

Teachers' Perceptions of the Kahoot Use in Learning of Pancasila and Citizenship Education (PPKN) in Public Elementary School

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Abstract

This study contains issues related to 1) teachers' perceptions of the use of the Kahoot application in Civics learning at SDN Depok 1, 2) what are the advantages and disadvantages of teachers in using the Kahoot application in Civics learning, 3) how the application of Kahoot media in Civics subjects. In this study, researchers conducted surveys or interviews with teachers at SDN Depok 1 to see perceptions of using Kahoot in Civics learning. This study aims to analyze teacher perceptions of using Kahoot in Civics learning. This study uses a qualitative research approach and case study method. Data collection techniques with observation, interviews, and documentation. This research was conducted at the SDN Yogyakarta area, namely Depok 1 State Elementary School, with 28 students, 12 boys and 16 girls, and 1 class teacher. The results showed 1) the teacher's perception, in this case, is evident from the indicators of a teacher in getting a response, description, and understanding obtained when using Kahoot media in learning, 2) the advantages of Kahoot media are that it makes it easier for teachers to evaluate learning, makes it easier to see the score, while the disadvantages of using the Kahoot application according to teacher perceptions are that it requires high internet access, 3) Application of Kahoot media in Civics subjects.

Keywords: Civics Learning; Elementary School; Kahoot Application.

Abstrak

Penelitian ini memuat persoalan terkait 1) bagaimana persepsi guru terhadap penggunaan aplikasi Kahoot dalam pembelajaran PPKn di SDN Depok 1, 2) apa saja kelebihan dan kekurangan yang guru dalam menggunakan aplikasi Kahoot dalam pembelajaran PPKn, 3) bagaimana penerapan media Kahoot dalam mata pelajaran PPKn. Dalam penelitian ini peneliti melakukan survei atau wawancara dengan guru di SDN Depok 1 untuk melihat persepsi terhadap penggunaan Kahoot dalam pembelajaran PPKn. Penelitian ini bertujuan guna menganalisis persepsi guru penggunaan Kahoot dalam pembelajaran PPKn. Penelitian ini menggunakan pendekatan penelitian kualitatif dan metode studi kasus. Teknik pengumpulan data dengan observasi, wawancara, dokumentasi. Penelitian ini dilakukan di SDN daerah Yogyakarta yaitu SD Negeri Depok 1 dengan partisipan 28 siswa terdiri dari 12 laki-laki, dan 16 perempuan dan 1 orang guru kelas. Hasil penelitian menunjukkan 1) persepsi guru dalam hal ini terbukti dari indikator seorang guru dalam mendapat tanggapan, gambaran serta pemahaman yang diperoleh saat menggunakan media *Kahoot* dalam pembelajaran, 2) kelebihan dari media *Kahoot* adalah memudahkan guru saat mengevaluasi pembelajaran, memudahkan saat melihat perolehan skor, sedangkan kekurangan penggunaan aplikasi *Kahoot* menurut persepsi guru yaitu memerlukan akses internet yang cukup tinggi, 3) Penerapan media *Kahoot* dalam mata pelajaran PPKn.

Kata Kunci: Aplikasi Kahoot; Pembelajaran PPKn; Sekolah Dasar.

INTRODUCTION

This study examines the use of technology in Civics learning. This research gap arises because most studies focus more on the use of technology in other subjects or at higher education levels. There is a gap in understanding teachers' perceptions of the use of technology: although technology increasingly penetrates the classroom, not many studies have explored teachers' perceptions towards using technology, such as Kahoot, in the context of civics. Although the Kahoot application has become popular in learning, there is still a lack of understanding of teachers' perceptions of its use. Therefore, this researcher wants to analyze teachers' perceptions of using the Kahoot application in Civics learning at Depok 1 State Elementary School and evaluate the application of Kahoot in Civics subjects.

The use of technology in learning has become a significant concern in improving the quality of education, including in the subject of Pancasila and Citizenship Education (PPKn), so a problem was found that not all teachers use the Kahoot application the suitability of the content in increasing understanding of the subject, then the need to ensure that the Kahoot application can be accessed and utilized by all students, limited access to technology. In addition, consideration of the effectiveness of the Kahoot application in the context of Civics learning in elementary schools and how the interaction generated by the application can develop students' deep understanding of Civics materials. Civics is a subject that contains materials that aim to make students able to apply an educated, disciplined, and independent spirit, like to defend and uphold (Human Rights Human Rights). The subject of Civics is a subject that has various points of view. Civics can be interpreted as democracy education, values, and moral education (Nasution et al., 2023).

