



Perceptions of Elementary School Teacher Education Students on the Use of Wordwall Interactive Media as a Quiz

Zeva Adi Fianto^{1*}, Sekar Purbarini Kawuryan², Bambang Saptono³, Mujinem Mujinem⁴, Galuh Mentari Putri⁵ 

^{1,2,3,4} Faculty of Education and Psikologi, Universitas Negeri Yogyakarta, Yogyakarta, Indonesia

ARTICLE INFO

Article history:

Received July 07, 2023

Accepted December 10, 2023

Available online February 25, 2024

Kata Kunci:

Persepsi, Wordwall, Kuis Online

Keywords:

Perception, Wordwall, Online Quiz



This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.

Copyright © 2024 by Author. Published by Universitas Pendidikan Ganesha.

ABSTRAK

Penggunaan media interaktif dalam kegiatan pembelajaran memberikan inovasi baru pada dunia pendidikan. Penelitian ini bertujuan untuk menganalisis persepsi mahasiswa PGSD terhadap penggunaan media interaktif wordwall sebagai kuis pada mata kuliah pendidikan IPS sekolah dasar. Penelitian ini berjenis kuantitatif dengan subyek 50 mahasiswa PGSD (Pendidikan Guru Sekolah Dasar). Metode penelitian yang digunakan pada penelitian ini yaitu metode survei. Data dikumpulkan dengan memanfaatkan angket skala Likert 1-5. Angket dibagikan kepada mahasiswa melalui google form. Data yang diperoleh dari penelitian kemudian dianalisis menggunakan skala likert dan hasilnya dikonversi kedalam tabel klasifikasi persepsi mahasiswa. Hasil analisis dari angket yang disebarakan kepada mahasiswa PGSD menunjukkan bahwa persepsi mahasiswa PGSD terhadap penggunaan media interaktif wordwall sebagai kuis pada mata kuliah pendidikan IPS sekolah dasar berada pada kategori "setuju". Sehingga untuk pembelajaran yang dilakukan kedepannya dapat memanfaatkan media interaktif wordwall. Berdasarkan hasil angket yang dibagikan kepada mahasiswa kesimpulan yang dapat diambil yaitu penggunaan media ajar yang interaktif seperti wordwall sebagai kuis mampu meningkatkan motivasi, hasil belajar, semangat serta prestasi belajar anak didik. Sebab penggunaan media interaktif wordwall memiliki tampilan yang menarik, mudah digunakan dan pada akhir pengerjaan kuis akan muncul rating nilai secara otomatis. Sehingga dapat merangsang siswa untuk berlomba-lomba mendapatkan nilai yang maksimal.

ABSTRACT

The use of interactive media in learning activities provides new innovations in the world of education. This study aims to analyze the perceptions of PGSD students on the use of Wordwall interactive media as quizzes in elementary school social studies education courses. This research is a quantitative type with 50 PGSD (Elementary School Teacher Education). The research method used in this research is the survey method. Data was collected using a 1-5 Likert scale questionnaire. Questionnaires were distributed to students via the Google form. The data obtained from the study were then analyzed using a Likert scale and the results were converted into a student perception classification table. The results of the analysis of the questionnaire distributed to PGSD students showed that the perceptions of PGSD students regarding the use of Wordwall interactive media as quizzes in elementary school social studies education courses were in the "agree" category. So that future learning can take advantage of Wordwall interactive media. Based on the results of the questionnaire distributed to students, the conclusion that can be drawn is that the use of interactive teaching media such as Wordwall as quizzes can increase students' motivation, learning outcomes, enthusiasm and learning achievements. Because the use of Wordwall interactive media has an attractive appearance, is easy to use and at the end of the quiz work a value rating will appear automatically. So that it can stimulate students to compete to get the maximum value.

1. INTRODUCTION

Teachers must be able to use innovative and creative learning media as technology, information and communication develop. Increasing creativity and innovation has a significant impact on human

survival, including the world of education. It needs to be understood that innovation in learning activities will encourage the creation of a learning atmosphere that is fun and not boring so that it can increase students' learning motivation (Kuncoro & Arigiyati, 2020; Lutviana & Mafulah, 2021). Technological advances have given birth to various applications with features that are very complete, comprehensive and can be used for various purposes, including to support learning so that learning objectives can be realized as they should (Irving, 2006; Yilmaz, 2017). This progress should be utilized wisely by educators in the era of revolution 4.0 which continues to develop rapidly and dynamically, especially in the fields of technology and information. In line with the statement of previous study state that in the 4.0 era, especially in the world of education, educators must be able to facilitate students in learning individually wherever they are by utilizing technological tools (Min & Nasir, 2020). So that educators can understand the concept of learning media, they must be able to master technology and information, especially learning media (Alfian et al., 2022; Samerkhanova & Imzharova, 2018). In neighbouring countries, the demand for learning using online platforms has greatly increased because it has a positive impact on learning (Kessler, 2018; Nasir, 2020). One of the components that educators need to pay attention to in learning is the use of media, because using media in learning will make it easier for students to understand and absorb the information conveyed by the teacher inside and outside the classroom.

