p-ISSN: 2086-4280
e-ISSN: 2527-8827

Development of Learning Media Assisted by Wordwall on the Material of Exponent for Phase E Students

Yoza Agrullina[1], Sri Rezeki[2], Agus Dahlia[3*], Sindi Amelia[4]

[1,2,4]Mathematics Education Program, Universitas Islam Riau
Jalan Kaharuddin Nst No.113, Kota Pekanbaru, Riau, Indonesia
[1]*yozaagrullina@student.uir.ac.id; [2]sri_rezeki@edu.uir.ac.id; [4]sindiamelia88@edu.uir.ac.id*
[3*]Petroleum Engineering Program, Universitas Islam Riau
Jalan Kaharuddin Nst No.113, Kota Pekanbaru, Riau, Indonesia
[3*]*agus.dahlia@edu.uir.ac.id*

Article received: 07-03-2023, revised: 20-09-2023, published: 30-10-2023

Abstrak

Penggunaan Android sebagai media pembelajaran memungkinkan siswa mengakses materi pembelajaran tanpa batasan ruang dan waktu. Penelitian ini bertujuan untuk mengembangkan media pembelajaran berbantuan Wordwall pada materi eksponen yang teruji validitas dan praktikalitasnya sehingga dapat digunakan oleh guru dan siswa pada Tahap E (Kelas X SMA). Dalam pengembangan media ini digunakan desain Research and Development (R&D) yang dimodifikasi Sugiyono dengan tahapan Potensi dan Masalah, Pengumpulan Data, Desain Produk, Validasi Desain, Revisi Desain, Uji Coba Produk, Revisi Produk, dan Produk Akhir. Subjek penelitian berjumlah 26 siswa kelas 10. Hasil penelitian menunjukkan bahwa media pembelajaran yang dikembangkan mempunyai rata-rata validitas sebesar 91,91% dengan kriteria sangat valid dan rata-rata kepraktisan sebesar 84,29% dengan kriteria praktis. Berdasarkan hasil penelitian dapat disimpulkan bahwa media pembelajaran yang dihasilkan layak digunakan karena telah teruji validitas dan praktikalitasnya.

Kata Kunci: Android; Fase E; Media; Perkembangan; dinding kata.

Abstract

Using Android as a learning medium allows students to access learning materials without space and time constraints. This research aims to develop a learning media assisted by Wordwall on the exponent material tested for validity and practicality so that teachers and students can use them in Phase E (Class X SMA). In developing this media, Research and Development (R&D) design, which Sugiyono modifies, is used with the stages of Potential and Problems, Data Collection, Product Design, Design Validation, Design Revision, Product Trial, Product Revision, and Final Product. The research subjects were 26 students in grade 10. The results of this study indicate that the learning media developed has an average validity of 91.91% with very valid criteria and an average practicality of 84.29% with practical criteria. Based on the results of this study, it can be concluded that learning media have been produced that are suitable for use because they have been tested for validity and practicality.

Keywords: Android; Phase E; Media; Development; Wordwall.

I. INTRODUCTION

Rapid technological advancements have significantly influenced education in the contemporary era of globalization. Global demands drive this impact, necessitating continuous adaptation of educational practices to evolving technological developments, particularly within the context of learning (Budiman, 2017; Elyana, Wulandari, & Mulyani, 2022). Technologically-mediated learning facilitates enhanced teacher-student interactions in the classroom. Consequently, educators must be cognizant of temporal and resource constraints when integrating technology into the learning environment (Khairiyah Mar'aha et al., 2020). Furthermore, teachers should possess proficient skills in planning, developing, and utilizing instructional media to bolster students' interest, attention, and motivation for learning (Yaumi, 2018; Ranila, Yunianta, & Prihatnani, 2023).

Given students' diverse levels of understanding and preparedness during their developmental stages, the methods and materials employed in teaching exponent number concepts can be tailored to accommodate individual variations. Notably, at the high school level, this mathematical material is typically covered in class 10 or phase E of the independent curriculum. Students at this stage are expected to generalize the properties of number operations involving powers.

