties are caused due to lack of mastery of the material in students.

The numeracy material studied in this discussion is in phase B of the independent curriculum, namely grade 4. Not only in mathematics subjects, but almost all subjects contain numeracy content.

Previous research that is in line with this thinking is a study entitled "Development of Snakes and Ladders Game Media to Improve Learning Outcomes of Elementary School Students" which shows the results that the use of learning media in learning activities makes it easier for students to gain understanding and motivate students to learn so as to get good learning outcomes (A. Wati: 2021 in (https://ummaspul.e-journal.id).

This study aims to describe the implementation of learning using snake and ladder games and determine the results of learning implementation on numeracy skills in grade IV students of SD Negeri Rantewringin.

METHOD

The type of research used is qualitative research in the form of Classroom Action Research (PTK). According to Moleong Lexy J (2012) revealed qualitative methods aimed at understanding the phenomena experienced by research subjects. This includes explaining behavior, perception, motivation, behavior, etc. as a whole, in terms of language and in specific natural contexts, using various natural methods.

The research design used is a spiral system, as proposed by Kemmis and Mc. Taggart (in Kasihani Kasbolah, 1999: 113) "The spiral system of self-reflection begins with plans, actions, observations, reflections, and re-planning is the basis for a problem-solving plan".

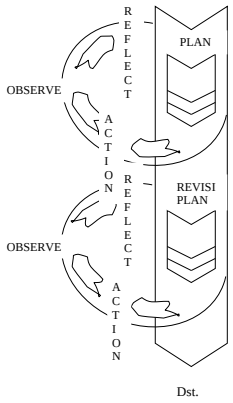

Figure 1. Research Design
(sumber: Y. Padmono, 1999: 46)

The research was conducted at SD Negeri Rantewringin Buluspesantren District, Kebumen Regency in Semester 2 of the 2022/2023 Academic Year. Held within 1 month, namely in February. The students who were sampled in the study were class IV which amounted to 18 children consisting of 9 boys and 9 girls. The fourth grade at SD Negeri Rantewringin has implemented an independent curriculum.

This study used two variables. Learning uses snakes and ladders as an action variable (independent variable), and students' numeracy ability as a problem variable (dependent variable).

Data sources in this study came from students and observers or peers. Data from students include value documents, numeracy skills, performance results. While from colleagues or observers, among others, the results of observations or observations of learning carried out. Observation instruments in the form of; 1) Student activity observation sheet, 2) teacher activity observation sheet, 3) assessment instrument. The data is then analyzed quantitatively and qualitatively.

Data collection techniques carried out by; 1) documentation to take previous data (profiles or learning outcomes) as well as documentation or photos of learning implementation, 2) observation to see the process of action given both to students and by teachers. 3) Test to determine the results of the action by providing formative assessment after the implementation of the action. The instrument is in the form of formative assessment to determine numeracy skills in mathematical subjects, namely numerical and fractional materials.

After the data is obtained, data processing is carried out through stages; 1) data reduction; Collect, focusing data as needed and removing unneeded chests. 2) FGD (*Focus Group Discussion*) to equalize perceptions and thoughts or ideas and ideas between researchers, observers, and principals. 3) Analysis of data presentation, at this stage a negotiation of the data that has been collected is carried out to draw conclusions.

Table 1. Learning Process Criteria and Learning Outcomes

No	Percentage	Criterion
1	86% ≤ p ≤ 100%	Excellent
2	72% ≤ p ≤ 85%	Good
3	60% ≤ p ≤ 71%	Enough
4	p ≤ 59%	Less

(sumber: Kunandar, 2008: 73)

The procedure of the research action consists of 2 cycles. Each cycle consists of planning, action, observation and reflection activities. At the planning stage, researchers prepare all the tools needed, both teaching devices, media, and evaluation instruments. Then at the implementation stage, researchers carry out learning in accordance with the scenarios that have been compiled. At the observation stage, researchers are assisted by colleagues who are tasked with observing the course of learning, both teachers and students. Then at the reflection stage, researchers together with observers and principals reflect on the implementation of actions, analyze shortcomings and advantages, so that they can be used as guidelines for improvement in the next cycle.

Success Indicators

Research is successful if: 1) The percentage of learning implementation reaches 90%. 2) The percentage of completeness of numeracy ability reaches 85%. 3) The snake and ladder game works very well with a percentage of 90%.