Based on the results of observations, problems were found, namely lack of concentration in attending lectures. This is due to the 3 credit hours taken in elementary social studies education courses, so that students often lose focus. Students who lose focus will talk to their friends and make the class less conducive. The role of lecturers in stabilizing the class is very necessary so that lectures run smoothly. During the lecture process students only make presentations and ask questions, for the rest of the lectures are led by lecturers using the lecture method. Another problem related to the use of technological media is still very minimal and only displays power points. The results of interviews with lecturers said that in order to provide technology-based media, lecturers had time constraints to create the media. This is because the workload of lecturers is already busy, so the time to create media is very minimal. Plus, making technology-based media requires a lot of time and the skills to master technology. Lecturers must prepare materials, administration and lecture tools for the following day, so that making media is difficult to realize. The lack of media innovation in lectures gives researchers ideas to research related to technology-based lectures which are expected to attract students' attention and focus.

Learning that utilizes online platforms can make it easier for teachers to explain the material and students will be more motivated in learning because the material provided is more attractive in appearance (Atmojo & Nugroho, 2020; Oliveira et al., 2020). Among the use of media several models that can be used can be a quiz. One media that can be used is online quizzes. Thanks to the presence of sophisticated technology, many applications can facilitate this online quiz activity. It is hoped that online quizzes will reduce the lecturer's task of correcting and providing student assessments. Using online quizzes, lecturers do not need to correct and provide assessments manually, because the assessment is done automatically by the system (Berrais, 2015; Mardiana, 2020). The benefits of online quizzes are not only limited to that, but also have a very positive impact on the lecture process and classroom learning.

In university lectures, the use of online quizzes can be a learning aid. Because quizzes are online based, their use using the internet can have a wide reach. The use of online game-based media in higher education has received a positive response from students. Many students state that the use of online games in learning can integrate games and learning (Chapman & Rich, 2018; Karim et al., 2018). Students are also very supportive of doing game-based learning which will create interesting learning. With the existence of online learning platforms/applications, learning activities can be done anywhere, anytime and however. Learning is no longer a boring activity in the classroom with learning resources in the form of books (Deris & Shukor, 2019; Meletiou-Mavrotheris et al., 2020). Thus, learning indirectly plays an important role in improving the quality of human resources (HR) without requiring a specific time or location.

A sophisticated application where teachers and students both have access to various online quizzes, one of which is the wordwall application. Wordwall offers free types of assistance for teachers to develop learning assessment media. Technology-based wordwall media which provides game and quiz features which can be used as evaluation media (Hidayaty et al., 2022; Khairunisa, 2021). In fact, the use of online quizzes at the postgraduate program level has received a positive response in its use (Mohamad et al., 2020; Savitri, 2021). Teachers only need to enter questions and answer keys for one of the various types of games that have been provided as templates. Wordwall is an easy-to-use application and there are several options for implementing the questions. Wordwall is an educational online site in which there are various kinds of templates (Turdaliyevna & Berdiyrovna, 2023). Wordwall makes it easy for its users, this is because wordwall already has a wide variety of templates. In addition, wordwall is easy to operate online, so educators can easily access the wordwall application at any time. Wordwall itself is an application that is

not paid or free. To create an interesting learning activity that can motivate students, it can be realized by implementing this media.

Using educational games as learning evaluation research on how to use Kahoot! As a learning medium to improve student study results. The objects of the research were students from the Muhammadiyah University of Mataram class of 2019. This research resulted in the discovery that learning by utilizing Kahoot! more improved as seen from the results of student studies compared to using power point media (Andari, 2020). Other research also explains that using wordwalls as an online quiz medium can increase the spirit of competition in getting the highest quiz scores (Loiola & Mourão, 2021). This is because in doing online quizzes the scores are sorted from the highest to the lowest score. In addition, there is previous research on the use of Wordwall as a support for learning media. The aim to be achieved through this research is to determine the impact of using Wordwall in increasing the mastery of Arabic vocabulary among MI Al Ba'ats Class III students. The research results show that students' Arabic vocabulary increased after educators used Wordwall as a learning medium (Azizah, 2020).

The importance of implementing wordwalls in this era can help provide innovation in the world of education. Wordwall is used as a supporting tool in delivering learning material to students (Al-qonita et al., 2022; Arimbawa, 2021). This can prevent students from getting bored and foster feelings of enjoyment in learning. Sometimes learning in class still uses the lecture method, so learning is less varied. Utilizing wordwalls can increase student enthusiasm, motivation and learning outcomes at school. So it is important to implement wordwalls in classroom learning.

With the basic ideas above, researchers are interested in researching the use of wordwall interactive media as quizzes. use wordwall media as a quiz. Researchers hope to contribute to innovative and interesting learning by utilizing wordwall interactive media. The data obtained from this study are expected to provide consideration for teachers and lecturers in preparing lesson plans. Perception provides an overview and view of something that needs to be done. Perception can also give one's belief in certain things (Al Hashimi et al., 2022; Pandy et al., 2021). What differentiates this research from previous research is that the focus of research conducted in previous research emphasized more on the benefits and learning outcomes of using wordwall media. Meanwhile, this research focuses on the perceptions of PGSD students, where the results of the analysis can be used as a reference by teachers and lecturers in implementing technology-based learning both in school and college environments. This research aims to analyze the perceptions of PGSD (Primary School Teacher Education) students at Yogyakarta State University regarding the use of wordwall interactive media as a quiz.