The role of Civics at the elementary school level studies the scope, including the material of Pancasila, Unity in Diversity, State Foundation, (Constitution of the Republic of Indonesia) Constitution of the Republic of Indonesia, life in society, nation, and state. In the process of delivering the material in Civics, the teachers must be extra so that students can understand and remember the material that the teacher has delivered. Civics education at the elementary school level is a stage of development where students know the skills to be useful for students who study it because in the life of the nation and state as a prefix to face the social environment. Pancasila and Citizenship Education is learning that generally

provides something that only focuses on forming students with character and following the values of the Indonesian people. (Sulistiawati et al., 2023).

Using Kahoot in learning is a fun activity and stimulates students to learn. When students use Kahoot, it will provide opportunities for students to interact further with peers. Therefore, a learning model that integrates education with technology is needed. Kahoot benefits students and teachers in delivering learning, with Kahoot providing student involvement, which aims to provide fun and innovative learning. So, teachers do not only use the lecture method for learning (Priyambodo et al., 2022). If done well, Kahoot in learning will benefit students and teachers because the Kahoot application has a fun and innovative appearance that provides feedback that pleases learning.

Other studies on the use of Kahoot media conducted by Mukhlis et al., obtained positive results associated with the use of Kahoot media. The results showed that learning using Kahoot media improved from the posttest scores. The average value of the pretest is 65.8, while the value of the posttest results is 90.08 (Mukhlis et al., 2020). So, it can be concluded that using Kahoot media in teaching and learning can improve student learning at SMKS Darul Ihsan Aceh Besar. Firdiansyah and Pamungkas stated that using Kahoot as a learning evaluation media received a positive response from students. That is because Kahoot is easy to use, attractive, and transparent in displaying scores, so students are increasingly motivated to learn to get high scores (Firdiansyah & Pamungkas, 2021). With the research conducted by Yhadi and Purwa, it can be concluded that the Kahoot application has a good impact on students who use it in terms of benefits. In other research conducted by Fadly and Sari, the study showed that the results of student perceptions of the Kahoot application were 71.1 and in the quizizz application were 69.5 (Fadly & Sari, 2022). It can be concluded that students prefer learning in the form of using Kahoot media than using media with quizizz.

In other research, Andarusni Alfansyur and Mariyani show that students are more enthusiastic about learning the needs and materials if they use the media. One is Kahoot, an ICT-based learning media that relies on a network and gadgets. (Alfansyur & Mariyani, 2019). The results show that using Kahoot can determine the accuracy of learning media selection, increasing student motivation in civics learning. In other research, Sulistiawati et al., show that learning media with the Kahoot application can be used in the learning process with the guidance of the teacher's media use and understanding of learning diversity material in students (Sulistiawati et al., 2023).

The following study, conducted by Sri Wigati through classroom action research in two cycles, showed that the use of Kahoot increased the students' interest in the learning process (Wigati, 2019). Furthermore, Fauzan et al. confirmed that the learning outcomes of the two groups were not too different overall. Using Kahoot media, the learning atmosphere is more fun and less tense, creating two-way communication between educators and students. The research aims to test the difference between learning and using Kahoot (Fauzan et al., 2020). It can be concluded that Kahoot can create fun learning. Teacher engagement at SD Negeri Depok 1 is a relevant research subject regarding technology use in learning. Teachers in this school may have adopted learning technologies, including Kahoot, to enhance students' learning experience. Case studies on teachers' perceptions of using Kahoot, especially at SD Negeri Depok 1, are still limited. This study aims to analyze teachers' perceptions of using the Kahoot application in learning at SD Negeri Depok 1.

METHODS

This research uses a qualitative approach. Qualitative research produces descriptive data in the form of written or spoken words from people and observed behavior (Moleong, 2010). This type of research uses a case study conducted at one of the Depok 1 State Elementary Schools with class IV students, 28 people, and 1 class teacher. This study used interview, observation, and documentation techniques in data collection. According to Miles and Huberman, as described by Luthfiah, data analysis techniques are in the form of data condensation, data presentation, and drawing and verifying conclusions (Miles et al., 2013).

