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Wordwall Application in Improving Numeracy Ability SDN RENDA

Selfi Juniarti[1], Syarifudin[2], Nurrahmah[3]
[1,2,3]STKIP Taman Siswa Bima

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Abstract

Education plays a crucial role in developing individual potential and enhancing quality of life, with numeracy skills being *a key aspect of this process. This study aims to explore the effectiveness of using the Wordwall application in mathematics learning to improve numeracy skills among students at SDN Renda. A qualitative approach with a descriptive case study design was employed. Data were collected through observations, interviews with teachers and students, and documentation. The results indicate that the use of Wordwall significantly increased student engagement and motivation, with an average posttest score improvement of 20.4 points compared to the pretest. The application offers various quiz and game templates that make learning more interactive and engaging. However, challenges related to technology access limited the full implementation of the application. The discussion highlights that Wordwall is effective in enhancing mathematics understanding and numeracy skills, as well as increasing student interest in learning. In conclusion, Wordwall is a highly beneficial tool in mathematics education, and schools should provide technological support and training for teachers to maximize its benefits. The study recommends broader implementation of the Wordwall application to improve the quality of mathematics education in elementary schools.*

Corresponding Author:
Selfi Juniarti
STKIP Taman Siswa Bima
Email: selfijuniarti192@gmail.com

1. INTRODUCTION

Education is one of the policies implemented by the government to increase individual potential. In accordance with the statement of the 1945 Constitution Number 20 of 2003 concerning the National Education System, Article 3 Paragraph (1), it is stated that "national education functions to develop abilities and shape the character and civilization of a dignified nation in order to make the nation's life more intelligent, aimed at developing the potential of students. to become human beings who believe and are devoted to God Almighty, have noble character, are healthy, knowledgeable, capable, creative, and become democratic and responsible citizens." Based on the above, it can be said that education can help the government develop the ability of citizens to improve their quality of life so that they can improve their standard of living, society, nation and state. One of the abilities that can help advance a nation is the ability to count numbers.

As stated in the Ministry of Education and Culture (2017), numeracy skills have been designated as one of the determinants of a nation's success since 2006 by UNESCO. Apart from that, numeracy ability is one part of the four main independent learning policies of the Ministry of Education and Culture which consist of: (a) National Standard School Examinations which have been replaced with exams (assessments), (b) National Examinations which have been changed to Minimum Competency Assessments and Character Survey consisting of: literacy, numeracy, and character, (c) Teachers can freely use, choose, develop and create lesson plans, (d) Use a zoning system with the aim of bringing

equality in the problems of quality and distance of education in various regional (Ministry of Education and Culture, 2019).

Numeracy in the Ministry of Education and Culture (2020) is a fundamental skill that equips students with the ability to apply number concepts and arithmetic operation skills in everyday life and the ability to interpret quantitative information found around us. Apart from that, in the Ministry of Education and Culture (2020**)** states that numeracy is a fundamental competency that students need to learn throughout life and contribute to society. So, it is important to teach numeracy skills to students at the basic education level.

However, in fact, the numeracy skills possessed by Indonesian students are still relatively low. This is shown in the 2018 Program for International Student Assessment (PISA) assessment, where literacy skills for the Indonesian mathematics category were ranked 73rd out of 79 countries and only 1% of Indonesian students in PISA reached level 5 and none of them were the same. once which reaches level 6 (Tohir, 2019). One of the characteristics of level 5 in PISA is that students are able to develop and operate with models in elusive situations, identify obstacles and explain appropriately possible predictions. The characteristics of level 6 are that students are able to conceptualize, generalize and use information based on investigation and modeling in complex problem situations (Putra, 2020). The decrease in the 2018 PISA score from 2015 is presented in the following description.

The three main skill categories that test performance in reading, mathematics, and science showed a decrease in PISA (Program for International Student Assessment) scores between 2015 and 2018. Reading proficiency scores fell from 397 in 2015 to 371 in 2018, a decrease of 26 points. In terms of mathematical aptitude, his score fell from 386 in 2015 to 379 in 2018, a reduction of 7 points. Additionally, there was a decline in science performance ability, with a score of 396 in 2018 representing a decrease of 6 points from 402 in 2015. To ensure that student performance in reading, mathematics, and science can be maintained and improved in the future, the education system must be evaluated and improved overall, as can be seen from the decline in the three talent categories.