2. METHOD

This research is a type of descriptive quantitative research because it will provide an overview and analysis of the use of wordwall interactive media (Seixas et al., 2018). The aim of this research is to analyze the perceptions of PGSD UNY students regarding the wordwall application as an interactive media in the form of a quiz. By using a descriptive quantitative approach, the researcher only focused on PGSD UNY students regarding the use of wordwall interactive media as a quiz. The research method used in this study is the survey method. The research subjects were students of the PGSD class C study program, semester 4 of the 2022/2023 academic year with a total of 50 students. The research instrument used a questionnaire which was distributed to students using Google Form. The questionnaire consists of 19 questions with 2 aspects studied including the benefits of wordwalls and the involvement of wordwalls in learning. To find out the results of students' assessments of the use of interactive wordwall media as a quiz using a Likert scale measurement scale of 1 to 5 as show in Table 1.

Table 1. Likert Scale

Scale	Category
5	Strongly Agree (SA)
4	Agree (A)
3	Enough (E)
2	Disagree (D)
1	Strongly Disagree (SD)

Data was collected by researchers using a questionnaire instrument to analyze the perceptions of PGSD UNY students regarding the use of wordwall interactive media as a quiz. The following is the instrument grid from the questionnaire distributed to students as show in Table 2.

Table 2. Questionnaire Instrument Grid

Aspect	Indicator	No
Benefits of wordwall	Focus	1
	Motivation	2
	Feedback	3
	Comprehension	4,5,6
	Challenge	7
Engagement in learning	Control	8
	Deep engagement	9,10,11,12
	Interest	13,14,15
	Goals	16,17,18,19

After the data is collected, data analysis is then carried out. In this research, descriptive quantitative data analysis is used as a data analysis method. Likert scale data was used to analyze data collected from student questionnaire answers. The perceptions of PGSD UNY students regarding the use of wordwall interactive media as a quiz can then be known using this method. The next step after calculating the average value is then converted into a classification of student perceptions so that students' perceptions of using interactive media wordwall as a quiz can be known. After carrying out calculations, the student perception classification table was obtained with an interval distance of 0.8 as show in [Table 3](#).

Table 3. Classification of Student Perceptions

Average Value Range	Category
>4.20 s/d 5.00	Strongly Agree (SA)
>3.40 s/d 4.20	Agree (A)
>2.60 s/d 3.40	Enough (E)
>1.80 s/d 2.60	Disagree (D)
1.00 s/d 1.80	Strongly Disagree (SD)

Based on [Table 3](#), it can be said that you agree if the scores from the two aspects in the questionnaire distributed to students match the classification table with a score range of 3.41-5.00. If the value obtained is in accordance with the classification table with a value range of 1.00-3.40, then the student's perception does not agree.

3. RESULT AND DISCUSSION

Result

The subjects of this study were 50 Class C PGSD UNY students who were taking the Elementary Social Sciences Education course, consisting of 9 male students or 18% of the total number of students and 41 female students or 82% of the total number of students. This research is descriptive quantitative type. The purpose of this research was to describe the perceptions of PGSD UNY students on the use of wordwall interactive media as quizzes. So that it is expected to be able to bring up new innovations in the lecture process in class. Data processing is done by converting the quantitative data obtained from the distribution of questionnaires with a Likert scale of 1-5 into qualitative data according to the student perception classification table. Then conclusions can be drawn from the processing of qualitative data obtained from the student perception classification table.

The results of measuring the level of perception of PGSD UNY students regarding the use of wordwall interactive media as a quiz can be seen from [Figure 1](#). Based on [Figure 1](#), the results of the perceptions of PGSD UNY students regarding the use of wordwall interactive media as a quiz show. Judging from the pie chart shown, it shows that the level of perception of PGSD UNY students towards the use of wordwall interactive media is in the "Agree" category with a percentage of 47.65%. The results obtained were based on an assessment of the aspects of the benefits of wordwalls and the involvement of wordwalls in learning which were distributed to students through questionnaires. It is hoped that the results of this study can become a reference for tertiary institutions to implement the use of wordwall interactive media in student assessments. This is supported by the widespread use of online media in learning as show in [Figure 1](#).