RESULT AND DISCUSSION

Use of Kahoot in Civics Learning

Based on the results of observations made by researchers, one of the public elementary schools in Yogyakarta shows that it already has facilities to support the technology-based learning process, such as LCD projectors permanently installed in the classroom, smartphones, and computers (SDN Depok 1 class teacher interview). In addition, teachers have implemented technology-based learning and applied engaging learning media such as learning media, one of which is Kahoot. When the researcher asked about the use of the Kahoot application in Civics learning, the informant stated that in the process of compiling learning materials in collaboration with the Kahoot application, Mr.

Sumardi, as the teacher who applied the Kahoot media, revealed that "The use of Kahoot media has been carried out since 2020 during the Covid-19 pandemic", when researchers conducted interviews with informants, the reasons for some teachers who have not used it are due to "limited abilities, tools, and infrastructure because some students do not have tools to access". Overall, using the Kahoot application in Civics learning in elementary schools has the potential to increase student engagement in understanding Pancasila values and citizenship concepts. This application can be an effective tool in enriching students' learning experience. However, there are several things to consider when using school technology.

Analysis of the Advantages and Disadvantages of Using Kahoot

Of course, the use of an application has advantages and disadvantages. The following are the advantages of using the application for students, which the informant stated to the researcher namely, "the benefits for students are that children are much happier, fun and introduce students to the digital world through learning-based online games including Kahoot, then students are more enthusiastic about the subject matter because in Kahoot it is also not only multiple choice there is a right and wrong that interacts with interesting animations" (Interview with Mr. Sumardi, Class IV Teacher).

The advantages of using the Kahoot application for teachers expressed by informants are "making it easier to evaluate because there is already a student report card, as well as being able to see the progress of the grades obtained by students, making it easier for teachers to assess and can be used as an ice breaking aid for students". Then related to the shortcomings stated by the informant to the researcher, namely "data packages or wifi, one of the students who does not have a smartphone". However, the agency has a solution to solve problems related to the obstacles experienced, the informant revealed that the solution is "lending smartphones to students who do not bring or do not have a tool to access, during the pandemic the school also assisted in the form of smartphones for underprivileged students, knowing that smartphones are a kind of basic need. The funds come from alms from student guardians, school committees, teachers as a contribution to help them" (Interview with Mr. Sumardi, Class IV Teacher).

The use of Kahoot has advantages, including making it easy to use. It can be accessed via smartphones and personal computers (PC) due to a user-friendly design that prioritizes comfort in answering questions and answers for free. Still, Kahoot also has disadvantages because the Kahoot application can be accessed via smartphones and

personal computers, so an internet connection is needed to use it (Jannah & Pahlevi, 2020). According to several expert opinions, the advantages and disadvantages of using Kahoot media are (1) Making it easier for teachers to create learning evaluation tools in the form of uis and questions. (2) Facilitate learning that is accessed anywhere and anytime. (3) Many free features are available. (4) There is an automatic quick count of the score, making it easier for educators to rank directly. The disadvantages of the Kahoot application are that it requires high internet access, is not fully capable in the school room, requires the availability of an overhead projector, and there are word limits in processing questions (Melawati, 2022).

The advantages of using the Kahoot application for learning are that the classroom atmosphere can be more enjoyable, students are trained to use technology as a medium for learning, and students are trained in their motor skills in operating Kahoot. In contrast, the shortcomings as a learning media are that not all teachers are updated with technology, inadequate school facilities, limited meeting hours in class, and not all teachers have time to organize lesson plans with Kahoot (Bahar et al., 2020). The advantages of Kahoot media are questions in the presentation with the use of applications by adjusting, which is limited by time in the process, which can increase student activeness or interaction (Wang & Tahir, 2020).

The benefits of Kahoot in the learning process are that it makes learning exciting and fun for students or learners, can help review the material that has been given, increases students' enthusiasm for learning, increases knowledge in learning, and raises students' curiosity in learning. The Kahoot application also has disadvantages, namely only a few new teachers using technology, lack of school facilities, students who are easily tempted to open other things, limited hours in learning, not all teachers have time to organize learning related to the Kahoot application, individual students can see other friends' answers, must appear in focus, online-based and cannot be used offline difficulty creating questions, and the ability to use the Kahoot application (Wibowo et al., 2022).