Fundamentally, in the process of instructing on rank number concepts, educators often emphasize achieving curriculum targets, placing greater emphasis on rote memorization rather than fostering conceptual understanding. Additionally, learning activities predominantly adopt a teacher-centred approach through lecture methods instead of a more student-centred approach utilizing instructional media (Hamid, 2020). This tendency contributes to students' challenges in grasping the conceptual intricacies of exponent numbers, leading to difficulties in solving problems related to exponent number properties.

The conventional teaching approach has led to a decline in students' interest and comprehension of the material. To address this issue, a game was designed to engage students in their studies. Wordwall emerged as a suitable learning medium due to its versatility, offering various learning methods and templates that enhance creativity and make the learning experience more captivating (Surahmawan et al., 2021). Wordwall, a digital platform, provides features like games and quizzes that educators can utilize for instructional purposes.

Wordwall as a learning medium has distinct advantages, including a range of engaging games accessible for free, such as quizzes, random wheels, anagrams, and more (Surahmawan et al., 2021). Prior research efforts by Sudarsono & Mulyani

(2021) focused on employing the wordwall game for teaching odd numbers in mathematics. Rochmada & Suprayitno (2022) utilized wordwalls for social science education, specifically historical heritage materials. Pamungkas et al. (2021) applied the wordwall game to enhance students' learning motivation, and Divine et al. (2022) developed wordwall as an interactive tool to alleviate mathematics anxiety. These studies, conducted across various educational units, demonstrated the feasibility of Wordwall in increasing students' motivation, rendering it a valuable resource for teachers and students.

In this study, distinctions exist from prior research in terms of objectives, location, educational units, subjects, and the primary material addressed in the developed media. The chosen medium for this research is Wordwall. Given the abovementioned challenges, the research aims to develop a wordwall-assisted mathematics learning medium focused on eksponent material for Phase E students. The study involves testing the validity and practicality of the developed medium.

II. METHOD

The Research and Development (R&D) method was employed in this study. It was initially formulated by Sugiyono and subsequently adapted by the researchers. As delineated by Sugiyono (2014), research and development are a research approach designed to generate certain products and evaluate their efficacy. However, it is pertinent to note that in the present research, the developmental phase was confined to assessing the media's validity and practicality without delving into its overall effectiveness. The modified stages of research and development encompassed identification of potential and problems, data collection, product design, design validation, design revision, product testing, product revision, and the final product.

Wordwall-assisted learning media was applied with a cohort of 26 Class X students at SMA Negeri 4 Pekanbaru, Riau. The data collection methodologies incorporated in this research included interviews, observations, validity tests, and questionnaires. The instruments employed for data collection were carefully selected to ensure the thorough assessment of the developed Wordwall-assisted learning media. The data collections used are as follows:

1. Validation Sheet

The validation process was conducted by a media expert, a Mathematics Education Lecturer at FKIP UIR, and a subject matter expert, a mathematics teacher at SMA Negeri 4 Pekanbaru. The primary objective was to assess the wordwall-assisted learning media designed for Phase E students focusing on exponent material.

Aspek	No.	Indikator	Butir Pertanyaan	Skor Penilaian			
				VD1	VD2	VG1	VG2
Kelayakan Isi	1.	Kesesuaian Materi Soal dengan Kurikulum	Kesesuaian materi soal dengan capaian pembelajaran (CP) Kurikulum Merdeka				
			Kesesuaian kedalaman materi soal yang disajikan dengan CP Kurikulum Merdeka				
	2.	Kualitas Materi Soal	Keakuratan soal yang disajikan				
			Kesesuaian alternatif jawaban dengan soal yang disajikan				
Media	3.	Format Teks	Kejelasan teks atau kalimat yang disajikan pada media sehingga mudah untuk dibaca				
			Keseimbangan pemilihan jenis dan ukuran huruf teks				
	4.	Desain Media	Keseimbangan proporsi background, gambar, maupun teks				
			Ketepatan pemilihan dan kombinasi warna dalam media				
			Kesesuaian gambar atau animasi yang dipilih				
	5.	Penggunaan Efek Suara	Kejelasan efek suara yang digunakan dalam media				
			Penggunaan efek suara tidak mengganggu penggunaan media				
Bahasa	7.	Penyajian Kalimat	Kesesuaian bahasa yang digunakan pada media dengan Pedoman Umum Ejaan Bahasa Indonesia (PUEBI)				
			Kejelasan bahasa yang digunakan dalam media sehingga mudah untuk dipahami dan dimengerti				
			Kesesuaian bahasa yang digunakan dengan perkembangan intelektual peserta didik				
	8.	Penggunaan Istilah	Ketepatan istilah yang disajikan				
			Ketepatan simbol matematis yang disajikan				
			Konsistensi dalam penggunaan istilah				
Jumlah							
Rata-rata							
Kategori							

Figure 1. Validation Sheet

Observing Figure 1 reveals the application of the validation sheet to assess the media. This sheet encompasses three key aspects: content relevance, appropriateness of media, and linguistic proficiency.