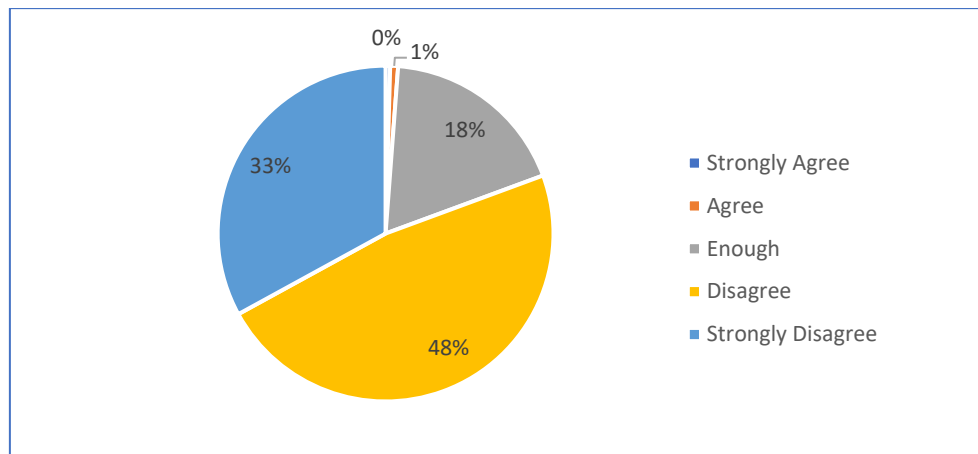


Figure 1. UNY PGSD Student Perception Diagram

The objects examined in this study include 2 aspects, namely the benefits of wordwalls and involvement in learning. Of the 2 aspects studied, there were 19 questions to find out student perceptions. These questions were distributed to students using a Google form and each question used a Likert scale answer of 1 to 5. From the results of distributing the questionnaire, it was discovered that the 50 students who filled out the questionnaire showed that their results were in the range of an average value of 4 and 5 in terms of the benefits of wordwall. It can be concluded that the benefits of wordwalls in learning have a big influence on providing learning innovation. Meanwhile, in the aspect of involvement in learning, the average score range was 4 and 5. So it can be concluded that wordwall involvement in learning has a positive impact on students' development in learning. The presentation of the percentage of results from distributing questionnaires on the aspects of wordwall benefits and involvement in learning is presented in Figure 2.

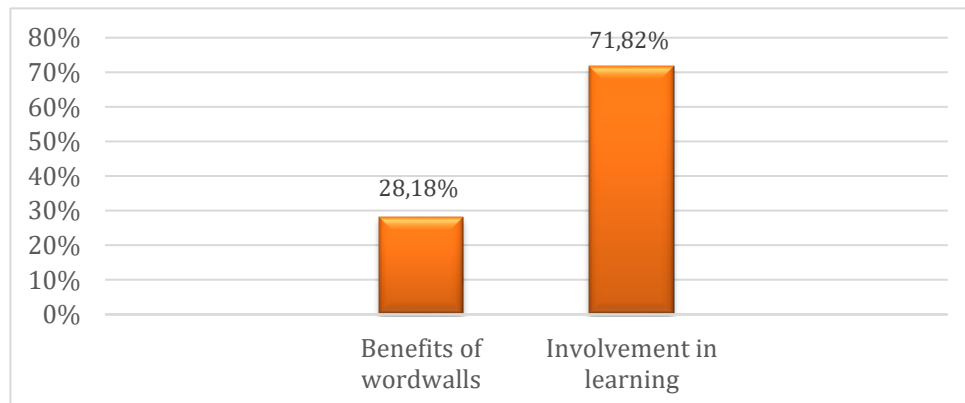


Figure 2. Aspect Percentage Diagram

Based on Figure 2 show the results of distributing student perception questionnaires, it can be seen that the aspect of wordwall benefits scored 4.01 included in the "agree" classification and the involvement aspect in learning scored 4.17 included in the "agree" classification. Based on the questionnaire distributed to students regarding the perceptions of PGSD UNY students on the use of wordwall interactive media as quizzes, it can be concluded that the use of wordwall interactive media as quizzes agreed to be used in the lecture process. This is because by utilizing the wordwall as an interactive media quiz, lectures are more interesting and don't seem monotonous. Taking quizzes will also make students more challenged to compete, because after finishing taking the quiz a ranking will appear automatically.

Discussion

Based on the results of the data analysis above, the results show that the level of perception of PGSD students regarding the use of wordwall as an interactive media for quizzes is in the agree category. These results are obtained from indicators of the benefits of wordwalls and the involvement of wordwalls in learning. Students gave a positive response to the use of wordwall as an interactive quiz media. This shows that students are able to adapt to developments in science and technology in the 4.0 era. So that learning media can be applied to the learning process in the classroom.

This is in line with research conducted by previous researchers regarding student perceptions of the use of interactive media (Wao et al., 2022). The research results revealed that students responded positively to the use of interactive media in learning. The aspects measured in the research include motivational, usability and cognitive aspects. Previous researchers also explained that the implementation of interactive media in schools is still not optimal because there are still obstacles regarding the need for technological facilities and infrastructure in schools (Ferrer & Corres, 2022). So the generalization between this research and previous research is that there are several factors that influence perception. These factors include internal factors and external factors. Internal factors lie within the student, while external factors come from the lecturer and infrastructure to support the implementation of interactive media (Chandrasiri & Weerakoon, 2022; Widyaningsih et al., 2020). Internal factors can influence student motivation in operating interactive media so that students are less able to operate interactive media. It can be concluded that the use of interactive media can improve student learning outcomes.

The application of wordwalls in the world of education is very effective in improving learning outcomes in class. Another benefit of using wordwall learning media is that it can increase interest, motivation and effectiveness of learning in class (Grace et al., 2022; Pradani, 2022). So that learning attracts more students' attention and makes learning more creative and innovative. If we talk about creativity and innovation, of course it cannot be separated from the rapid digital development in the current era. One of the positive impacts of digital developments in the world of education today is game-based learning. Game-based learning is combining learning material with games. The use of wordwalls can help students to be more involved and play an active role in interactive learning (Firdiansyah & Pamungkas, 2021; Mazelin et al., 2022). Wordwall can also increase student independence in working on questions, because there are instructions that must be followed when working on questions. The games presented by wordwall are very interesting because they present problems that exist in the real world and are included in the game.