As for the other advantages and disadvantages. The advantages, according to Budianto, who Sulistiyawati et al. quoted. Revealed that the advantages of using Kahoot are that the class atmosphere becomes more fun, trains students to use technology, trains motor skills, as an evaluation of student understanding, everyone can access easily, interesting many category choices. The disadvantages are that not all teachers are updated regarding IT skills, inadequate school facilities, students are easily distracted from opening other things, and they require robust internet access (Sulistiyawati et al., 2021). From the

explanation above, it can be concluded that using the Kahoot application has many advantages and disadvantages. One of the advantages of using the application is that it makes it easier for teachers to input acquisition scores because the application system provides direct report results. Not only are teachers able to make learning enjoyable, but behind the platform's advantages, Kahoot also has disadvantages, one of which is that the application system is in the form of technology, so it requires high internet coverage to access the application. At the same time, many schools have not provided internet services with high capacity in the learning process. As research conducted by Fatonah et al., in interviews between informants and researchers, the use of Kahoot is an alternative to measure students' ability to capture learning (Salfadilah et al., 2023).

Kahoot Application Activities in PPKn Lessons

Kahoot has been widely applied in various subjects. Even Kahoot is one of the lessons that can be used to develop quizzes such as pretest or posttest activities or questions that must be solved (Permana, 2021). Kahoot has been widely used by teachers in all subjects. When conducting interviews with informants, the informants said that "Kahoots are not only applied in Pancasila and Citizenship Education (PPKn) subjects but have also begun to be applied in several other subjects such as Mathematics, Javanese, Natural Sciences, and Social Sciences" (Interview with Mr. Sumardi, Class IV Teacher). "In utilizing Kahoot in Civics learning, one of them is also applied to the material of Pancasila". (Interview with Mr. Sumardi, Teacher of Class IV). The following is one of the applications when teachers utilize the Kahoot application in the learning process in PPKn subjects or Pancasila and Citizenship Education:

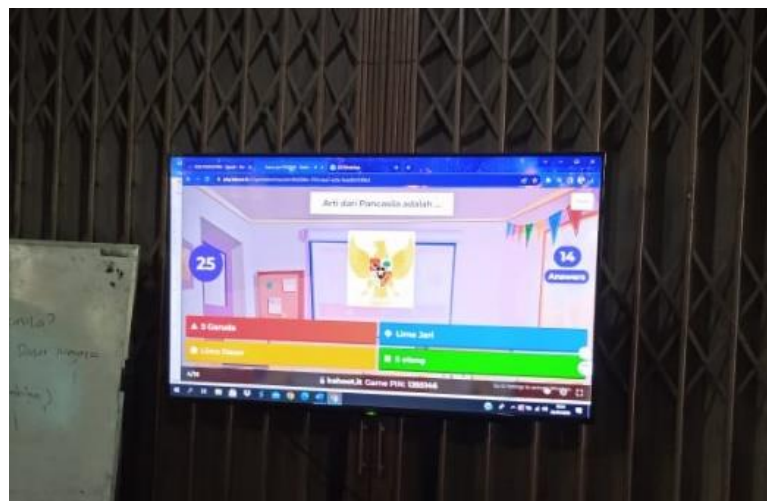


Figure 1. Application of Kahoot in Civics Learning

Figure 1 is an activity where Kahoot's application in civics learning is carried out by class IV teachers, who involve information technology in learning with the help of Kahoot media games. The material presented is related to Pancasila. Civics is one of the subjects that can be utilized using the Kahoot application because the material is centered on events that occur in the subject. The teacher must be innovative when packaging the material (Alfansyur & Mariyani, 2019). One of the subjects of Civics is one of the subjects taught in elementary schools to form a smart and good citizen. Kahoot learning is applied to help support the evaluation of teacher learning in teaching. Information and technology affect the use of an auxiliary tool in the interactive learning process (Sulistiawati et al., 2023).

Teachers and students can use information and communication technology media, as a teacher has the knowledge and ability to use information and communication technology because educators play a significant role in supporting the quality of student competence, balanced by quality and meaningful learning (Fazriyah et al., 2020). Kahoot has a social learning design, where people can learn together with the help of a screen, projector, and a computer monitor or gadget screen (Seftiani, 2019). Rapid development has made many changes in the education world, so the development of technology is required to create enjoyable learning (Ma'ruf & Alfurqan, 2022).