Indonesian students' ability to answer AKM numeracy questions can be used to measure their lack of numeracy skills. Learning media is used in the process of improving numeracy skills. Learning media functions as a vehicle for communicating ideas, feelings and concentration. This shows that this media is very important in the process of gaining knowledge. Additionally, these media platforms help the spread of abstract ideas to ensure seamless understanding and assimilation among individuals in education (Hasiru et al., 2021). It is believed that learning media will foster close communication between teachers and students, so that learning becomes interesting and fun. Students will be better able to absorb and understand the material offered if this happens. Therefore, persistence and the capacity to find and provide interesting teaching materials are essential for educators. Agree with (Wildan et al., 2023) who stated that media selection in the field of education is very important. In addition, educators must have the ability to produce interactive media. Despite this, teachers continue to use traditional media. On the other hand, today's students show a high dependence on technology.

The importance of updating mathematics learning materials in the current technological era. The possibility of interactive and easily accessible learning is one of the educational tools that can increase student motivation. These resources include platforms such as Wordwall, Quizizz, Schoology, Kahoot, and various other similar tools (Nenohai et al., 2021). Wordwall-based learning materials are one type of learning tool that can be used to engage students in active learning. Wordwall is a game-based online application that can be used as a learning tool. Wordwall is an online learning platform that allows educational content producers to design a series of interactive learning tasks, such as word games, quizzes, and other similar exercises. According to Lesatari, (2021) wordwalls are useful as learning resources, media, and fun assessment tools for students (Akbar, H. F., & Hadi, M. S., 2023). Students can use Wordwall as an entertaining assessment tool, media tool, and

educational resource. You can access this game using a laptop or smartphone to play this game. Students may be interested in the Wordwall program because it offers interactive games, music, animation, and visuals. Wordwall learning resources have the power to improve students' understanding of the material and offer encouraging feedback as they grasp new ideas. Wordwall media shows its application in both online learning scenarios and face-to-face learning environments (PTM). By giving them the opportunity to compete, Wordwall encourages and motivates students to become more involved in their education.

Previous research that is similar and related to this research is research by (Wafiqni & Putri, 2021) with the title "Effectiveness of Using the Wordwall Application in Online Mathematics Learning in Grade 1 Whole Numbers." The research results show that the use of the Wordwall application is suitable for use as a learning media for students with an increase in test results reaching 75%. Research by (Istiqomah & Nisa, 2023) with the title "Improving Mathematics Learning Outcomes About Circle Elements Through the Application of Wordwalls in Class VI Students of Sd Negeri 1 Setrojenar" the results of this research can be concluded that the application of wordwalls can improve mathematics learning outcomes about elements. circle elements in class VI students of SD Negeri 1 Setrojenar. Research by (Afriani & Taufan, 2023) with the title "Improving the learning concentration of children with difficulty learning mathematics through the Wordwall Quiz application" from this research, students at SDN 18 Koto Luar Padang who experienced learning difficulties in mathematics learning in class IV increased since the intervention of the Wordwall quiz application was given. Research by (Ruhsoh Triyani, 2023) with the title "Use of Wordwall-Based Interactive Games as a Mathematics Learning Media for Middle School Students" research results from a response questionnaire for class VIII students at SMPN 10 Serang City, with a total percentage of (94.1%) who could categorize as Very Good or Strongly Agree because they are happy and interested in the innovation of mathematics learning.

Based on the explanation above, this research aims to explore the use of the Wordwall application in mathematics learning and its impact on improving students' numeracy skills at SDN Renda. Using a qualitative approach through case studies, this research seeks to explore the experiences and perceptions of teachers and students in using the Wordwall application. It is hoped that the results of this research will provide new insights into the use of digital technology in mathematics learning in elementary schools and efforts to improve students' numeracy skills.

2. RESEARCH METHOD

This research uses a qualitative approach with case study methodology (Sugiyono, 2016). The focus of the research is SDN RENDA which is located in Renda Village, Kec. Belo, Bima Regency, West Nusa Tenggara. The even semester of the 2023/2024 academic year was used for this investigation. Primary sources (Meleong, 2014) in this research are: Mathematics Teachers and Class V Students. Meanwhile, secondary data (Meleong, 2014) in this research are: books, documents and scientific articles related to research.