2. Assessment of Media Practicality

An evaluation of the practicality of the learning media, specifically designed for Phase E students focusing on exponent material, was conducted through a practicality sheet. This assessment involved both teachers and students at SMA Negeri 4 Pekanbaru to gauge the effectiveness and suitability of the wordwall-assisted learning media.

No.	Pernyataan	Pilihan Jawaban	
		Ya	Tidak
1.	Saya dapat menggunakan Media ini karena kalimat soal yang jelas		
2.	Latihan yang disajikan pada Media berbasis android ini tidak membantu saya untuk melihat sejauh mana pemahaman materi yang telah diajarkan guru		
3.	Latihan menggunakan rancangan Media seperti ini terasa sangat membosankan		
4.	Latihan menggunakan Media seperti ini menumbuhkan rasa percaya diri saya dalam melaksanakan proses pembelajaran		
5.	Warna yang ada pada Media ini terlihat sangat menarik		
6.	Gambar yang ditampilkan pada Media ini membantu saya dalam menjawab soal		
7.	Soal yang ada pada Media ini melatih saya untuk memahami konsep		
8.	Soal yang ada pada Media ini melatih saya untuk berpikir		
9.	Gambar yang disajikan pada Media latihan soal ini membingungkan		
10.	Waktu pengerjaan latihan pada Media ini sudah sesuai		
11.	Latihan menggunakan Media ini sama sekali tidak membantu saya dalam mempelajari materi matematika		
12.	Mengerjakan latihan soal menggunakan Media ini membuat saya malas untuk berpikir		
13.	Tema pada Media latihan soal terlihat menarik		
14.	Saya kesulitan memahami kalimat yang terdapat pada Media		
15.	Saya merasa waktu yang diberikan untuk latihan menggunakan Media ini sangat sedikit		

Figure 1. Teacher and Student Response Sheet

Figure 2 illustrates the emphasis on practicality in media usage as reflected in the student and teacher response sheets.

Quantitative data was employed to ensure the efficacy of this research. The data collection process was executed organically to meet the research requirements without any alterations. The data collection methods encompassed interviews, validity tests, and the distribution of questionnaires focusing on practicality. The expert validation questionnaire implemented a modified Likert Scale as the measurement scale, detailed in Table 1 below.

Table 1.
Modified Likert Scale

No	Quantitative Analysis	Statement Score	
		Positive	Negative
1	Strongly agree	4	1
2	Agree	3	2
3	Disagree	2	3
4	Strongly Disagree	1	4

Meanwhile, the analysis of questionnaire data on teacher and student

p-ISSN: 2086-4280
e-ISSN: 2527-8827

responses was conducted descriptively using quantitative methods, specifically through percentage assessments. The teacher and student response data were calculated.

Table 2.
Guttman Scale

Alternative Answer	Alternative Answer	
	Positive	Negative
Yes	1	0
No	0	1

The technique employed to process the acquired data is quantitative descriptive analysis. The obtained data falls into the quantitative category, derived from the validity tests conducted by experts (Expert Testing). This quantitative data will be analyzed using quantitative methods, specifically by calculating the percentages. The formula utilized is:

$$Score = \frac{\sum score\ obtained}{\sum total\ score} \times 100\%$$

(Source: Sugiyono, 2011)

The results of the calculated data are converted into Table 5, allowing for the interpretation of the developed media's validity and practicality testing outcomes. The criteria employed for assessment are delineated in Table 5 as follows:

Table 3.
Validity and Practicality Criteria

No.	Interval	Criteria
1	85,01% ≤ x ≤ 100%	Highly Valid/Practical or can be utilized without revision.
2	70,01% ≤ x < 85%	Valid/Practical or can be utilized with minor revision
3	50,01% ≤ x< 70%	Less Valid/Practical, recommended for not being utilized because of major revision
4	01,00% ≤ x < 50%	Invalid/impractical, or must not be utilized

III. RESULT AND DISCUSSION

A. Result

Drawing upon the researchers' modification of the Research and Development (R&D) model, the process of developing mathematics learning media is elucidated through the subsequent steps:

1) Potential and Problems

During this initial phase, the focus is on identifying potential and existing problems within the school environment, accomplished through interviews and observations. Findings from assessments at SMAN 4 Pekanbaru reveal the following observations:

a. Students already employ Android devices as learning tools.
b. Students exhibit reduced interest when learning activities solely involve blackboard explanations.
c. A variety of learning approaches leads to student boredom and diminished engagement.
d. Students struggle with grasping the concept of exponent numbers and face challenges in solving problems related to exponent number properties.

2) Data Collection

In this stage, researchers gather essential materials for developing mathematics learning media. Collected materials include Learning Outcomes (CP), Learning Objectives Flow (ATP), and Teaching Modules (MA) about Power Number content, aligned with the school's Merdeka Curriculum.

3) Product Design

a) Material Design

The material design phase involves sourcing teaching resources for topics related to numbers with powers. The content within the mathematics learning media aligns with the Teaching Module (MA) and adheres to the learning objectives specified in the Independent Curriculum adopted by SMAN 4 Pekanbaru. Figure 3 visually represents the material on exponent numbers and associated questions.

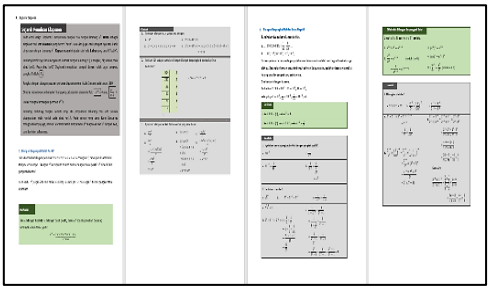

Figure 2. Exponent Material

b) Designing Question

The design of questions related to the topic of exponent numbers comprises a total of 20 items. This set of questions was presented to the teachers at SMAN 4 Pekanbaru for evaluation, assessing their appropriateness for use by students at SMAN 4 Pekanbaru (refer to Figure 4).

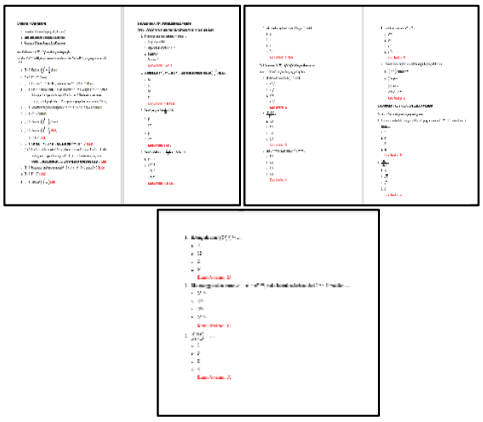

Figure 3. Exponent Questions

c) Designing Wordwall

In the design of Wordwall, the initial steps involve determining the game template to be utilized, specifying the theme and duration, and crafting the questions to be presented.

Figure 4. Wordwall Template

Based on Figure 5, several templates in Wordwall can be utilized for creating educational games.

p-ISSN: 2086-4280
e-ISSN: 2527-8827

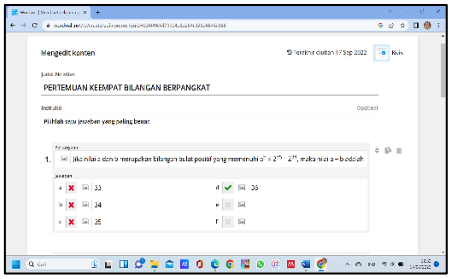

Figure 5. Content/Question Process

In Figure 6, users can input questions along with images and corresponding answers that have been created. However, in this Wordwall game, the capability to input questions in fractions and radical expressions is not yet available.

