Journal of Psychology and Instruction
Volume 8, Number 3, 2024 pp. 134-140
P-ISSN: 2597-8616, E-ISSN: 2549-4589
Open Access: https://doi.org/10.23887/jpai.v8i3.81979

The Effectiveness of Using Playclock Media on Students' Critical Thinking Skills

Dian Novianti Sitompul[1], Melyani Sari Sitepu[2*], Arianto[3]

[1] Pendidikan Akuntansi, Universitas Muhammadiyah Sumatera Utara, Medan, Indonesia
[2] Pendidikan Guru Sekolah Dasar FKIP Universitas Muhammadiyah Sumatera Utara
[3] Pendidikan Bahasa Indonesia, FKIP, Universitas Alwashliyah, Medan

ARTICLE INFO

Article history:
Received August 29, 2024
Accepted October 10, 2024
Available online October 25, 2024

Kata Kunci:
Media, Jam Putar, Berfikir Kritis, Peserta Didik

Keywords:
Media, Playclock, Berpikir Kritis, Siswa

ABSTRAK

Media pembelajaran adalah salah satu faktor yang berperan penting dalam proses pembelajaran. Adapun kedudukan media dalam system pembelajaran yaitu sebagai alat bantu, alat penyaluran pesan, penguatan, dan penyampaian informasi. Adapun latar belakang penelitian ini adalah guru yang belum terbiasa menggunakan media pembelajaran berbasis permainan sehingga berdampak pada rendahnya kemampuan berfikir kritis siswa. Tujuan penelitian ini adalah untuk mengetahui apakah penggunaan media jam putar efektif terhadap kemampuan berfikir kritis peserta didik? Penelitian ini adalah penelitian kuantitatif dengan pendekatan eksperimentan desain pretest-posttes one group design. Teknik pengumpulan data menggunakan tes. Instrument penelitian menggunakan lembar tes untuk melihat kemampuan berfikir kritis siswa. Populasi penelitian ini berjumlah 42 sedangkan sample yang digunakan sebanyak 24 siswa. Data dianalisis menggunakan Paired Sample T-Test. Hasil penelitian menunjukan bahwa penggunaan media jam berputar berbasis permainan efektif terhadap kemampuan berfikir kritis siswa. hal ini dapat dilihat dari data analisis uji paired t-test dengan membandingkan nilai sig<a (5%). Hasil analisis menggunakan spss menunjukan bahwa nilai sig lebih kecil dari alpha (0.000<0.05). Dari perolehan nilai sig tersebut dapat disimpulkan bahwa penggunaan media jam putar efektif terhadap kemampuan berfikir kritis peserta didik. Implikasi Implikasi dari temuan ini adalah guru perlu terus mengembangkan dan memanfaatkan media pembelajaran kreatif seperti playclock untuk merangsang proses berpikir siswa. Penggunaan media ini dapat membantu siswa lebih terlibat aktif dan memproses informasi secara mendalam, sehingga lebih efektif dalam membangun keterampilan berpikir kritis.

ABSTRACT

Learning media is one of the factors that play an important role in the learning process. The position of media in the learning system is as an aid, a tool for conveying messages, reinforcement, and delivering information. The background of this study is that teachers are not used to using game-based learning media, which has an impact on students' low critical thinking skills. The purpose of this study was to determine whether the use of rotating clock media is effective for students' critical thinking skills? This study is a quantitative study with an experimental approach to the pretest-posttest one group design. Data collection techniques used tests. The research instrument used a test sheet to see students' critical thinking skills. The population of this study was 42 while the sample used was 24 students. Data were analyzed using the Paired Sample T-Test. The results of the study showed that the use of rotating clock media based on games was effective for students' critical thinking skills. This can be seen from the paired t-test analysis data by comparing the sig value <a (5%). The results of the analysis using spss showed that the sig value was smaller than alpha (0.000 <0.05). From the sig value obtained, it can be concluded that the use of the rotating clock media is effective for students' critical thinking skills. Implications The implication of this finding is that teachers need to continue to develop and utilize creative learning media such as playclocks to stimulate students' thinking processes. The use of this media can help students be more actively involved and process information in depth, so that it is more effective in building critical thinking skills.