Games among young people are no stranger, they can even be said to be integrated into everyday life. Gaming also has an impact on the education sector. Often found in the community, children are lazy to learn because they prefer to play games (Adam et al., 2022; Baculima-Suárez & Erazo-Álvarez, 2022). Along with the development of the times, games are used as learning media or what is often called game based learning. So, with the wordwall application which is used as an interactive medium as an online quiz, it can stimulate motivation and enthusiasm for learning in children. Then it can improve learning outcomes. Game-based learning is easy to use, in its creation a template is provided so that the creator only enters images and writing (Anggraini et al., 2020; Çil, 2021).

Of the many examples of interactive media that are often used in learning, one of them is wordwall. Wordwall is an interactive media that can be used as a learning resource and learning media, and an instrument for assessing online-based student learning outcomes. Using Wordwall as a learning medium can increase motivation and attract students' attention (Sari & Yarza, 2021; Sinaga & Soesanto, 2022). The advantage of a wordwall is that there are already templates that educators can use directly. Wordwall application that is free and easy to access. Games that have been made can later be shared via WA, classroom, email etc. Wordwall also has a feature to convert games that have been made into PDF format. Many types of games can be used on wordwalls such as quizzes and crosswords. There are also other types of games such as; Random Wheel, Find The Match, True or False, Random Cards, Match Up, Group Short, Whack a mole, Missing Word, Hangman, Open the Box, Labeled diagram, Anagram, Ballon Pop, Wordsearch, Unjumble, and Gameshow Quiz (Kurniawati et al., 2020; Sun'iyah, 2020). Research by previous study regarding prospective teachers' perceptions of online learning using wordwall interactive media in Poland and Italy obtained results of a high level of perception regarding the use of wordwalls (Agusti & Aslam, 2022).

There is previous research which explains that research results from using wordwalls as quizzes can increase motivation and learning achievement (Arimbawa, 2021). Learning motivation has an important role in learning, this is because learning motivation can make students participate in learning in a way that is conducive to achieving a learning goal. On the other hand, the use of interactive media in teaching and learning activities can improve student learning outcomes (Bachry et al., 2018; Irawati et al., 2021; Isnaeni & Hildayah, 2020). The understanding of learning outcomes is a change in the behavior of students. This is strengthened by research conducted that explaining that the use of wordwall media as an online quiz has an influence on the learning outcomes of fourth grade elementary school students (Sukma & Handayani, 2022). Even the use of wordwall interactive media produces wordwall interactive media that can improve cursive writing skills for deaf students. The results of research on wordwall quiz media for undergraduate students in Russia can be concluded that students are more interested in using wordwall as a quiz medium than using other online quiz media (Gudkova & Prokhorov, 2022). These results are motivated by the wordwall media providing many interesting and challenging features. Competition to get maximum scores and rankings is the main attraction for students.

The contribution of the research carried out can provide views on teachers or lecturers in preparing methods, models and learning strategies in the classroom. So that learning planning in class is well organized. The implications obtained from this research can provide an overview and views regarding student perceptions of the use of interactive media quizzes, later teachers and lecturers in providing assessments to students can implement this interactive media. This research has the limitation of only researching certain subjects and also only researching one type of interactive media in the form of wordwalls. Suggestions for future researchers are expected to be able to conduct research not only on one interactive media, but also examine students' perceptions of several existing interactive media.

4. CONCLUSION

PGSD UNY students' perceptions of the use of wordwall interactive media as a quiz media have a significant influence on learning activities. This is obtained by the level of student perception in the category of agreeing to the use of wordwall interactive media. So that it can increase motivation and enthusiasm for student learning which has an impact on learning outcomes that have increased. Besides that, the use of wordwall interactive media is easy to operate, free of charge and able to make learning not monotonous. Educators are expected to be able to take advantage of the wordwall application as an interesting learning alternative. Educators can take action to improve their mastery of learning technology by participating in various activities such as seminars and workshops related to creating technology-based interactive media.