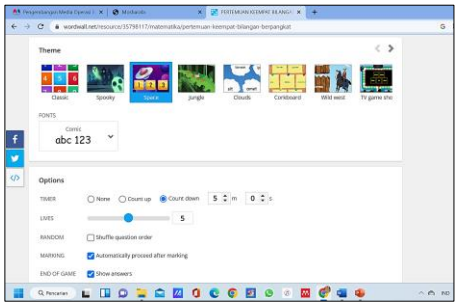

Figure 7. Wordwall Theme

Referring to Figure 7, it can be observed that various appealing themes are available for use in the learning process. Subsequently, after selecting a game theme, users can initiate the game based on the chosen template (refer to Figure 8). Following this, users can press the start button on the game, and the game will commence, as illustrated in Figure 9.

Figure 8. Initial Game Display

Figure 9. Question Display

d) Designing Kodular

In designing Kodular, the initial steps involve specifying the background, button design, display layout, and font design (refer to Figure 10).

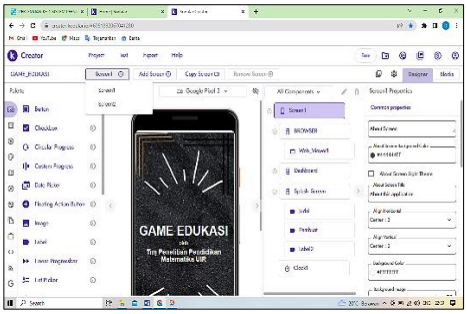

Figure 10. Kodular Display

4) Design Validation

During the validation process of learning media, two Teacher Validators (VG) and two Lecturer Validators (VD) served as media experts. The evaluation of the validity of mathematics learning media utilizing Wordwall, conducted by these experts, covers material, media, and

language aspects. The detailed assessment is presented in Table 4 below:

Table 4.
Validation Result

Validator	Aspect Assessed			Mean (%)	Validity Criteria
	Material	Media	Language		
VG1	64	92	96	92,65	Highly Valid
VG2	64	96	88	91,18	Highly Valid
VD1	52	92	88	85,29	Highly Valid
VD2	64	108	96	98,53	Highly Valid
Mean Total				91,91	Highly Valid

As depicted in Table 4, the comprehensive average validation score for mathematics learning media employing Wordwall, explicitly focusing on exponent material, is determined to be 91.91%. This places it within the "Very Valid" criteria. Despite the media being deemed suitable for use without revision, the researchers proceed with revisions in alignment with suggestions and criticisms provided by validators, aiming to enhance the quality of mathematics learning media utilizing Wordwall for rank number material.

5) Design Revision

Suggestions and evaluations addressed by validators are elucidated in the following table:

Table 5.
Suggestions and Evaluation from Validators

Suggestions and Evaluation	Revision
Replace the question in the first meeting with the HOTS question	Researchers have renewed the questions to the HOTS-type questions
	
Use attractive themes and sounds to avoid boredom.	Researchers have changed the theme and sound to make the app more appealing.
	

As seen from Table 5, the suggestions and evaluations from the validators focused on the questions and the theme used in the media.

6) Product Trial

Following the revision of the learning media, a limited test involves a small group examining teacher and student responses to the developed learning media. These trials aim to gauge the practicality of the media. The limited trial involved two mathematics subject teachers and 26 students from SMAN 4 Pekanbaru.

p-ISSN: 2086-4280
e-ISSN: 2527-8827

The practical outcomes are presented in Table 6 below:

Table 6.
Practicality Test Result

Questionnaire Response from Teacher (%)	Questionnaire Response from Student (%)	Mean (%)	Criteria
90,00	78,57	84,29	Practical

Table 6 outlines that the overall average practicality score for learning media utilizing Wordwall is 84.29%, categorizing it as "Practical."

7) Product Revision

The teacher and student response sheets analysis reveals a "Practical" category, signifying that the product is usable with minor revisions.

8) Final Product

Following the researchers' revisions, the final product materialized as mathematics learning media utilizing Wordwall for topics related to numbers with powers. The product was deemed suitable for use after comprehensive testing of its validity and practicality.