Corresponding author
*E-mail addresses: melyanisari@umsu.ac.id (Melyani Sari Sitepu)

1. INTRODUCTION

One of the important aspects needed in human resource development is education. (Fidyawati dkk., 2024). The development of technology from time to time is increasingly sophisticated, this is based on the increasing human needs in the fields of education, health, transportation, information, communication and construction. Currently, the role of technology in the world of education is very important. Technology is developing so rapidly that it must be used optimally, especially in the field of education. (Rahayu et al., 2023).

Education and teaching are conscious and directed efforts that systematically aim to change children's behavior towards adulthood. (Suci Perwita Sari & Khalifatussadiah, 2020). The success of the learning process in educational activities is basically influenced by many factors, including lecturers, students, environment, curriculum, strategies, methods and effective learning media so that they can help students to learn optimally. (Setyawan et al., 2019).

Learning in the 21st century has been assumed as learning for a generation that grows and develops along with technological advances. The 21st century has demanded that every individual be able to master various skills (interdisciplinary), be system-oriented, understand patterns (quantitative aspects), be initiative and integrative (Sebbowa et al., 2014). In relation to the conditions of the industrial revolution 4.0 and education 4.0, it requires creative, adaptive, flexible and innovative learning methods by utilizing technological advances. In addition, the role of educational technology in the perspective of the current independent learning curriculum is very influential on educational technology as a basis for learning in the 4.0 era in improving the quality of education (Widiyono & Millati, 2021). Independent learning is freedom of thought that can specifically adjust policies to restore the essence of learning assessment. Through independent learning, teachers are expected to be able to develop their potential, such as planning learning that is interesting, fun, and meaningful.

The learning process is an activity carried out by two parties, namely the teacher as a facilitator and students as learners. A professional teacher must have four competencies, namely pedagogical, personal, social, and professional competencies. Where pedagogical competence requires teachers to be able to carry out their learning well. Learning can be carried out well if teachers can plan or design learning systematically and carefully. Elementary schools as the first level of basic education can form a strong foundation, namely by equipping students with adequate abilities and skills. In developing cognitive abilities, students not only memorize lesson materials, but also must develop intellectual abilities, critical thinking of students.

Critical thinking is “an intellectual process of conceptualizing, applying, synthesizing, and/or evaluating information obtained from observation, experience, reflection, thought or communication as a basis for believing and taking action” (Anggitasari & Widyaningrum, 2021). The purpose of critical thinking according to Sapriya (2009) is "to assess a thought, estimate the value and even evaluate the implementation or practice of a thought, estimate the value and even evaluate the implementation or practice of a thought and the value". To create a suitable learning design in developing and teaching critical thinking, one thing that teachers can do is to look at the critical thinking profile of students (Cahyono, 2017). Critical thinking has become a very interesting term to talk about in the world of education in the last decade, even though the tradition of critical thinking itself has been around for a long time and continues to develop (Fisher,2009).

In reality, students' critical thinking skills have not been developed, especially in elementary schools. This can be seen in the design, implementation, and assessment of learning in elementary schools that have not been aimed at developing students' critical thinking skills. The characteristics of learning in elementary schools are still conventional and in their implementation are still dominated by teachers (teacher-centered) so that the student-centered learning approach has not been fully integrated in the implementation of learning in elementary schools. This has an impact on the learning process being passive so that students are not skilled (Magdalena et al., 2020).

Hang Tuah 2 Titipapan Elementary School is one of the elementary schools in Medan. The elementary school is a private school located in Medan Deli sub-district. Ideally, teachers who teach at Hang Tuah school in the learning process have often used learning media. However, the reality is that what is ideal does not happen. Based on data obtained from initial interviews on March 24, 2023 from the homeroom teacher of class V, information was obtained that there was still a lack of media use during teaching and learning activities in the classroom. This can be seen from teachers who are not yet varied or are still monotonous in the learning process using the whiteboard. Thus, there are still some students who still have difficulty understanding the learning material, which affects students' critical thinking skills. The development of students' thinking skills should also be the responsibility of teachers. Teachers have full authority in managing learning in the classroom so that they can maximize students' critical thinking skills.