5. REFERENCES

- Adam, A., Hamid, I., Abdullah, P. W., & Diva, F. (2022). Pengaruh Gadget Terhadap Ahklak Dan Moral Siswa Di Sekolah Dasar Negeri 47 Kota Ternate. *Juanga : Jurnal Agama Dan Ilmu Pengetahuan*, 8(1), 29–47. <https://doi.org/10.59115/juanga.v8i1.52>.
- Agusti, N. M., & Aslam, A. (2022). Efektivitas media pembelajaran aplikasi wordwall terhadap hasil belajar ipa siswa sekolah dasar. *Jurnal Basicedu*, 6(4), 5794–5800. <https://doi.org/10.31004/basicedu.v6i4.3053>.
- Al-qonita, A. S., Aliputri, N. U., Kinasih, P. P., & Semarang, U. N. (2022). Literature Review : Efektivitas Aplikasi Wordwall Pada Pembelajaran Matematika. *Prosiding Seminar Nasional Pendidikan Matematika IV (Sandika IV)*, 4(1), 155–161. <https://proceeding.unikal.ac.id/index.php/sandika/article/view/1184>.
- Al Hashimi, S., Alamarat, Y., & Zaki, Y. (2022). Students' perceptions of online assessment, feedback practices, and challenges. *International Journal of Evaluation and Research in Education (IJERE)*, 11(4), 1939. <https://doi.org/10.11591/ijere.v11i4.22753>.
- Alfian, A. N., Putra, M. Y., Arifin, R. W., Barokah, A., Safei, A., & Julian, N. (2022). Pemanfaatan Media Pembelajaran Audio Visual berbasis Aplikasi Canva. *Jurnal Pengabdian Kepada Masyarakat UBJ*, 5(1), 75–84. <https://doi.org/10.31599/jabdima.v5i1.986>.
- Andari, R. (2020). Pemanfaatan Media Pembelajaran Berbasis Game Edukasi Kahoot! Pada Pembelajaran Fisika. *ORBITA: Jurnal Kajian, Inovasi Dan Aplikasi Pendidikan Fisika*, 6(1), 135. <https://doi.org/10.31764/orbita.v6i1.2069>.
- Anggraini, D., Khumaedi, M., & Widowati, T. (2020). Validity and reliability contents of independence assessment instruments of basic beauty students for class X SMK. *Journal of Research and Educational Research Evaluation*, 9(1), 40–46. <https://doi.org/10.15294/jere.v9i1.42558>.
- Arimbawa, I. G. P. A. (2021). Penerapan Word Wall Game Quis Berpadukan Classroom Untuk Meningkatkan Motivasi dan Prestasi Belajar Biologi. *Indonesian Journal of Educational Development*, 2(2), 324–332. <https://doi.org/10.5281/zenodo.5244716>.
- Atmojo, A. E. P., & Nugroho, A. (2020). EFL Classes Must Go Online! Teaching Activities and Challenges during COVID-19 Pandemic in Indonesia. *Register Journal*, 13(1), 49–76. <https://doi.org/10.18326/rgt.v13i1.49-76>.
- Azizah, H. N. (2020). Peningkatan Penguasaan Kosakata Bahasa Arab Melalui Penggunaan Media Word Wall. *Alsuniyat*, 1(1), 1–16. <https://doi.org/10.17509/alsuniyat.v1i1.24212>.
- Bachry, H., Yuwono, J., & Utami, Y. T. (2018). Penggunaan Media Word Wall Untuk Meningkatkan Kemampuan Menulis Tegak Bersambung (Studi Single Subject Research Pada Siswa Tunarungu Kelas III Di SKh Negeri 02 Kota Serang Banten). *Jurnal UNIK*, 3(1), 1–9. <https://doi.org/10.30870/unik.v3i1.5301>.
- Baculima-Suárez, J. A., & Erazo-Álvarez, C. A. (2022). App gamificada para el aprendizaje activo de ecuaciones lineales. *Cienciamatria*, 8(3), 685–712. <https://doi.org/10.35381/cm.v8i3.799>.
- Berrais, A. (2015). Using online Moodle quizzes to support the teaching of mathematics to foundation