RESULTS AND DISCUSSION

This study was conducted to determine the implementation of numeracy learning using snakes and ladders game media in grade IV SD Negeri Rantewringin Buluspesantren District, Kebumen Regency in Semester 2 of the 2022/2023 Academic Year.

Initial Conditions

The results of the numeracy ability assessment at the end of semester 1 showed a number that was not in accordance with the predetermined target. The average is still low at 66, the highest value is 92 and the lowest value is 48, and the completeness based on the KKTP determined is only 38.89%. Students are not excited when learning numeracy, especially if it is about stories. Students tend to be pasrif when learning and quickly get bored with teacher learning activities. The learning carried out by teachers is still conventional, the media used is minimal and the activities are monotonous. This factor makes the author moved to conduct research.

Implementation of Numeration Learning Using *Snake and Ladder* Media in Cycle I

This research was carried out in two decades, each cycle of 2 meetings. Learning by utilizing *snake and ladder* is carried out in different subjects and materials. The first cycle will be held on Tuesday and Thursday January 17, 19, 2023. And the second cycle will be held on Tuesday and Thursday February 7 and 9, 2023. The implementation of each cycle includes four stages, namely planning, implementation, observation, and reflection.

In the preparation stage, researchers who are fourth grade teachers identify possible factors that cause problems, identify student learning styles, analyze material from each subject that contains numeracy, analyze CP and ATP, then compile teaching modules with PBL learning models, and prepare *snake and ladder* game media according to the number of groups of learners in the class. This science snakes and ladders learning media consists of 4 components, namely: (1) game pieces (2) dice (3) game boards (4) challenge envelopes (development questions).

The rules of the snake and ladder game *are* 1) dice eyes to determine the number of steps the piece moves up or down, 2) If the piece touches the number with a ladder picture then the player must complete the challenge, which is to do a question about numeracy on the challenge envelope, 3) If the piece touches the number that has a snake drawing, then the player must go down. 4) If the player cannot complete the challenge, it means that the player is over-gamed. 5) The player is declared victorious if he reaches the finish point.

The implementation of learning in the first cycle of learning (Tuesday, January 17, 2023) is the application of the traditional snake *and ladder game in the subject of* Pancasila Education material "Maintaining Harmony of the Unitary State of the Republic of Indonesia in the School Environment" by living in harmony and not discriminating friends.

Learning activities are preceded by classroom conditioning and ensuring the readiness to learn of students. In *the Orientation Activity students on problems*; students listen to videos shown by teachers about examples of events that reflect living in harmony and not getting along well at school. *Organizing students to learn;* Students in groups explore various learning resources, some use Chromebooks, books, magazines,

to find information about living together and examples. *Guiding individual and group investigations*; Students using LKPD conduct education about living in harmony at school, *develop and present their work*; Students play snake *and ladder* games. In the early stages of the game, learners purely play like the standard rules. Each group takes turns playing, some become yuri and 3 other members become players. The challenge envelope at this first meeting contains numeracy questions in which there is a value of harmony. One example is "*Wati has 240 candies, she will distribute them to 18 of her friends. How do you distribute so that it is fair and does not cause a commotion?*

Analyzing and evaluating the problem-solving process, at this stage each group presents its LKPD in front of the class, followed by a discussion to strengthen the concept of harmony. The learning activity ends with reflection and evaluation (formative assessment) to measure the achievement of KKTP.

The second lesson in the first cycle will be held on Thursday, January 19, 2023, the subjects studied are Mathematics in the material "Geometry" specifically for flat area material. In problem orientation activities, teachers use objects around the classroom as learning resources. Students determine how to solve problems, namely determining the area of flat buildings around the classroom such as; tables, blackboards, ceramics, windows, and so on are rectangular. Students look for sources that can be used as clues to solutions such as books or the internet using chromebooks. The teacher acts as a facilitator and companion, providing assistance for the struggling. After each group explained the results of solving the problem, classically students and teachers equalized perceptions and strengthened the concept of rectangular flat area. To deepen their abilities, students do games using *snakes and ladders* so that students feel happy and serious in learning numeracy.