What happened at SDN Hang Tuah 2 should not be left alone. Teachers need a solution to overcome the low critical thinking skills of students. One solution that can be used is to use learning media. Learning media is a tool that functions to explain part of the entire learning program that is difficult to explain verbally. Learning materials will be easier and clearer if learning uses learning media (Amirudin, 2016). The function of learning media is to help teachers convey abstract concepts so that they can be understood by students concretely. In terms of age range, elementary school children are in the concrete operational phase. This phase requires teachers to be able to develop students' reasoning through concrete objects or from students' direct experiences. (Suroto, 2024). Concrete objects that teachers can use are learning media.

Related to learning media, basically there are many types such as animation media, concrete media, learning videos, simple media, and many more. In this study, the media chosen was a rotating wheel. The basis for choosing the rotating wheel media is because the concept of its use is still based on games which are in accordance with the developmental stages of elementary school children.

The play clock media is a circular or round object that can rotate. (Fadhilah et al., 2021). A spinning wheel is a circular object that can be rotated to display information related to the material being studied (Wardah Khairunnisa, 2017). This playclock learning media is designed with the principle of interesting learning media which is combined with game activities. In this case, students who like to play will continue to play, but they will play while learning under the supervision of the teacher as a moderator. (Yuniawatika et al., 2023b). The aim of implementing the playclock media is to encourage students to think actively, train their self-confidence, train their memory and cooperation. (Kimianti & Prasetyo, 2019).

This spinning wheel learning media is designed with the principle of interesting learning media combined with game activities. In this case, students who like to play will continue to play, but they will play while learning under the supervision of the teacher as a moderator. The purpose of implementing this spinning wheel media is to encourage students to think actively, train their level of self-confidence, train their memory and cooperation (Indun Riyani, 2019). The rotating wheel media in elementary schools has several advantages, including being fun, entertaining, and interesting. However, behind its advantages there are also disadvantages: for students who are lazy to follow learning instructions, the purpose of this rotating wheel is not achieved. In addition, the rotating clock also takes up a lot of time (Rohmah, Erwin Rahayu Saputra, 2021).

The shortcomings of the clock media must be overcome. In responding to this, teachers must be able to manage the right time if they choose the rotating wheel media as an alternative in learning activities. Before choosing media that is considered suitable for application, teachers need to conduct trials on the impact of using the selected learning media. (Yuniawatika et al., 2023a). The purpose of this study is to determine whether the use of rotating clock media is effective for students' critical thinking skills. This study is expected to provide knowledge and can be used as study material for readers to improve critical thinking skills by using playclock media.

2. METHOD

The method used in this study uses a quantitative approach. According to Sugiyono, the quantitative research method is a research method based on the philosophy of positivism, used to research a certain population or sample, data collection using research instruments, data analysis is quantitative or statistical, with the aim of testing the established hypothesis. (Amalia & Sampurno, 2019). In this study, the experimental method was used. According to Sugiyono (2014) Experimental research method is a research method used to find the effect of certain treatments on others under controlled conditions. This type of research is quantitative research with a one group pretest-posttest research design. The research design is as shown in the picture below.

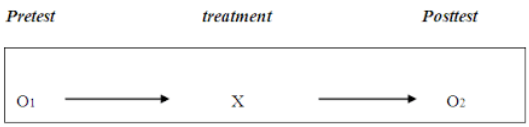

Figure 1. One group Pretest-Posttest Design

The sample used in this study were all students of grade IV of SDN Hang Tuah 2 totaling 20 students. The sampling technique in this study used the saturated sampling technique. The saturated sampling technique was taken because the population was used as the entire sample. The use of this sample was due to the relatively small population or less than 30 (Jumadiyah & Zumrotun, 2024). This study groups two

main variables, namely independent variables and dependent variables. The independent variable in this study is the use of rotating wheel media, while the dependent variable is students' critical thinking skills.

In data collection, researchers use test techniques with the same question sheets as the research instruments. According to Ridwan in (Tanujaya, 2017) stated that data collection techniques are techniques or methods used by researchers to collect data. In a study, this stage is used as a process where researchers will obtain related information that is needed and will be accounted for. There are various techniques in data collection in a study, the technique used in this study is the test technique. Data analysis using paired sample t-test with the help of spss version 22. The paired sample t-test is intended to test the research hypothesis whether the use of clock media has an effect on students' critical thinking skills or not. The implementation of the study began with giving questions to students (pre-test) then carrying out treatment with learning using clock media and at the end of the learning students were given questions (post-test). The students' pre-test and post-test scores were analyzed to see whether the use of clock media was effective in the critical thinking skills of students at SD Hang Tuah 2.