- engineering students. QScience Proceedings (Engineering Leaders Conference). <https://doi.org/10.5339/qproc.2015.elc2014.8>.
- Chandrasiri, N. R., & Weerakoon, B. S. (2022). Online learning during the COVID-19 pandemic: Perceptions of allied health sciences undergraduates. *Radiography*, 28(2), 545–549. <https://doi.org/10.1016/j.radi.2021.11.008>.
- Chapman, J. R., & Rich, P. J. (2018). Does educational gamification improve students' motivation? If so, which game elements work best? *Journal of Education for Business*, 93(7), 315–322. <https://doi.org/10.1080/08832323.2018.1490687>
- Çil, E. (2021). The Effect of Using Wordwall.net in Increasing Vocabulary Knowledge of 5th Grade EFL Students. *Language Education & Technology (LET Journal)*, 1(1), 21–28. <http://www.langedutech.com/letjournal/index.php/let/article/view/16>.
- Deris, F. D., & Shukor, N. S. A. (2019). Vocabulary learning through mobile apps: A phenomenological inquiry of student acceptance and desired apps features. *International Journal of Interactive Mobile Technologies*, 13(7), 129–140. <https://doi.org/10.3991/ijim.v13i07.10845>.
- Ferrer, J. C., & Corres, J. C. (2022). Online learning attitudes and basic computer literacy of teacher education students. *Premiere Educandum: Jurnal Pendidikan Dasar Dan Pembelajaran*, 12(1), 106. <https://doi.org/10.25273/pe.v12i1.12883>.
- Firdiansyah, Y., & Pamungkas, H. P. (2021). Analisis Persepsi Mahasiswa Terhadap Penggunaan Kahoot Sebagai Media Evaluasi Pembelajaran Pada Mata Kuliah Teori Ekonomi Moneter. *JEKPEND: Jurnal Ekonomi Dan Pendidikan*, 4(1), 1. <https://doi.org/10.26858/jekpend.v4i1.15549>.
- Grace, D., Matt, F., Banseng, S., Gerry, D., & Handrianto, C. (2022). Available online at globets.org/journal International Journal of Education. *Technology and Science*, 2(3), 279–287. <https://globets.org/journal/index.php/IJETS/article/view/56>.
- Gudkova, L. V., & Prokhorov, N. N. (2022). Using online tools Quizlet and WordWall to form foreign lexical competence of undergraduate students. *Vestnik of Minin University*, 10(3). <https://doi.org/10.26795/2307-1281-2022-10-3-3>.
- Hidayaty, A., Qurbaniah, M., & Setiadi, A. E. (2022). Pengaruh Media Wordwall Terhadap Minat Dan Hasil Belajar The Influence of Wordwall on Students Interests and Learning Outcomes. 15(10), 1–10. <https://doi.org/10.21831/jpipfip.v15i2.51691>.
- Irawati, I., Ilhamdi, M. L., & Nasruddin, N. (2021). Pengaruh Gaya Belajar Terhadap Hasil Belajar IPA. *Jurnal Pijar Mipa*, 16(1), 44–48. <https://doi.org/10.29303/jpm.v16i1.2202>.
- Irving, K. E. (2006). The impact of technology on the 21st century. *Teaching Science in the 21st Century, March 1981*, 3–19. <https://cmapsconverted.ihmc.us/rid=1JVHR9TKT-1VMCFZP-SHW/21stcentury.pdf>.
- Isnaeni, N., & Hildayah, D. (2020). Media Pembelajaran Dalam Pembentukan Interaksi Belajar Siswa. *Jurnal Syntax Transformation*, 1(5). <https://doi.org/10.46799/jst.v1i5.69>.
- Karim, R. A., Abu, A. G., Airil Haimi Mohd Adnan, & Astri Dwi Jayanti Suhandoko. (2018). The use of mobile technology in promoting education 4.0 for higher education. *Advanced Journal of Technical and Vocational Education*, 2(3), 34–39. <https://doi.org/10.26666/rmp.ajtve.2018.3.6>.
- Kessler, G. (2018). Technology and the future of language teaching. *Foreign Language Annals*, 51(1), 205–218. <https://doi.org/10.1111/flan.12318>.
- Khairunisa, Y. (2021). Pemanfaatan fitur gamifikasi daring maze chase-wordwall sebagai media pembelajaran digital mata kuliah statistika dan probabilitas. *MEDIASI*, 2(1), 41–47. <https://doi.org/https://doi.org/10.46961/mediasi.v2i1.254>.
- Kuncoro, K. S., & Arigiyati, T. A. (2020). Development of 3N-Oriented TPACK Mathematical Computing E-Modules. *JIPM (Jurnal Ilmiah Pendidikan Matematika)*, 8(2), 122. <https://doi.org/10.25273/jipm.v8i2.5833>.
- Kurniawati, D., Taufiq, M., Kasiyun, S., & Nauf'ah, N. (2020). Meta-Analysis of Teams Games Tournament Learning Model with Spinning Wheel Media-Based on Local Wisdom Toward Students' Learning Outcomes. *Journal of Education Research and Evaluation*, 4(3), 296. <https://doi.org/10.23887/jere.v4i3.28183>.
- Loiola, B. de A., & Mourão, C. (2021). Jogo didático: a utilização do Wordwall® como abordagem metodológica para contribuição no processo de ensino aprendizagem. *Revista Cocar*, 15(33), 1–11. <https://periodicos.uepa.br/index.php/cocar/article/view/4080>.
- Lutviana, R., & Mafulah, S. (2021). The use of slang words in online learning context of EFL class. *EnJourMe (English Journal of Merdeka): Culture, Language, and Teaching of English*, 6(1), 55–62. <https://doi.org/10.26905/enjourme.v6i1.6118>.
- Mardiana, H. (2020). Lecturers' Adaptability to Technological Change and Its Impact on The Teaching Process. *JPI (Jurnal Pendidikan Indonesia)*, 9(2), 275–289. <https://doi.org/10.23887/jpi->