In data collection techniques, researchers use several methods to obtain accurate and comprehensive information. Based on Prastowo (2016), observation techniques were used to collect data which included data presentation material, Learning Implementation Plans (RPP) and the curriculum implemented at the school. This observation provides a direct picture of how the lesson plans and curriculum are implemented in the daily learning process.

The next technique is interviews. According to Sugiyono (2016), interviews were conducted with various informants, including mathematics teachers, fifth grade students, and other respondents relevant to the research variables. This interview aims to explore in-depth information regarding their experiences, views and perceptions related to the learning process and curriculum implementation.

Furthermore, documentation techniques are used as an additional method to collect data. Based on Meleong (2014), data collected through documentation techniques includes various documents and

notes related to research. These documents can be in the form of academic reports, attendance records, as well as evaluation and assessment records.

To ensure the validity of the data, researchers applied data triangulation techniques. According to Sugiyono (2013), triangulation is carried out by combining interview results from various informants and comparing them with related documents. In this way, researchers can validate the data and ensure the validity of the information obtained, resulting in a more accurate understanding of the phenomenon under study.

Data analysis in this research was carried out using the Miles and Huberman analysis technique, which consists of three main stages: data condensation, data presentation, and drawing conclusions (Miles & Huberman, 2007).

1. In the first stage, **data condensation**, researchers collect and summarize data obtained from the field, including the results of interviews, observations and documentation. This process involves sorting and simplifying data to focus on relevant information. The data is then organized into certain concepts and themes related to the research objectives.
2. The second level is **presentation of data**, where researchers present data that has been condensed in a more organized and descriptive form. This presentation can be in the form of a descriptive narrative, tables, graphs, or other visual forms that make it easier for readers to understand the information presented.
3. The third stage, **drawing conclusions**, is the process in which the researcher makes an interpretation of the data that has been presented. These conclusions are drawn based on findings that emerge during data analysis and attempt to identify patterns, relationships, or new findings that have not been previously identified. This conclusion drawing is carried out continuously throughout the research process to ensure that the final findings are accurate and valid.

By using this analysis technique, researchers can systematically manage research data and produce findings that can be trusted and have high scientific value.

3. RESEARCH RESULTS AND DISCUSSION

Wordwall Learning Media

According to the National Education Association (NEA) Media is a form of communication, both print and audio-visual. Learning media is a communication technique that can be used for learning, learning media is a means of delivering material physically. Learning media means communication in the form of print, visual and audiovisual, including hardware technology (Fikriansyah and Layyinnati 2022). According to Nasution, the benefits of learning media as a tool in the learning process are as follows: 1) students can increase their motivation to learn with more interesting teaching. 2) students understand and master the teaching objectives better if the teaching materials are clearer. 3) students will not get bored, teachers will not only communicate verbally through spoken words, learning methods will be varied, and teaching staff will not run out. 4) the more students do while studying, the better they understand the information their teacher provides (Nurrita 2018).

One learning media that can be applied is wordwall. Wordwall is also a gamification application that offers a wide selection of games that teachers can use to convey information or teaching materials and Wordwall can also be used as a learning assessment strategy because of its unique appearance and also amazes users so that Wordwall can be played by anyone without age limits, and anywhere. (Minarta and Pamungkas 2022). The advantages of the wordwall application are: a) Able to provide a meaningful learning system that can be easily followed by elementary and higher-level students. b) The assignment model in the wordwall application, which students can access via their cellphone. c) Are creative. Meanwhile, the disadvantages of the wordwall application are: a) When used, it is prone to fraud and the font size cannot be changed. b) In making it, it melts the old one. c) Can only be seen because of visual media (A. A. Mujahidin et al. 2012).

Numeracy Ability

Numeracy ability is knowledge and skills in using various numbers and symbols related to basic mathematics to solve practical problems in everyday life as well as analyzing data presented in various forms (tables, charts, diagrams, graphs, etc.), and interpreting the results of the analysis to make a decision (Kemendikbud, 2017). Meanwhile, according to Diaz et al., (Westwood, 2021) numeracy is seen as the ability to process, communicate and interpret numerical information in various contexts which involves the use of mathematical concepts to achieve several goals in certain contexts in everyday life as well as using numbers in context. to help decision making.