3. RESULT AND DISCUSSION

Result

This study began by giving students an initial test (prestest) with the aim of determining the initial abilities of students before using the rotating clock media in learning. The results of the student pretest can be seen in Table 1 below.

Table 1. Student Pretest Data

Criteria	Amount
Tuntas	0
Tidak Tuntas	28
Skor Tertinggi	60
Skor Terendah	28
Rata-Rata	42,5

Based on Table 1 of the pretest data of participants before being given learning treatment using the rotating clock media, it was obtained that out of 20 Didik students, none of them completed. The KKM applied was 75. The highest score was only 60 and the lowest was 28. The average score was 42.5. After the pretest was conducted, the researcher carried out the treatment by learning using the rotating clock media. After the learning was carried out, the researcher gave a test to the students. The posttest was given with the aim of seeing whether after being given the treatment, the learning objectives were achieved so that they were effective for the critical thinking skills of the students. For the data recorded by students after receiving the treatment can be seen in Table 2 below.

Table 2. Student Posttest Data

Kriteria	Jumlah
Tuntas	16
Tidak Tuntas	4
Skor Tertinggi	89
Skor Terendah	60
Rata-rata	78,8

Table 2 above shows the number of students who meet the KKM as many as 16 students, while those who do not meet the KKM are only 4 students. The highest score obtained by students is 89 and the lowest is 60. The average score obtained after learning using the rotating clock media is 78.8.

From the posttest results, it is known that students who have completed the KKM after implementing learning using the rotating clock media increased to 16 students. To see whether the rotating clock media is effective for critical thinking skills, a hypothesis test was conducted. Strengthening the results of the descriptive analysis, then conducting an inferential statistical analysis to prove the hypothesis proposed using the paired t-test statistical test.

Table 3. Inferential Statistical Analysis

		Perbedaan berpasangan					T	df	Sig. (2-ekor)
		Berarti	Deviasi Standar	Kesalahan Standar Rata-rata	Interval Kepercayaan 95% dari Perbedaan				
					Lebih rendah	Atas			
Pasangan 1	VAR00002 VAR00003	-36.30000	5.01681	1.12179	-38.64794	-33.95206	-32.359	19	0.000

Based on the data in Table 3 above, inferential statistical analysis was carried out and the data obtained were that the Sig. (2-tailed) value <0.05, which means that the use of clock media is effective in critical thinking skills in student participants. Statistical data analysis was obtained by comparing the values before treatment (prepress) with the values achieved by students after learning using clock media.

Discussion

The effectiveness of using clock media on critical thinking skills has been proven. This can be seen from the number of students who have completed the KKM before using the rotating clock media and after using the rotating clock media. Before the learning treatment with rotating clock media, no students completed it so it can be said that students' critical thinking skills have not developed. After learning using rotating clock media, there was an increase in students who completed the KKM to 16 people. To test the research hypothesis, an analysis test was carried out with a paired t-test which resulted in a sig value (0.000) <a (0.05). This answers the research hypothesis that rotating clock media is effective for critical thinking skills in students.

The use of media is basically a tool to convey learning messages that lead to learning objectives. Learning using the right media will provide optimal results for students' understanding of the material they are studying. (Padang & Sitepu, 2023). Media as a tool used as a message carrier in learning activities, the message in question is teaching materials where the presence of media is intended so that messages can be more easily understood and comprehended by students. Media as an intermediary that conveys information between the source and the recipient. (Miftah, 2014). If the media carries information or messages that are instructional or contain teaching intent, it is called learning media. Learning media is an inseparable part of the teaching and learning process in order to achieve educational goals, learning media as a communication bridge in learning activities that are not limited to student intelligence.(Mukhlis et al., 2020).