- [undiksha.v9i2.24595](https://doi.org/10.24595/undiksha.v9i2.24595).
- Mazelin, N., Maniam, M., Jeyaraja, S. S. B., Ng, M. M., Xiaoqi, Z., & Jingjing, Z. (2022). Using Wordwall to Improve Students' Engagement in ESL Classroom. *International Journal of Asian Social Science*, 12(8), 273–280. <https://doi.org/10.55493/5007.v12i8.4558>.
- Meletiyou-Mavrotheris, M., Carrilho, A. R., Charalambous, C., Mavrou, K., & Christou, C. (2020). Teacher Training for 'Augmented Reading': The Living Book Approach and Initial Results. *Education Sciences*, 10(5), 1–25. <https://doi.org/10.3390/educsci10050144>.
- Min, H., & Nasir, M. K. M. (2020). Self-Regulated Learning In A Massive Open Online Course: A Review of Literature. *European Journal of Interactive Multimedia and Education*, 1(2), e02007. <https://doi.org/10.30935/ejimed/8403>.
- Mohamad, M., Arif, F. K. M., Alias, B. S., & Yunus, M. M. (2020). Online game-based formative assessment: Distant learners post graduate students' challenges towards quizizz. *International Journal of Scientific and Technology Research*, 9(4), 994–1000. <https://www.researchgate.net/profile/links/60c30050299bf1949f499c4a/Online-game-based-formative-assessment-Di>.
- Nasir, M. K. M. (2020). The Influence of Social Presence on Students' Satisfaction toward Online Course. *Open Praxis*, 12(4), 485. <https://doi.org/10.5944/openpraxis.12.4.1141>.
- Oliveira, A. R., Alencar, T. B., Oliveira, C. R., Silva, J. C. e., & Carvalho, J. B. (2020). a Utilização Do Jogo Didático "Dominó Vegetal" Como Instrumento Alternativo Para O Ensino De Briófitas E Pteridófitas Na Disciplina De Ciências (Relato De Experiência). *Brazilian Journal of Development*, 6(8), 54327–54336. <https://doi.org/10.34117/bjdv6n8-010>.
- Pendy, A., Suryani, L., & Mbagho, H. M. (2021). Analisis Keefektifan Pembelajaran Online di Masa Pandemi Covid-19 pada Mahasiswa Pendidikan Matematika. *Edukatif: Jurnal Ilmu Pendidikan*, 4(1), 19–27. <https://doi.org/10.31004/edukatif.v4i1.1661>.
- Pradani, T. G. (2022). Penggunaan media pembelajaran wordwall untuk meningkatkan minat dan motivasi belajar siswa pada pembelajaran IPA di Sekolah Dasar. *Educenter*, 1(5), 452–457. <https://doi.org/10.55904/educenter.v1i5.162>.
- Samerkhanova, E. K., & Imzharova, Z. U. (2018). Organizational and pedagogical conditions for forming the readiness of future teachers for project activities in the context of Digitalization of education. *Vestnik of Minin University*, 6(2). <https://doi.org/10.26795/2307-1281-2018-6-2-2>.
- Sari, P. M., & Yarza, H. N. (2021). Pelatihan Penggunaan Aplikasi Quizizz Dan Wordwall Pada Pembelajaran Ipa Bagi Guru-Guru Sdit Al-Kahfi. *SELAPARANG Jurnal Pengabdian Masyarakat Berkemajuan*, 4(2), 195. <https://doi.org/10.31764/jpmb.v4i2.4112>.
- Savitri, A. (2021). Pemanfaatan Game Edukasi Wordwall Sebagai Evaluasi Pembelajaran Bahasa Indonesia Secara Daring Di Perguruan Tinggi. *ISoLEC Proceedings*, 5(1), 159–166. <http://isolec.um.ac.id/proceeding/index.php/issn/article/view/95>.
- Seixas, B. V., Smith, N., & Mitton, C. (2018). The qualitative descriptive approach in international comparative studies: Using online qualitative surveys. *International Journal of Health Policy and Management*, 7(9), 778–781. <https://doi.org/10.15171/ijhpm.2017.142>.
- Sinaga, Y., & Soesanto, R. (2022). Upaya Membangun Kedisiplinan melalui Media Pembelajaran Wordwall dalam Pembelajaran Daring pada Siswa Sekolah Dasar. *Jurnal Basicedu*, 6, 1845–1857. <https://doi.org/10.31004/basicedu.v6i2.1617>.
- Sukma, K., & Handayani, T. (2022). Pengaruh Penggunaan Media Interaktif Berbasis Wordwall Quiz Terhadap Hasil Belajar Ipa Di Sekolah Dasar. *Jurnal Cakrawala Pendas*, 8(4), 1020–1028. <https://doi.org/10.31949/jcp.v8i4.2767>.
- Sun'iyah, S. L. (2020). Media pembelajaran daring berorientasi evaluasi pembelajaran pada mata pelajaran PAI ditingkat 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.
- Turdaliyevna, O., & Berdiyrovna, I. (2023). Implementation Of Kahoot And Wordwall To Improve Vocabulary Aspect In Intermediate Level In FLT. *Journal of Integrated Education and Research*, 2(1), 98–105. <https://ojs.rmasav.com/index.php/ojs/article/view/743>.
- Wao, Y. P., Priska, M., & Peni, N. (2022). Persepsi Mahasiswa Terhadap Penggunaan Media Pembelajaran Interaktif Classpoint Pada Mata Kuliah Zoologi Invertebrata. *Jurnal Inovasi Pembelajaran Biologi*, 3(2), 76–87. <https://doi.org/10.26740/jipb.v3n2.p76-87>.
- Widyaningsih, S. W., Yusuf, I., Prasetyo, Z. K., & Istiyono, E. (2020). Online Interactive Multimedia Oriented to HOTS through E-Learning on Physics Material about Electrical Circuit. *JPI (Jurnal Pendidikan Indonesia)*, 9(1), 1. <https://doi.org/10.23887/jpi-undiksha.v9i1.17667>.
- Yilmaz, R. (2017). Exploring the role of e-learning readiness on student satisfaction and motivation in flipped classroom. *Computers in Human Behavior*, 70, 251–260. <https://doi.org/10.1016/j.chb.2016.12.085>.