Implementation of the Wordwall Application in Improving Students' Numeracy Skills

Based on a Case Study (Interview with a mathematics teacher at SDN RENDA) The learning method used at SDN RENDA is a conventional method which includes lectures, question and answer sessions, group discussions, and homework, applied there. However, this implies that teachers are only releasing information that has already been presented to students rather than providing new knowledge. The less-than-ideal effect on students' numeracy skills is caused by the use of inappropriate teaching methods. The findings of this study identified several areas where teacher and student teaching should be addressed. Twenty-five fifth grade students at SDN RENDA who were the objects of the research were randomly interviewed when asked: Can students' numeracy skills be supported by wordwall learning media? Students often respond by saying that wordwall learning materials make learning more interesting and arouse their interest in the material. The researchers' research findings using interviews showed a number of problems when teachers did not use wordwall learning resources. When content or assignments are delivered in a conventional way, students become increasingly bored and unhappy. Several grade V students at SDN RENDA who participated in interviews stated that they were happier and more engaged by using wordwall learning resources. Apart from that, they think the teaching will not be boring. Apart from that, they want wordwall learning resources to be used in mathematics subjects so that students don't get bored when their teachers provide material that still uses conventional techniques. Because of the score and timer features in the application, using Wordwall Learning Media also encourages students to complete their assignments more competitively. Fifth grade students need to better understand explanations of material in mathematics subjects. This shows that to improve their understanding of mathematics and assist teachers in providing creative teaching, students need some kind of media to enrich their learning. Teachers should at least try to give students access to learning materials, even if they are not familiar with Wordwall. It is recommended that educators organize their assignments into assignments when using the Wordwall program to create them. From this, it can be seen that Wordwall learning materials are very suitable for use in mathematics education, as shown by students' great interest in using them. Wordwall with Gameshow Quiz can improve student learning outcomes (Minarta, 2022).

The Wordwall application is a web-based tool designed to facilitate the creation of interactive lessons by educators. For instructors and students, there are a variety of interesting templates and quiz types that can be accessed. This media is among the interactive ones that can trigger students' curiosity and inspire them to learn. The popularity of Wordwall media among educational institutions can be attributed to its ability to create a lively learning environment. The Wordwall program can be accessed via the URL https://wordwall.net; anyone can view the various templates available.

The steps that students take in offline learning when students are asked to do a learning evaluation:

1. Click on the website that the teacher has sent, then write the student's name then click start as shown below:

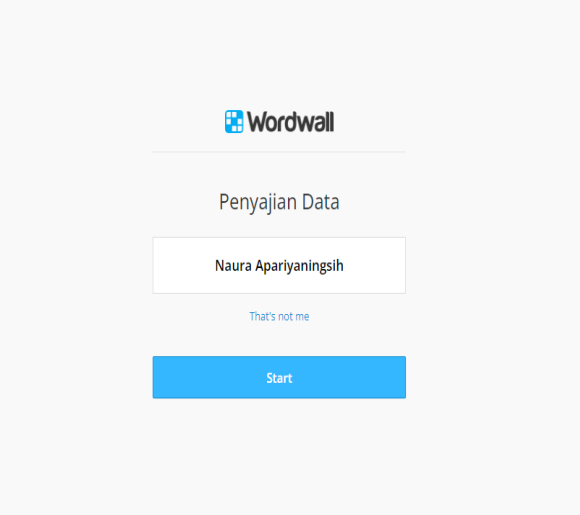

Figure 1. Initial appearance of the Wordwall platform

2. Then click start game

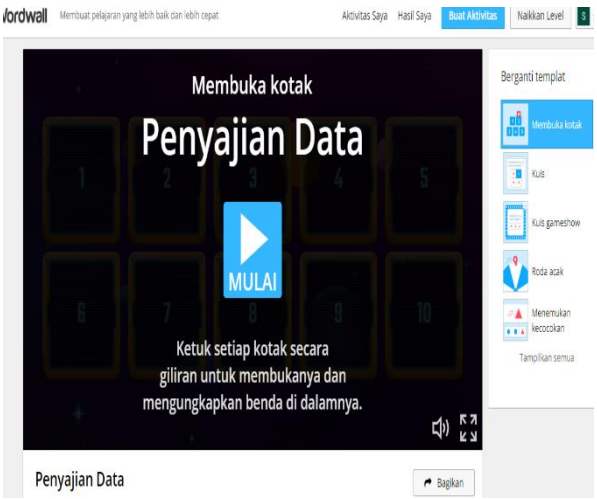

Figure 2. Game Name Display

3. A display like the one below will appear, and students are asked to open a box containing 10 questions that must be answered