The results of this study are in line with previous studies. Research on the Utilization of Rotating Wheel Media to Improve Learning Outcomes of Grade I Students in Mathematics Lessons at SDN Krian 4 Sidoarjo conducted by (Nengtyas et al., 2023). The results of the study indicate that the use of rotating learning media can improve student learning outcomes, which can be achieved by increasing learning output. This is indicated by a significant increase in learning output, where in the pre-cycle the overall level of student learning achievement was 37.03%, but there was an increase in cycle 1 to 62.96% and in cycle 2 it increased to 81.48%. Furthermore, the use of media and project selection should be adjusted to the student's condition. Another study conducted by (Yuniawatika et al., 2023a) Smart Quiz Puzzles to Improve Social Studies Students' Learning Outcomes. The results obtained from the application of this media practice can improve the motivation and learning achievement of sixth grade social studies students on the material of nature and social conditions of neighboring countries. It was proven in cycle I of 33 students who achieved high school grades, as many as 16 students or 48.5% obtained an average score of 68.2. Then high school students increased again in cycle II to 28 students or 84.9% with a score of 77.6 exceeding the target indicator achievement of 70. Based on the results of observations, this learning process is in the good category. Unlike previous studies, research conducted by (Maulya et al., 2021) by developing the Rotary Smart Sticker Wheel Learning Media on ASEAN Grade V Elementary School Material. The results of the study indicate that the media needs expected from educators and students are media presented with wood materials and various colors. The desired wheel height is ± 52 cm with a sticker size of ± 19cm x 19cm. The arrow is on the top of the Smart Sticker Wheel media and the language used is Indonesian which is easy to understand. The Rotary Smart Sticker Wheel media is declared very feasible to be tested on students. The validation results from material experts obtained a ratio of 82.85% and from media experts obtained a rating of 98.83%. So it can be concluded that the Smart Sticker Wheel media is feasible to be used as a learning media for ASEAN grade VI material.

The success of the research using rotating learning media is due to the accuracy in choosing learning media. The criteria for choosing media for the purpose of learning diaries are adjusted to the learning objectives. Accuracy with teaching objectives, meaning that learning media is chosen based on the

educational objectives that have been set. Media must support the content of the material, namely factual material. Rotary media is an interesting media, so that by using this rotary media students can be interested and enthusiastic in learning. In addition, it also makes it easier to understand the learning delivered by the teacher .(Solichah et al., 2020). These media can attract attention, stimulate interest, and motivate learning as well as improve learning outcomes (Irham & Firdaus, 2024).

The effectiveness of using rotating wheel media on students' critical thinking skills is in accordance with the benefits of rotating wheel media, namely that students become more concentrated, students can pay attention to the material they will receive, the classroom atmosphere becomes fun and enthusiastic because the learning is interesting so that students can be directly involved in learning so that the learning process will greatly affect learning outcomes (Yuniawatika et al., 2023a). The use of rotating wheel media in learning is easy to use and has advantages that will have a positive impact on critical thinking skills. According to (Ismail et al., 2023) The rotating wheel clock has several advantages as follows: (1) the wheel is a fun game for teenagers, (2) it can stimulate students to be directly involved in learning activities, (3) it can train students' critical thinking skills, (4) it can see each other's abilities, (5) it can encourage students to continue trying the game until they get the desired points. In addition, the rotating wheel media trains children's memory as well as their speed of thinking by training children to visualize the messages in the media. Thus, students will find it easy to train their memory in the learning process. (Sari et al., 2021).

4. CONCLUSION

The results of this study indicate that there is a difference in students' critical thinking skills before being given learning and after learning with rotating media. In addition, effectiveness can also be seen by comparing the value of the sign <a (0.00<0.05). With a sig value smaller than alpha, it is concluded that the use of rotating wheel media is effective for students' critical thinking skills. Teachers are advised to use rotating wheel media in learning because rotating media is easy to use and can be made from ordinary cardboard. The use of rotating wheel media is also fun for students because there is an element of play in its use. The results of this study indicate that the use of media is effective for students' critical thinking skills. Teachers in carrying out learning and facilitating the delivery of teaching materials can use media that are in accordance with the characteristics of the teaching materials to be taught. For other researchers, they can study the effectiveness of watch media on both affective and psychomotor aspects. The materials and tools used so that the watch media is easily accessible, so that teachers and other researchers can develop more interesting and enjoyable watch media to facilitate the achievement of learning objectives.

5. REFERENCES

Amalia, R. D., & Sampurno, W. (2019). Analisis Siaran Iklan Dan Gratis Ongkos Kirim Sebagai Tipu Muslihat Di Youtube Terhadap Minat Beli Konsumen (Studi Pada E-Commerce Shopee) Universitas Telkom. *E-Proceeding of Applied Science*, *5*(2), 571–579.