Learning with Kahoot is a way of learning that provides education with features that can be utilized for better and different learning. Learning media based on the Kahoot application is very much used in collaboration to create enthusiastic students in learning activities that embody technology and the usefulness of multimedia because the Kahoot presentation is in the form of a game and can completely process students. Therefore Kahoot is useful for fostering student encouragement regarding the understanding of teaching materials presented by educators such as this Kahoot application. It can be seen that the use of media in the learning process is very influential as revealed by Gagne that learning media is a component that is around students who can stimulate students to learn and according to Tay Vaughan, learning media is a combination of text, photos, audio, animation, and other forms with digital tricks with educational purposes (Wibowo et al., 2022). Knowing the rapid development of technology and over time technology in learning is often used so that it makes educators rack their brains to prepare learning skills that apply technology-based educators. The application of Kahoot in this Civics subject can be applied in the material, one of which is the application of Pancasila material in the Civics subject (Pancasila and Citizenship Education) in class IV at SD Negeri Depok 1.

CONCLUSION

This study aims to analyze teachers' perceptions of using the Kahoot application in learning Pancasila and Citizenship Education (PPKn) at SDN Depok 1 and the advantages and disadvantages of learning and how activities during learning. The results of this study can provide valuable insights for practitioners and the challenges of using technology, such as the Kahoot application, in Civics learning. With a better understanding of teachers' perceptions, this strategy is expected to improve the quality of Civics learning by utilizing the contribution of technology at the elementary school level.

Limitations of this study may include the generalization of the results only to the context of SDN Depok 1, so the results cannot be directly applied to other schools. In addition, other factors, such as teachers' technological skills and the availability of technological infrastructure in schools, may also affect the results of this study. Therefore, further research with a broader scope and variety of contexts is needed to confirm these findings more generally.

REFERENCES

- Alfansyur, A., & Mariyani, M. (2019). Pemanfaatan Media Berbasis Ict “Kahoot” Dalam Pembelajaran Ppkn Untuk Meningkatkan Motivasi Belajar Siswa. *Bhineka Tunggal Ika: Kajian Teori Dan Praktik Pendidikan Pkn*, 6(2), 208–216. <https://doi.org/10.36706/jbti.v6i2.10118>
- Bahar, H., Setiyaningsih, D., Nurmalia, L., & Astriani, L. (2020). Efektifitas Kahoot Bagi Guru Dalam Pembelajaran Di Sekolah Dasar. *KACANEGARA Jurnal Pengabdian Pada Masyarakat*, 3(2), 155–162. <https://doi.org/10.28989/kacanegara.v3i2.677>
- Fadly, M. F. N., & Sari, P. M. (2022). Persepsi Siswa terhadap Pemanfaatan Kahoot dan Quizizz Dalam Pembelajaran Di Kelas IV Sekolah Dasar. *Jurnal Cakrawala Pendas*, 8(4), Article 4. <https://doi.org/10.31949/jcp.v8i4.2792>
- Fauzan, A., Safira, M. C., & Sulistyono, E. N. (2020). Inisiasi Kahoot! sebagai variasi pembelajaran kalkulus bagi mahasiswa teknik lingkungan. *Jurnal Riset Pendidikan Matematika*, 7(2), 118–131. <https://doi.org/10.21831/jrpm.v7i1.33735>
- Fazriyah, N., Saraswati, A., Permana, J., & Indriani, R. (2020). Penggunaan Aplikasi Kahoot Pada Pembelajaran Media Dan Sumber Pembelajaran Sd. *Didaktik : Jurnal Ilmiah PGSD STKIP Subang*, 6(1), 139–147. <https://doi.org/10.36989/didaktik.v6i1.119>
- 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>