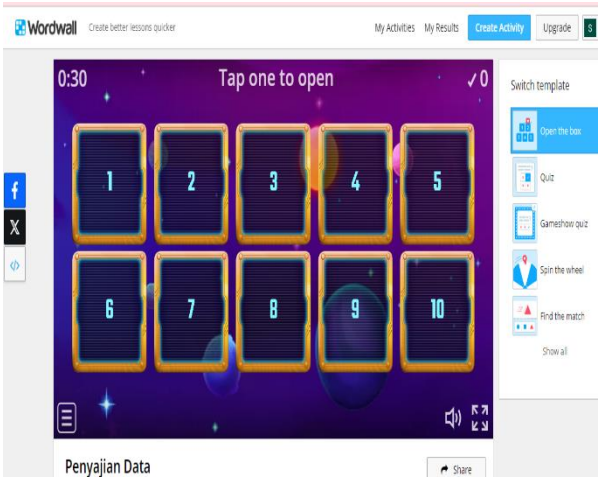

Figure 3. Game Display

4. Then students open one of the 10 boxes containing questions and begin to answer the questions that appear after the box is opened

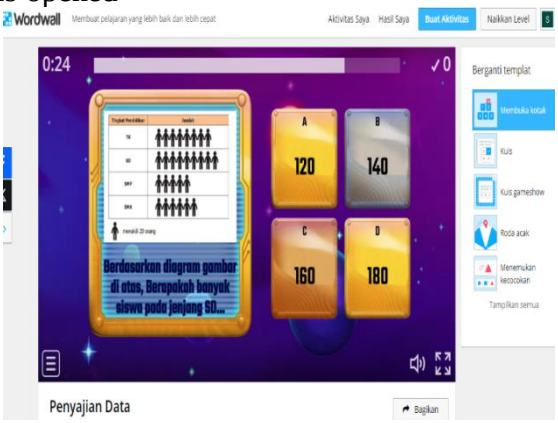

Figure 4. Display of one of the questions in the game

5. Students can see the scores obtained and the processing time. If there are still many mistakes in doing it, students can try again by clicking start again. Teachers can also set a maximum number of times students can repeat the game.

Figure 5. Score obtained

6. For teachers, to see the recap results of students who have worked on them, you can see them in my results section.

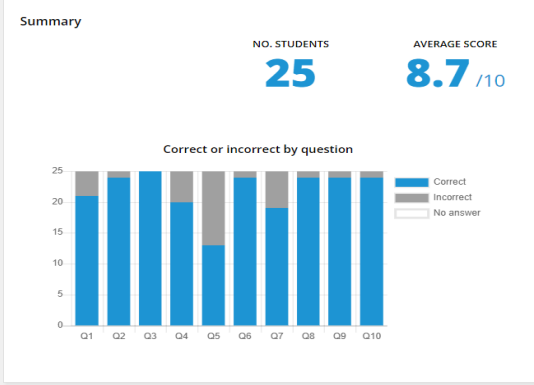

Figure 6. Table diagram of student scores in one class

Rank	Name
1st	Naura Apariyaningsih
2nd	Fedi Wahyudin
3rd	M Riski

Figure 7. Student leaderboard

Based on the picture above, students are very interested in using the Wordwall platform. It was clear that the game was highly desired even though there were only 25 students and 37 applications to participate. Wordwall makes it easier for teachers to assess student learning outcomes. Teachers can view overall times and scores, displayed in tables and graphs. The leaderboard also displays the three students with the highest scores, as well as the scores of individual students who have played or replayed the game. This allows educators to track improvements in students' numeracy skills when using data presentation materials. Wordwalls really help increase student engagement and interest in mathematics.