Anggitasari, V., & Widyaningrum, T. (2021). Pengembangan Berpikir Kritis Melalui Analisis Jurnal. *Nasional Pendidikan*, *1*(1), 1954–1960. http://www.seminar.uad.ac.id/index.php/SemNasPPG/article/download/12105/2642.

Cahyono, B. (2017). Analisis Ketrampilan Berfikir Kritis Dalam Memecahkan Masalah Ditinjau Perbedaan Gender. *Aksioma*, *8*(1), 50. https://doi.org/10.26877/aks.v8i1.1510.

Fadhilah, N., Mustaji, M., & Jannah, M. (2021). Pengaruh Media Roda Putar Terhadap Kemampuan Mengenal Pola Dan Motorik Halus Anak Usia Dini. *Cetta: Jurnal Ilmu Pendidikan*, *4*(3), 644–658. https://doi.org/10.37329/cetta.v4i3.1479.

Fidyawati, S. C., Juwitaningrum, I., & Kosasih, I. (2024). *Decision Making Self Efficacy Pada Siswa Kelas 12 SMK Negeri di Kota Bandung*. *8*(1), 21–28. https://ejournal.undiksha.ac.id/index.php/JoPaI/article/view/76109/29117.

Indun Riyani. (2019). Pengaruh Penggunaan Alat Peraga Roda Putar Terhadap Hasil Belajar Matematika Siswa Kelas Iv Sd Negeri 56 Kota Bengkulu. In *Αγαη* (Vol. 8, Issue 5). http://repository.iainbengkulu.ac.id/3458/1/INDUN RIYANI.pdf.

Irham, N. H., & Firdaus, A. M. (2024). *Penggunaan Media Roda Putar Dalam*. *3*(1), 17–23.

Ismail, I., Tika, A., Sulianto, J., & Wikyuni, S. (2023). Analisis Penggunaan Media Jam Dinding Pada Mata Pelajaran Matematika Materi Pengukuran Kelas 1 SDN Plamongsari 02 Semarang. *… : Journal Of Social Science …*, *3*. http://j-innovative.org/index.php/Innovative/article/view/310%0A.

Jumadiyah, N., & Zumrotun, E. (2024). Pengaruh Penggunaan Metode Jarimatika Terhadap Literasi Numerasi Melalui Program Kampus Mengajar Batch 5 di Sekolah Dasar. *Attadrib: Jurnal Pendidikan Guru Madrasah Ibtidaiyah*, *7*(1), 12–22. https://doi.org/10.54069/attadrib.v7i1.710.

Kimianti, F., & Prasetyo, Z. K. (2019). Pengembangan E-Modul Ipa Berbasis Problem Based Learning Untuk Meningkatkan Literasi Sains Siswa. *Kwangsan: Jurnal Teknologi Pendidikan*, *7*(2), 91. https://doi.org/10.31800/jtp.kw.v7n2.p1--13.

Magdalena, I., Hasna Aj, A., Auliya, D., & Ariani, R. (2020). Analisis Kemampuan Berpikir Kritis Siswa Kelas Vi Dalam Pembelajaran Ipa Di Sdn Cipete 2. *PENSA : Jurnal Pendidikan Dan Ilmu Sosial*, *2*(1), 153–162. https://ejournal.stitpn.ac.id/index.php/pensa.

Maulya, N. A., Martanti, F., & Rinjany, E. D. (2021). Pengembangan Media Pembelajaran Roda Putar Stiker Pintar Dalam Materi Asean Kelas Vi Sekolah Dasar. *Jurnal Cakrawala Pendas*, *7*(2), 201–214. https://doi.org/10.31949/jcp.v7i2.3083.

Miftah, M. (2014). Pemanfaatan Media Pembelajaran Untuk Peningkatan Kualitas Belajar Siswa. *Jurnal Kwangsan*, *2*(1). https://doi.org/10.31800/jurnalkwangsan.v2i1.11.

Mukhlis, N, F. U., & Dkk. (2020). Pengembangan Permainan Question Wheel Sebagai Media Pembelajaran Untuk Melatih Keaktifan Menjawab Dan Meningkatkan Hasil Belajar Siswapada Materi Jamur. *Berkala Ilmiah Pendidikan Biologi*, *5*(3), 271–276. https://ejournal.unesa.ac.id/index.php/bioedu/article/view/19411/17728.