The results of the implementation of Cycle I are very good from the implementation of learning and the results of numeracy ability. Based on the observations of observers, learning goes very well. Teachers carry out learning in accordance with the teaching modules prepared. Students are very enthusiastic, actively involved in learning, enthusiastic, and happy in participating in learning activities. The results of the focal assessment of numeracy ability at the end of the first cycle showed a good number, namely an average of 83, the lowest value of 70 and the highest value of 98, and completeness based on KKTP of 83.33%. Likewise with learning activities, based on the results of observation instruments, they have received a score of 85% or good category. This result shows very good progress, but because it has not been in accordance with the author's expectations, the second cycle was carried out. The implementation of cycle II is the same as the scenario in cycle I only experienced improvements in the part of activities that need to be improved based on the results of FGD between researchers, observers, and principals.

Implementation of Numeration Learning Using Snake and Ladder Media in Cycle II

The first lesson in cycle II will be held on Tuesday, February 7, 2023, subject Indonesian material "Healthy My Body", especially the material of the function of water for the body. The problem orientation activity was carried out by displaying two different images, the first image of a person who was fresh fit after drinking exercise while the second image of a person who was exhausted and there was no water around. From these problems, students explore knowledge and information about water, examples of foods that contain lots of water, and the benefits of water. Teachers provide Chromebooks for surfing, books, children's magazines, also allow students to conduct observations and interviews with school residents.

After exploring, students present it in LKPD to communicate with friends and teachers in class. After being communicated and there is reinforcement of concepts from the teacher, then students strengthen numeracy skills with snakes and ladders games. This time the challenge or question is related to the benefits of water for the body. In addition to improving my numeracy ability, it can also strengthen my understanding of the health of my body. One example of a challenge is "There are 4 families living in Anita's house. Everyone drinks at least 8 glasses every day. Each glass contains 250 ml of water. One gallon of mineral water contains 24,000 ml. Determine how many days a gallon of water will run out!

The second learning in cycle II will be held on Thursday, February 9, 2023 in Mathematics Subjects, on the material that determines the combined area. The combined build in question is a flat square and rectangular build. Learners use the snake-ladder board as a medium to calculate the combined flat wake. Each student is free to determine the number of boxes to be combined and calculated in area. In the investigation activity, students determine the combined area using ceramics on the classroom floor and terrace. Learners create boundaries using markers and then in groups calculate the area. During the presentation, students use the LKPD guide that has been done together. The game of snake and ladder *or snake and ladder is carried out at the stage of developing the concept*.

The results of the implementation of cycle II are very good in terms of formative assessment results and from the implementation of learning. The results of the formative assessment are as follows; The average score of eighteen children reached 90, the highest score was 100, and the lowest score was 75, and the completeness based on the predetermined KKTP was 100%. This value is very rarely obtained. Based on the criteria that have been determined, the results of the formative assessment are categorized

as very good. As for learning activities, based on the score on the observation instrument, a processentase of 92% or very good was obtained. Both in terms of learning outcomes and the learning process have reached the targets and expectations of researchers so that there is no implementation of cycle III. While some shortcomings both of the ability of students are still lacking and the learning process that still needs to be improved will be made improvements outside this study.

Results and Discussion of Numeracy Learning Implementation Using *Snake and Ladder Media*

Data on the learning process using *snake and ladder* media was obtained by observation by observers, namely peers. Observers fill out observation sheets for learning implementation to determine the suitability of scenarios with learning implementation using *snake and ladder* media. From the observation sheet, it will be known how well the learning is carried out both at the introduction, core, closing, and media utilization stages.

Table 2. Results of Formative Assessment of Numeration Ability

Aspects What is observed	Cycle 1	Cycle II
Introduction	86	92
Core Activities	87	92
Concluding Activities	85	93
Keg. Game	84	93
Percentage	85%	92%

The percentage of learning scores in the first cycle of 85% can be said that learning went well. This means that learning is in accordance with the scenario prepared as well as game activities can run, but not yet optimally and requires further improvement. In Cycle II almost all aspects have improved, because researchers or teachers have received many suggestions and input from observers and school principals. Game activities function optimally so that in the end they can reach an average percentage of 92% of the very good category.