Throughout the developmental stages of this learning media, researchers encountered particular challenges, including:

1. During the Wordwall design phase, the absence of established rules for rendering mathematical equations necessitated screenshots, resulting in somewhat blurry formulas and images.
2. Limitations in the Wordwall platform prevented the presentation of all question formats, particularly essay questions, thus hindering the teacher's ability to observe the student's problem-solving process.
3. The scope of this research was confined to testing the validity and practicality of the media without delving into its overall effectiveness, owing to the constraints imposed by the research timeline.
4. The Wordwall platform proved inadequate for illustrating the concept of exponent numbers.

B. Discussion

The utilization of learning media in mathematics education at SMAN 4 Pekanbaru remains limited. According to teachers' observations, conventional or lecture methods persist in delivering learning content, potentially leading to student boredom and reduced engagement. Additionally, students encounter challenges in responding to questions in descriptive form, prompting the integration of multiple-choice questions for assistance. In response, researchers developed wordwall-assisted learning media to foster motivation and enthusiasm among students, thereby enhancing interest in mathematics within the classroom.

This wordwall-assisted learning media introduces diverse learning methods and templates, contributing to a more

engaging learning experience. Furthermore, it facilitates streamlined assessment for teachers, as students' assignment results are automatically forwarded. Notably, this learning media is compatible not only with smartphones but also with PC/Laptop platforms.

Upon completing the research, the developed media garnered suitability for teaching mathematics, specifically concerning numbers with powers. Media experts validated the product, yielding an average validity score of 91.91%, indicating its classification as "Very Valid." Consequently, the developed learning media is poised for further testing.

Limited trials involving 26 students yielded an overall average practicality level of 78.57%. To supplement student responses regarding media practicality, teacher opinions were solicited through a questionnaire, revealing an average practicality level of 90.00%. Combining both perspectives, an average practicality level of 84.29% was determined, aligning with the "Practical" criteria. Consequently, the mathematics learning media is deemed suitable for use, having undergone rigorous testing of its validity and practicality.

These research findings align with previous studies. Sudarsono & Mulyani (2021) reported increased test scores in elementary school mathematics learning through the wordwall game. Parisa et al. (2023) advocate for educational quizzes and games with Wordwalls as practical learning tools. Amiirah Faatin & Rusnilawati (2022) highlighted the positive impact of wordwall-based digital game learning media on students' motivation and learning success in integer operations. Divine et al. (2022) concluded that Wordwall games can alleviate students' anxiety levels during mathematics learning.

IV. CONCLUSION

In conclusion, the research findings and discussions affirm the successful development of mathematics learning media using Wordwall for Phase E students, focusing on rank number material. Given the rigorous testing of validity and practicality, this learning media is deemed suitable for use.

The researchers propose several recommendations on mathematics learning media, future researchers considering the utilization of Wordwall are advised to select materials that do not necessitate image screenshots for question creation. Subsequent research should explore and assess the effectiveness of the Wordwall application-based learning media developed in this study. Addressing the limitations of multiple-choice questions, it is recommended to conduct thorough testing of question validity and reliability. Acknowledging that the produced learning media exclusively pertains to Ranked Numbers, future research opportunities could involve creating learning media with

diverse materials and more captivating designs.

REFERENCES

Budiman, H. (2017). Peran Teknologi Informasi dan Komunikasi dalam Pendidikan. *Jurnal Pendidikan Islam*.

Elyana, D., Wulandari, A. A., & Mulyani, O. B. T. (2022). Peningkatan Prestasi Belajar Matematika Siswa dalam Pembelajaran Jarak Jauh Berbasis Video. *Plusminus: Jurnal Pendidikan Matematika*, *2*(1), 77-86.

Faatin, N.A., & Rusnilawati. (2022). Pengembangan Media Digital Wordwall Ditinjau dari Kemampuan Berfikir Tingkat Tinggi Materi Operasi Bilangan Kelas VI. *Kwangsan: Jurnal Teknologi Pendidikan*, *10*. https://doi.org/10.31800/jtp.kw

Hamid, A. (2020). Pembelajaran Aktif, Kreatif, Efektif Dalam Pembelajaran. *BDK Banjarmasin Kementerian Agama*.