- Jannah, K., & Pahlevi, T. (2020). Pengembangan Instrumen Penilaian Berbasis Higher Order Thinking Skills Berbantuan Aplikasi “Kahoot!” Pada Kompetensi Dasar Menerapkan Penanganan Surat Masuk Dan Surat Keluar Jurusan OTKP Di SMK Negeri 2 Buduran. *Jurnal Pendidikan Administrasi Perkantoran (JPAP)*, 8(1), 108–121. <https://doi.org/10.26740/jpap.v8n1.p108-121>
- Ma'ruf, A., & Alfurqan, A. (2022). Analisis Penggunaan Aplikasi Kahoot sebagai Digital Game Based Learning dalam Evaluasi Pembelajaran PAI di SMA Negeri 2 Padang. *As-Sabiqun*, 4(5), 1276–1287. <https://doi.org/10.36088/assabiqun.v4i5.2238>
- Melawati, R. (2022). Penggunaan Aplikasi Kahoot dalam Meningkatkan Kreatifitas Mahasiswa. *JURNAL PENELITIAN*, 16(1), Article 1. <https://doi.org/10.21043/jp.v16i1.13319>
- Miles, M. B., Huberman, A. M., & Saldana, J. (2013). *Qualitative Data Analysis: A Methods Sourcebook*. SAGE Publications.
- Moleong, L.J. (2010). *Metodologi Penelitian Kualitatif*. PT. Remaja Rosdakarya.
- Mukhlis, M., Yusran, Y., & Basrul, B. (2022). Pengaruh Media Kahoot Terhadap Minat Belajar Siswa di SMKS Darul Ihsan Aceh Besar. *Prosiding Seminar Nasional Biologi, Teknologi Dan Kependidikan*, 10(2), Article 2. <https://doi.org/10.22373/pbio.v10i2.15394>
- Nasution, A. J., Ziliwu, S., Akhiriani, W., & Waina, A. (2023). Penguatan Moral Melalui Pembelajaran PPKN di MIS Al-Afkari Kabupaten Deli Serdang. *EduInovasi: Journal of Basic Educational Studies*, 3(1), 151–159. <https://doi.org/10.47467/edui.v3i1.3156>
- Permana, N. S. (2021). Implementasi Aplikasi Kahoot Sebagai Media Pembelajaran Berbasis Game Dalam Pelajaran Pendidikan Agama Katolik. *JPAK: Jurnal Pendidikan Agama Katolik*, 21(2), 128–135. <https://doi.org/10.34150/jpak.v21i2.334>
- Priyambodo, H. Y., Amrullah, M. F. F., & Moi, M. Y. (2022). Persepsi Guru Terhadap Pelatihan Penggunaan Kahoot! Di SMA Dharma Ayu Kefamenanu. *Jurnal Umum Pengabdian Masyarakat*, 1(1), Article 1. <https://jurnal-cahayapatriot.org/index.php/jupemas/article/view/55>
- Salfadilah, F., Prastowo, A., & Wibowo, Y. R. (2023). Aplikasi Kahoot Sebagai Media Penilaian Kognitif Berbasis Hots Di Sekolah Dasar. *JRPD (Jurnal Riset Pendidikan Dasar)*, 6(1), 36–45. <https://doi.org/10.26618/jrpd.v6i1.9791>
- Seftiani, I. (2019). Alat Evaluasi Pembelajaran Interaktif Kahoot pada Mata Pelajaran Bahasa Indonesia di Era Revolusi Industri 4 . 0. *Prosiding Seminar Nasional Bulan Bahasa (Semiba)*, 1(1), 284–291. <https://ejournal.unib.ac.id/semiba/article/view/10342>
- Sulistiwati, S., Mulyati, T., & Furnamasari, Y. F. (2023). Pengembangan bahan ajar media Kahoot untuk pembelajaran PPKN materi keberagaman kelas IV sekolah dasar. *Jurnal Bintang Pendidikan Indonesia*, 1(4), 144–156. <https://doi.org/10.55606/jubpi.v1i4.2018>
- Sulistiyawati, W., Sholikhin, R., Afifah, D. S. N., & Listiawan, T. (2021). Peranan Game

Edukasi Kahoot! dalam Menunjang Pembelajaran Matematika. *Wahana Matematika Dan Sains: Jurnal Matematika, Sains, Dan Pembelajarannya*, 15(1), 46–57. <https://doi.org/10.23887/wms.v15i1.29851>

Wang, A. I., & Tahir, R. (2020). The effect of using Kahoot! For learning – A literature review. *Computers & Education*, 149, 103818. <https://doi.org/10.1016/j.compedu.2020.103818>

Wibowo, H. P., Nurliana, E., Aryanis, D. F., & Nugroho, O. F. (2022). Analisis Pemanfaatan Media Kahoot Sebagai Inovasi. *Prosiding Seminar Nasional Ilmu Pendidikan Dan Multidisiplin*, 5(9), 302–307. <https://prosiding.esaunggul.ac.id/index.php/snip/article/view/274>

Wigati, S. (2019). Penggunaan Media Game Kahoot Untuk Meningkatkan Hasil Dan Minat Belajar Matematika. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, 8(3), 457–464. <https://doi.org/10.24127/ajpm.v8i3.2445>