To make it clearer, the learning implementation data can be presented in the following bar chart:

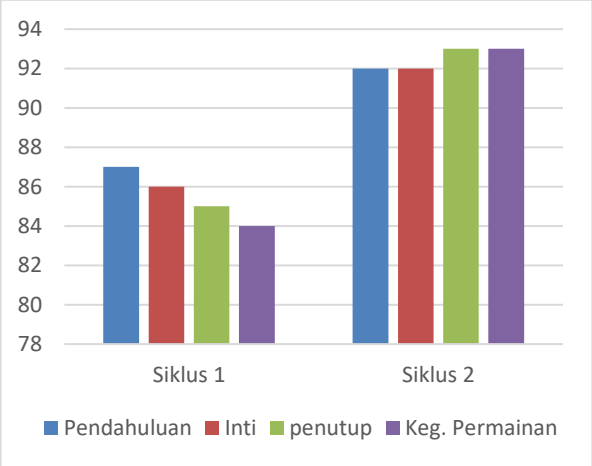

Figure 1. Observation Results of Learning Activities

Numeracy ability data is obtained from the results of formative assessments presented in the form of multiple choice through google form after the implementation of cycle I and cycle II. The form of the questions and levels are adjusted to the numeracy questions in ANBK. Because the ANBK problem is in accordance with the standard, so researchers adopted it. So that it can train children to recognize various forms and levels of questions. While the pre-cycle is taken from existing formative assessment data. The results of measuring numeracy ability can be presented as in the following table.

Table 3. Results of Formative Assessment of Numeration Ability

Result	Pre Cycle	Cycle I	Cycle II
Average	66	83	90
Lowest	48	70	75
Highest	92	98	100

Kekuntasan	38%	83%	100%

From the table above, you can see the progress of increasing learning outcomes from the application of the *snake and ladder game*. The pre-cycle situation is quite concerning because the completeness of learning is very low, namely only 7 children who are complete or 38% so that they are categorized as not good. The average score of 66 in the low category is not yet maximized, which is only 92 and the lowest value is very low at 48. After the implementation of game-based PBL learning showed an increase in results because of the enthusiasm of children also greatly increased until at the end of the first cycle as many as 15 children who achieved completeness or obtained completeness 83% entered the good category, meaning that the numeracy ability of students was good. The average score is also good at 83, the lowest score is 70 and the highest score is 98 almost the maximum. Meanwhile, at the end of cycle II, numeracy ability has greatly increased to the maximum point, namely 18 children or all children achieve graduation, in other words, 100% of students can achieve the specified KKTP target. This result exceeded the teacher's target of 85%. The lowest score has risen to 75, the average score of 90 and the highest score of 100 were obtained by 3 children. This result is really amazing.

To make it clearer, data on students' numeracy ability can be presented in the following bar chart:

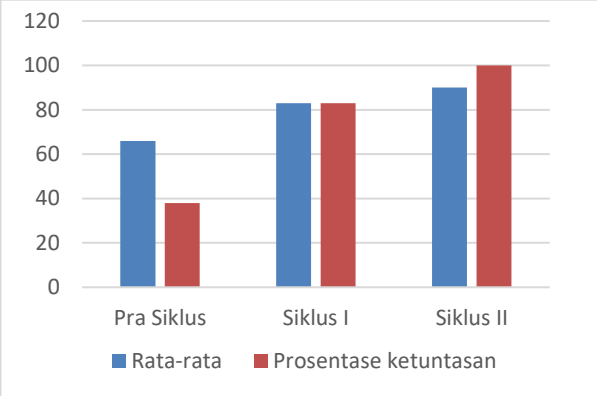

Figure 2. Numeration Ability Assessment Results

From figure 2, it is clear the difference in the average learning outcomes of students from the initial or pre-cycle conditions to after the implementation of cycle I and cycle II. The data proved the success of learning and a significant improvement in the numeracy ability of students after the *snake and ladder game* was implemented in grade IV elementary school. Based on previous research conducted by (Afandi, R., 2015) that the results of the implementation of snake and ladder game learning media increased student motivation by 66.7% in aspects of learning activity and enthusiasm for learning, while aspects of student learning motivation interest increased by 70%. Meanwhile, student learning outcomes have increased by 40% from 55% of students who achieve scores below KKM (minimum completeness criteria) to 100% of all students achieve scores above KKM (minimum completeness criteria).

From the results of the implementation and data analysis, researchers concluded that the snake and ladder game can improve the numeracy ability of grade IV students at SD Negeri Rantewringin.