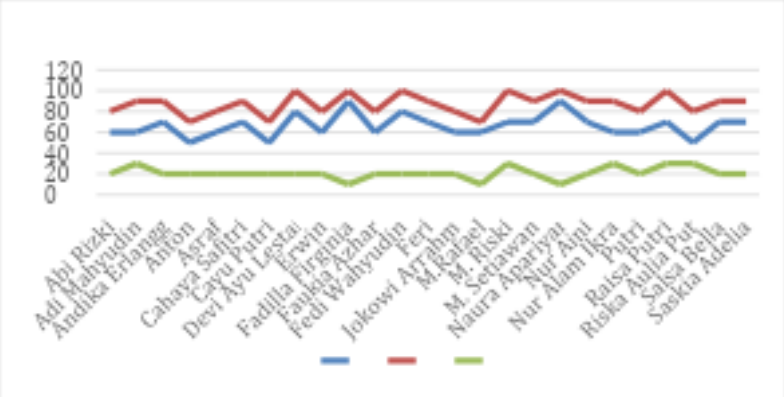

Figure 8. Graph of pretest, posttest and improvement values obtained

Based on the graph above, our research shows that this program has great potential to improve students' numeracy skills at SDN Renda. The students' average posttest score was 87.2, indicating a substantial average increase of 20.4 points, compared to their pretest average of 66.8. The majority of students saw their scores improve by 20 points, demonstrating the potential benefits of this tool. Students like Anton and Abi Rizki who had low pretest scores experienced the same improvement as students who had better pretest scores. Even though there was only a difference of 10 points, students like Fadilla Firginia and Naura Apariyaningsih who had the highest pretest scores still showed progress. Individuals who got the most points were Adi Mahyudin, M. Riski, Nur Alam Ikra, Raisa Putri, and Riska Aulia Putri. This shows how the Wordwall program works well for students at different skill levels. Due to the interactive and visual capabilities of the Wordwall application, it is hoped that students' interest in learning will increase. Based on observations, students who use Wordwall to learn mathematics show higher levels of motivation and enthusiasm. Teachers who have not yet taken advantage of this program will benefit greatly by helping students convey information and maintain their interest. The interactive activities and visual aids of this application have the ability to improve students' understanding of the subject of arithmetic. The biggest problem is the lack of access to technology in the classroom. To ensure that instructors get the most out of the Wordwall program, schools must provide them with additional resources and training. This is similar to Basir's opinion that the interactive media Wordwall is able to increase learning activity (Basir et al., 2021). Apart from that, the implementation of Wordwall media has been validly implemented because student responses are very positive and students are enthusiastic about participating in learning in a fun way (Nenohai et al., 2022). Students gave positive feedback about their learning experience with this app and said that learning became more enjoyable.

4. CONCLUSION

This research proves that the application of the Wordwall application in mathematics learning at SDN Renda significantly improves students' numeracy skills. This study uses a qualitative approach with a case study methodology involving fifth grade teachers and students as research subjects. Through interviews, observations and documentation, it was found that using Wordwall makes the learning process more interesting and enjoyable for students. Data shows that students who studied using Wordwall showed significant improvements in their learning outcomes, with an average posttest score of 87.2, an increase from a pretest score of 66.8. Most students experienced an increase in their scores of around 20 points, indicating the effectiveness of this application in supporting mathematics learning. Wordwall allows teachers to present material interactively and competitively, so that students are more motivated and involved in the learning process. The advantages of this application include the ability to present material in a visual and interactive format,

which can improve students' understanding of mathematical concepts. However, the main challenge faced is limited access to technology in the classroom, which requires additional support and training for teachers to optimize the use of these applications. Overall, the results of this research indicate that Wordwall is an effective learning tool in improving students' numeracy skills and creating a more dynamic and enjoyable learning environment. Implementing Wordwall in elementary schools can be considered an effective strategy to improve the quality of mathematics learning in Indonesia, considering evidence of significant increases in numeracy skills.

5. BIBLIOGRAPHY

Afriani, S., & Taufan, J. (2023). Meningkatkan konsentrasi belajar anak berkesulitan belajar matematika melalui aplikasi Wordwall Quiz. Jurnal Penelitian Pendidikan Khusus, 11(2), 118-123.

Alberta. "Literacy and Numeracy Progressions". Understanding Special Educational Needs, 2019, 1– 15

Basir, M., Bayu, A. T., & Sudarjat, A. (2021). Meningkatkan Keaktifan Belajar Siswa Melalui Media Interaktif Pada Pembelajaran PJOK Secara Online. Prosiding Seminar Nasional Pendidikan STKIP Kusuma Negara III, 54.