Ilahi, K. A., Sudiana, R., & Nindiasari, H. (2022). Pengembangan Media pembelajaran interaktif berbasis Wordwall untuk mengurangi kecemasan matematika. *Wilangan: Jurnal Inovasi Dan Riset Pendidikan Matematika*, *3*(4), 304. https://doi.org/10.56704/jirpm.v3i4.14303

Mar'ah, N.K., Rusilowatia, A., & Sumarnia, W. (2020). Perubahan Proses Pembelajaran Daring Pada Siswa Sekolah Dasar. *Seminar Nasional Pascasarjana*.

Pamungkas, Z. S., Randriwibowo, A., Wulansari, L. N. A., Melina, N. G., & Purwasih, A. (2021). Pengembangan Media Pembelajaran Interaktif Wordwall Dalam Meningkatkan Motivasi Belajar Siswa Kelas VII SMP Negeri 4 Gunung Sugih. *Social Pedagogy: Journal of Social Science Education*, *2*.

Parisa, M., Arcana, N., Susetyo, A. E., Krida, D., Kuncoro, S., Kuncoro, K. S., Parisa, M., Arcana, I. N., Susetyo, A. E., & Kuncoro, K. S. (2023). Pengembangan Kuis dan Game Edukasi Menggunakan Wordwall Pada Pembelajaran Daring Pertidaksamaan Nilai Mutlak Bentuk Linier. *Jurnal Theorems (The Original Reasearch Of Mathematics)*, *7*(2).

Ranila, R., Yunianta, T. N. H., & Prihatnani, E. (2023). Developing Android-Based Counting Game as Learning Media to Train Students' Creative Thinking. *Mosharafa: Jurnal Pendidikan Matematika*, *12*(3), 599-614.

Rochmada, E. D., & Suprayitno. (2022). Pengembangan Game Edukasi Wordwall dalam Pembelajaran IPS Materi Peninggalan Sejarah Kelas IV Sekolah Dasar. *Jurnal Pendidikan Guru Sekolah Dasar*.

Sudarsono, S., & Mulyani. (2021). Pengembangan Media Pembelajaran Game Interaktif Berbasis Aplikasi Web Wordwall pada Pelajaran Matematika Materi Bilangan Ganjil Genap Kelas II SD. *Jurnal Pendidikan Guru Sekolah Dasar*.

Sugiyono. (2011). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Alfabeta.

Sugiyono. (2014). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. Alfabeta.

Surahmawan, A. N. I., Arumawati, D. Y., Palupi, L. R., Widyaningrum, R., &

Cahyani, V. P. (2021). Penggunaan Media Wordwall sebagai Media Pembelajaran Sistem Pernafasan Manusia. *PISCES : Proceeding of Integrative Science Education Seminar, 1*.

Yaumi, M. (2018). *Media dan Teknologi Pembelajaran* (S. F. S. Sirate, Ed.; cetakan ke-1). Prenadamedia Group (Divisi Kencana).

AUTHOR'S BIOGRAPHY

Yoza Agrullina.

Born in Banjar Padang on August 5, 2001, I am currently a undergraduate student pursuing a Bachelor's degree in Mathematics Education at the Faculty of Teacher Training and Education, Universitas Islam Riau in Pekanbaru.

Dr. Sri Rezeki, S.Pd., M.Si.

Born in Tanjung Uban on January 15, 1971, I am currently a faculty member at Universitas Islam Riau. I completed my Bachelor's degree in Mathematics Education at Universitas Riau, Pekanbaru, in 1993. Subsequently, I pursued my Master's degree in Mathematics at Institut Pertanian Bogor, West Java, graduating in 2002. Continuing my academic journey, I earned a Ph.D. in Mathematics from Universitas Gadjah Mada, Yogyakarta, in 2008.

Agus Dahlia, M.Si.

Born in Pekanbaru on August 11, 1983, I am currently a faculty member at Universitas Islam Riau. I completed my Bachelor's degree in Mathematics at Universitas Riau, Pekanbaru, in 2007. Subsequently, I pursued my Master's degree in Mathematics at Universitas Indonesia, Depok, graduating in 2013.

Sindi Amelia, M.Pd.

Born in Kerinci on November 25, 1988, I am currently a faculty member at Universitas Islam Riau. I completed my Bachelor's degree in Mathematics Education at Universitas Riau, Pekanbaru, in 2010. Subsequently, I pursued my Master's degree in Mathematics Education at Universitas Pendidikan Indonesia, Bandung, graduating in 2012.