Nengtyas, S. R., Akhwani, Mujiadi, & Salwah, D. (2023). Penggunaan Media Roda Putar untuk Meningkatkan Hasil Belajar Peserta Didik Kelas I pada Mata Pelajaran Matematika di SDN Krian 4 Sidoarjo. *National Conference For Ummah (NCU)*, *2*(2), 42–46. https://conferences.unusa.ac.id/index.php/NCU2020/article/view/1195/782.

Padang, A. R. D. ., & Sitepu, M. S. (2023). Utilizing Educational Media in the Field of Education Fosters Active Learning Within the Classroom. *Jurnal Pendidikan (Teori Dan Praktik)*, *8*(2), 95–100. https://doi.org/10.26740/jp.v8n2.p95-100.

Rahayu, E., Isman, M., & Sitepu, M. S. (2023). *Cakrawala*. *17*(2).

Rohmah, Erwin Rahayu Saputra, M. M. (2021). Roda Putar Untuk Meningkatkan Hasil Belajar Siswa Pada Pelajaran Matematika Di Sd. *Wahana Sekolah Dasar*, *29*(2), 80. https://doi.org/10.17977/um035v29i22021p80-83.

Sari, N. P., Al-fath, A. M., Purnamasari, M. I., Studi, P., Guru, P., Dasar, S., Matematika, P., & Belajar, M. (2021). *Efektivitas Penggunaan Media Jam Sudut Pada Pembelajaran*. *1*, 20–26. https://ejournal.stkippacitan.ac.id/ojs3/index.php/sjes/article/view/747.

Sebbowa, D., Ng'ambi, D., & Brown, C. (2014). Using Wikis to teach History Education to 21st Century Learners: A Hermeneutic perspective. *Critical Studies in Teaching and Learning*, *2*(2), 24–48. https://doi.org/10.14426/cristal.v2i2.34.

Setyawan, B., Rufi'i, & Fatirul, A. N. (2019). Augmented Reality Dalam Pembelajaran IPA Bagi Siswa Sd. *Jurnal Teknologi Pendidikan*, *07*(01), 78–90.

Solichah, M., Akhwani, A., Hartatik, S., & Ghufron, S. (2020). Meta-Analisis Pengaruh Penggunaan Media Roda Putar Terhadap Hasil Belajar Matematika di Sekolah Dasar. *Wahana Sekolah Dasar*, *28*(2), 51–59. https://doi.org/10.17977/um035v28i22020p051.

Suci Perwita Sari, S. A., & Khalifatussadiah. (2020). Penggunaan Metode Make a Match Dalam Meningkatkan Hasil Belajar Siswa Sd. *EJoES (Educational Journal of Elementary School)*, *1*(1), 19–24. https://doi.org/10.30596/ejoes.v1i1.4554.

Sugiyono. (2021). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*.

Suroto, S. (2024). Karakteristik Siswa Sekolah Dasar Kelas Rendah. *Al-Ihtirafiah: Jurnal Ilmiah Pendidikan Guru Madrasah Ibtidaiyah*, *4*(1), 1–9. https://doi.org/10.47498/ihtirafiah.v4i1.3067.

Tanujaya, C. (2017). Perancangan Standart Operational Procedure Produksi Pada Perusahaan Coffeein. *Jurnal Manajemen Dan Start-Up Bisnis*, *2*(1), 90–95.

Wardah Khairunnisa. (2017). *Pengembangan Media Permainan Roda Putar Berbasis Website Untuk Keterampilan Membaca Bahasa Prancis Siswa Kelas Xi Sma Angkasa Adisutjipto*. https://eprints.uny.ac.id/53931/1/SKRIPSI Wardsh Khairunnisa.pdf.

Widiyono, A., & Millati, I. (2021). The Role of Educational Technology in the Perspective of Independent Learning in Era 4.0. *Journal of Education and Teaching (JET)*, *2*(1), 1–9.

Yuniawatika, Y., Mashuri, M. F., & Hadisurya, S. P. Y. (2023b). Meta Analisis: Efektivitas Penggunaan Media Roda Putar Terhadap Hasil Belajar Matematika Siswa Sekolah Dasar. *Metodik Didaktik*, *19*(1), 1–10. https://doi.org/10.17509/md.v19i1.57130.