Dr. Umar Sidiq, M.Ag Dr. Moh. Miftachul Choiri, MA. 2019. "Metode Penelitian Kualitatif Di Bidang Pendidikan." In Journal of Chemical Information and Modeling, ed. Anwar Mujahidin. Ponorogo: CV. Nata Karya, 228. http://repository.iainponorogo.ac.id/484/ 1/METODE PENELITIAN KUALITATIF DI BIDANG PENDIDIKAN.pdf

Ekowati, D. W., & Suwandayani, B. I. (2019). Literasi Numerasi Untuk Sekolah Dasar. UMM Press

Fikriansyah, Mohammad, and Idzi' Layyinnati. 2022. "Pengaruh Media Pembelajaran Berbasis Website (Wordwall) Terhadap Hasil Belajar Peserta Didik Pada Mata Pelajaran Fiqih Kelas VII Di Sekolah Menengah Pertama Muhammadiyah 07 Paciran." Jurnal Pendidikan Islam 1(1): 1– 32.

Firdareza, R. M., & Hapsari, S. N. (2019). Kesulitan Belajar Matematika Siswa Kelas X SMK Negeri Pedan Tahun Pelajaran 2019/2020. Buletin Pengembangan Perangkat Pembelajaran, 1(2), 18–24.

Istiqomah, I., & Nisa, A. F. (2023, March). PENINGKATAN HASIL BELAJAR MATEMATIKA TENTANG UNSUR-UNSUR LINGKARAN MELALUI PENERAPAN WORDWALL PADA SISWA KELAS VI SD NEGERI 1 SETROJENAR. In Dewantara Seminar Nasional Pendidikan (Vol. 1, No. 01).

Kemendikbud. 2017. Materi Pendukung Literasi Numerasi. Jakarta: Kemendikbud RI.

Kemendikbud. 2017. Materi Pendukung Literasi Numerasi. Jakarta: Kemendikbud RI.

Kementerian Pendidikan, Kebudayaan, Riset, Dan Teknologi Direktorat Jenderal Paud, Pendidikan Dasar, Dan Pendidikan Menengah Direktorat Sekolah Dasar Jakarta 2021, Modul Numerasi di Sekolah Dasar.

Khairunisa, Y. (2021). Pemanfaatan Fitur Gamifikasi Daring Wordwall Sebagai Media PembelajaranDigital Mata Kuliah Statistika Dan Probabilitas. Mediasi, 2(1), 41-47. diunduh 10 Oktober 2021

Mariamah, M., Ratnah, R., Katimah, H., Rahman, A., & Haris, A. (2021). Analysis of Students' Perceptions of Mathematics Subjects: Case studies in Elementary Schools. Journal of Physics: Conference Series, 1933(1). https://doi.org/10.1088/1742- 6596/1933/1/012074

Mariamah, Suciyati, H. (2021). Kemampuan Numerasi Peserta didik Sekolah Dasar Ditinjau dari Jenis Kelamin. TUNAS: Jurnal Penlitian Pendidikan Dasar, 01(1), 93.

Meleong. (2014). Metodologi Penelitian Kualitatif. Pt. Remaja Rosda Karya.

Miles, & Huberman. (2007). Analisis Data Kualitatif: Buku Sumber Tentang Metode-Metode Baru. Ui Press.

Minarta, Sakinata Maulidina, and Heni Purwa Pamungkas. 2022. "Efektivitas Media Wordwall Untuk Meningkatkan Hasil Belajar Ekonomi Siswa Man 1 Lamongan." OIKOS Jurnal Kajian Pendidikan Ekonomi dan Ilmu Ekonomi VI(Vol 6 No 2): 189–99

Mujahidin, Arif Agus et al. 2012. "Pemanfaatan Media Pembelajaran Daring (Quizizz, Sway, Dan Wordwall) Kelas 5 Di SD Muhammadiyah 2 Wonopeti." Innovative: Journal Of Social Science Research 1(2): 552–60.

Mutakin, T. Z., Nurhayati, & Rusmana, I. M. (2014). Penerapan Teori Pembiasaan dalam Pembentukan Karakter Religi Peserta didik di Tingkat Sekolah Dasa. Edutech, 1(3), 361–373.

Nenohai, J. A., Rokhim, D. A., Agustina, N. I., & Munzil, M. (2022). Development of Gamification-Based Wordwall Game Platform on Reaction Rate Materials. Orbital, 14(2), 122. https://doi.org/10.17807/orbital.v1 4i2.16206

Nurhayati, S., & Zarkasih Putro, K. (2021). Bermain Dan Permainan Anak Usia Dini. Jurnal Pendidikan Islam Anak Usia Dini, 4(1), 52–64.