CONCLUSION

Based on the problem formulation, implementation, data analysis and discussion, it can be concluded that: 1) the implementation of PBL learning with snake and ladder games observed in cycle one obtained a percentage of 85% carried out well and in the second cycle increased to 92% very well implemented.2) Learning outcomes had an impact on improving the numeracy ability of grade IV participants at SD Negeri Rantewringin with two formative assessments, namely at the end of the first cycle obtained The average of 83 and the completeness of KKTP 83% is good, and has increased at the end of the second cycle on average to 90 and all students 100% achieve learning completeness, when compared to numeracy ability in the initial condition which on average only reached 66 and only 7 children completed KKTP. In this study, researchers only examined the implementation of learning and cognitive learning outcomes. With the many shortcomings of this research, it is hoped that further research can expand research by observing and measuring other in-depth impacts, and contribute to improving the quality and quality of learning.

REFERENCES

Aela, A. M., Fatih, M., & Alfi, C. (2023). Pengembangan Permainan Ular Tangga Berbasis Magic Box Untuk Meningkatkan Kemampuan Numerasi Siswa Kelas I SD. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *8*(1), 5260–5272.

Astuti, F., & Alaby, M. A. (2019). Upaya Meningkatkan Kemampuan Kognitif melalui Permainan Ular Tangga. *Prosiding Seminar Nasional Pendidikan STKIP Kusuma Negara*.

Cahyono, A. (2017). Meningkatkan Kemampuan Berhitung Menggunakan Media Belajar Ular Tangga Di Taman Kanak–Kanak Dharma Wanita 2 Jragan Tembarak Temanggung. *E-Jurnal Skripsi Program Studi Teknologi Pendidikan*, *6*(5), 423–430.

Diana, D., Mansoer, Z., & Syaikhu, A. (2020). Upaya Meningkatkan Kemampuan Berhitung Permulaan dengan Bermain Ular Tangga. *Prosiding Seminar Nasional Pendidikan STKIP Kusuma Negara III*, 47–54.

Fajri, Z., Mutmainah, N., & Sajuri, S. (2023). PENINGKATAN KEMAMPUAN BERHITUNG MENGGUNAKAN PEMBELAJARAN KOOPERATIF BERBANTUAN MEDIA PERMAINAN ULAR TANGGA DI KB AN NAWAWI BONDOWOSO. *Raudhah Proud To Be Professionals: Jurnal Tarbiyah Islamiyah*, *8*(1), 79–102.

Istighfarah, Y., & Ngayuningtyas, P. (2017). Peningkatan Kemampuan Berhitung Siswa Tunagrahita Sedang Kelas Viii Melalui Media Ular Tangga Di Smp Inklusi Tpa Jember. *SPEED Journal: Journal of Special Education*, *1*(1), 23–27.

Marlina, R. (2014). Upaya Meningkatkan Kemampuan Berhitung Melalui Model Pembelajaran Kooperatif Struktural Permainan Ular Tangga Tk Marta? óôé¼ôäóush Shibyan Singocandi Kudus. *PAUDIA: Jurnal Penelitian Dalam Bidang Pendidikan Anak Usia Dini*, *3*(2 Oktober).

Muqdamien, B., Umayah, U., Juhri, J., & Raraswaty, D. P. (2021). Tahap Definisi Dalam Four-D Model Pada Penelitian Research & Development (R&D) Alat Peraga Edukasi Ular Tangga Untuk Meningkatkan Pengetahuan Sains Dan Matematika Anak Usia 5-6 Tahun. *Intersections*, *6*(1), 23–33.

Nawafilah, N. Q., & Masruroh, M. (2020). Pengembangan Alat Permainan Edukatif Ular Tangga Matematika untuk Meningkatkan Kemampuan Berhitung Anak Kelas III SDN Guminingrejo Tikung Lamongan. *Jurnal Abdimas Berdaya: Jurnal Pembelajaran, Pemberdayaan Dan Pengabdian Masyarakat*, *3*(01), 37–46.

Pradani, L., Lestari, S., & Wibowo, W. A. (2015). *Metode permainan ular tangga untuk meningkatkan keterampilan berhitung pada anak diskalkulia*.

Sari, A. E., & Pramono, P. (2014). Peningkatan Kemampuan Operasi Hitung Campuran Siswa Tunarungu Kelas IV Melalui Permainan Ular Tangga. *Jurnal ORTOPEDAGOGIA*, *1*(3), 212–216.

Yanti, I., Affandi, L. H., & Rosyidah, A. N. K. (2021). Pengembangan media permainan ular tangga untuk meningkatkan kemampuan berhitung siswa kelas II SDN 12 Taliwang. *Jurnal Ilmiah Profesi Pendidikan*, *6*(3), 509–516.