Nurrita, Teni. 2018. "Pengembangan Media Pembelajaran Dan Hasil Belajar Siswa." Misykat: Jurnal Ilmu-Ilmu Al-Qur'an, Hadits, Syari'at dan Tarbiyah 03(1): 171–87.

Prastowo, A. (2016). Metode Penelitian Kualitatif Dalam Perspektif Rancangan Penelitian (Cet. 3). Ar-Ruzz Media.

Putri Lisa Mella Gultom, dkk, "Penerapan Media Pembelajaran Dengan Memanfaatkan Lingkungan Sekitar Sebagai Sumber Belajar Disekolah Dasar", Jurnal Pendidikan dan Konseling, 4(3), 2022, 701.

Rachmah, S., & Huda, M. (2021). Realisasi Pembelajaran dalam Jaringan pada Pelajaran Bahasa Indonesia di Sekolah Menengah Pertama. Jurnal Pendidikan Bahasa dan Sastra Indonesia, 11(3), 338– 345

Rosdiani, L., Munawar, B., Dewi, R., Studi, P., Guru, P., & Dasar, S. (2021). Pelatihan Membuat Game Edukasi Wordwall untuk Guru di Kelurahan Keraton. 2(2), 247–255.

Rusandi, and Muhammad Rusli. 2021. "Merancang Penelitian Kualitatif Dasar/Deskriptif Dan Studi Kasus." AlUbudiyah: Jurnal Pendidikan dan Studi Islam 2(1): 48–60.

Sinaga, Y. M., & Soesanto, R. H. (2022). Upaya Membangun Kedisplinan melalui Media Pembelajaran Wordwall dalam Pembelajaran Daring pada Siswa Sekolah Dasar. Jurnal Basicedu, 6(2), 1845–1857.

Sugiyono. (2016). Metode Penelitian Kuantitatif Dan Kualitatif Dan R&D. Afabeta.

Sun'iyah, S. L. (2020). Media Pembelajaran Daring Berorientasi Evaluasi Pembelajaran Pada Mata Pelajaran Pai Di Tingkat Pendidikan Dasar. Jurnal Studi Keagamaan, Pendidikan Dan Humaniora, 7(1), 1–18. http://www.unp.ac.id/sites/default/files/2018-05/pengembangan pembelajaran daring.pdf

Triyani, R. (2023). Penggunaan Game Interaktif Berbasis Wordwall sebagai Media Pembelajaran Matematika pada Siswa SMP. Intellectual Mathematics Education (IME), 1(1), 40-49.

Ulya Kamilatul, "Pengembangan Media Pembelajaran Math Garden Dalam Meningkatkan Kemampan Numerasi Pada Materi Operasi Hitung Perkalian dan Pembagian Kelas II Sekolah Dasar". Universitas Nahdatul Ulama Sunan Giri, 2022, 3.

Undang-Undang Nomor 20 Tahun 2003. Tentang Sistem Pendidikan Nasional

Wafiqni, N., & Putri, F. M. (2021). Efektivitas Penggunaan Aplikasi Wordwall dalam Pembelajaran Daring (Online) Matematika pada Materi Bilangan Cacah Kelas 1. Elementar (Elementary of Tarbiyah): Jurnal Pendidikan Dasar, 1(1), 68-83.

Wahyuningtyas, R., & Sulasmono, B. S. (2020). Pentingnya Media Dalam Pembelajaran Guna Meningkatkan Hasil Belajar Di Sekolah Dasar. Edukatif: Jurnal Ilmu Pendidikan, 2(1), 23-27. diunduh 10 Oktober 2021.

Westwood, P. S. 2021. Teaching for Numeracy Across the Age Range: An Introduction. Singapore: Springer Singapore.

Wijaya, A., & Dewayani, S. (2021). Framework Asesmen Kompetensi Minimum (AKM). Kementerian Pendidikan Dan Kebudayaan, 1–107.

Wijayanti, D., Murtono, M., & Kironoratri, L. (2020). Peningkatan Hasil Belajar Siswa Melalui Model Quantum Teaching Dan Media Palang Arahku. WASIS : Jurnal Ilmiah Pendidikan, 1(2), 80–85. https://doi.org/10.24176/wasis.v1i2.5049