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**MEDIA GAME INTERAKTIF WORDWALL  
DALAM KETERAMPILAN PROSES SAINS SISWA SEKOLAH DASAR**

**TESIS**

**diajukan untuk memenuhi sebagian syarat memperoleh gelar  
Magister Pendidikan Guru Sekolah Dasar**



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2024**

**PENGEMBANGAN MEDIA GAME INTERAKTIF WORDWALL  
DALAM KETERAMPILAN PROSES SAINS SISWA SEKOLAH DASAR**

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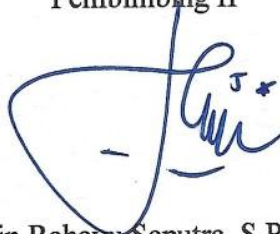
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## ABSTRAK

Penelitian ini bertujuan untuk mengembangkan media pembelajaran berbasis game interaktif Wordwall dalam keterampilan proses sains siswa. Latar belakang penelitian ini adalah belum terlihatnya kemampuan siswa dalam menguasai keterampilan proses sains, serta terbatasnya penggunaan media pembelajaran yang interaktif dan menarik dalam proses belajar mengajar. Metode penelitian yang digunakan adalah Metode penelitian Design Based Research (DBR) dengan pendekatan siklus yang meliputi identifikasi masalah, pengembangan prototype, uji coba, evaluasi, dan penyempurnaan produk. Hasil penelitian menunjukkan bahwa penggunaan game interaktif Wordwall secara signifikan dapat memperlihatkan keterampilan proses sains siswa. Siswa yang menggunakan media ini menunjukkan pemahaman konsep, kemampuan berpikir kritis, serta kemampuan merencanakan dan melaksanakan penyelidikan ilmiah. Selain itu, penggunaan Wordwall juga terbukti menjadi motivasi dan keterlibatan siswa dalam pembelajaran sains. Implikasi dari penelitian ini menyarankan agar sekolah dan guru lebih luas mengadopsi media pembelajaran interaktif seperti Wordwall dalam pengajaran sains. Selain itu, mengenai penggunaan dan pengembangan game yang sesuai dengan kurikulum perlu ditingkatkan sesuai dengan kebutuhan siswa. Rekomendasi juga diberikan bagi peneliti untuk terus mengevaluasi dan mengembangkan fitur-fitur baru dalam media ini guna memastikan relevansi dan efektivitasnya dalam mendukung pembelajaran.

Kata Kunci: keterampilan proses sains; media interaktif; pendidikan sains; pengembangan media pembelajaran; Wordwall

## ABSTRACT

*This research aims to develop interactive game-based learning media Wordwall for students' science process skills. The background to this research is that students' ability to master science process skills is not yet visible, as well as the limited use of interactive and interesting learning media in the teaching and learning process. The research method used is the Design Based Research (DBR) research method with a cyclical approach which includes problem identification, prototype development, testing, evaluation and product improvement. The research results show that the use of the Wordwall interactive game can significantly demonstrate students' science process skills. Students who use this media demonstrate conceptual understanding, critical thinking skills, and the ability to plan and carry out scientific investigations. Apart from that, the use of Wordwall has also been proven to motivate and engage students in science learning. The implications of this research suggest that schools and teachers should more widely adopt interactive learning media such as Wordwall in science teaching. Apart from that, the use and development of games that are appropriate to the curriculum need to be improved according to students' needs. Recommendations are also provided for researchers to continue to evaluate and develop new features in this media to ensure their relevance and effectiveness in supporting learning.*

*Keywords: interactive media; learning media development; science education; science process skills, Wordwall*

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## DAFTAR PUSTAKA

- Adas, M. (2018). *Machines as the measure of men: Science, technology, and ideologies of Western dominance*. degruyter.com. <https://doi.org/10.7591/9780801455261>
- Agusti, N., & Aslam, A. (2022). Efektivitas media pembelajaran aplikasi wordwall terhadap hasil belajar ipa siswa sekolah dasar. *Jurnal Basicedu*, *Query date:* 2024-07-12 05:37:19. <https://jbasic.org/index.php/basicedu/article/view/3053>
- Agustiani, E., Rustaman, N., & Wulan, A. (2020). Elementary School Teachers' Scientific Competence and Their Teaching Experiences. *Jurnal Basicedu*, *Query date:* 2024-06-17 10:17:02. <https://jbasic.org/index.php/basicedu/article/view/328>
- Aladé, F. (2016). Measuring with Murray: Touchscreen technology and preschoolers' STEM learning. *Computers in Human Behavior*, 62(Query date: 2024-06-22 20:31:27), 433–441. <https://doi.org/10.1016/j.chb.2016.03.080>
- Ananda, N. P., Rahmah, F. T., & Ramdhani, A. R. (2024). *Using gamification in education: Strategies and impact. I(1)*.
- Ananda, N., Rahmah, F., & ... (2024). Using gamification in education: Strategies and impact. ... *Journal of Educational ...*, *Query date:* 2024-06-22 20:26:56. <http://ejournal-hipkin.or.id/index.php/hipkin-jer/article/view/7>
- Anggraeni, I. (2024a). Analisis Kemampuan Sains pada Aktivitas Eco Printing di PAUD. *Al-Marifah| Journal Pendidikan Islam Anak Usia ...*, *Query date:* 2024-07-12 05:39:55. <http://journal.iaitasik.ac.id/index.php/Al-Marifah/article/view/324>
- Anggraeni, I. (2024b). *Pembelajaran Ecoliteracy Pada Anak Usia Dini*. books.google.com. <https://books.google.com/books?hl=en&lr=&id=TAjtEAAAQBAJ&oi=fnd&pg=PR1&dq=%22ira+anggraeni%22&ots=E4NPSZxHsr&sig=PeewakNMlg64uwHyNGJYXyRvte8>
- Anggraini, Y. (2021). Analisis persiapan guru dalam pembelajaran matematika di sekolah dasar. *Jurnal Basicedu*, *Query date:* 2024-07-12 05:37:19. <https://jbasic.org/index.php/basicedu/article/view/1241>
- Ardiana, R. (2021). Implementasi Media Pembelajaran pada Kecerdasan Bahasa Anak Usia 5-6 Tahun. *Murhum: Jurnal Pendidikan Anak Usia Dini*, *Query date:* 2024-06-27 15:39:38. <https://www.murhum.ppjpaud.org/index.php/murhum/article/view/47>
- Ariani, R., & Festiyed, F. (2019). Analisis landasan ilmu pengetahuan dan teknologi pendidikan dalam pengembangan multimedia interaktif. *Jurnal Penelitian Pembelajaran Fisika*, *Query date:* 2024-06-22 12:33:59. <https://ejournal.unp.ac.id/index.php/jppf/article/view/107439>
- Arifin, A., Mashuri, M., Lestari, N., & ... (2023). Application of Interactive Learning Games in Stimulating Knowledge About Object Recognition in Early Childhood. *Educenter: Jurnal ...*, *Query date:* 2024-06-22 20:26:56.

- <https://jurnal.arkainstitute.co.id/index.php/educenter/article/view/528>
- Aripin, I., Hidayat, T., & Rustaman, N. (2022). Citizen science project's contributions to species literacy for preservice biology teacher. *Jurnal Bioedukatika*, *Query date: 2024-06-17 10:17:02*. <https://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=23386630&AN=160637481&h=SnsGay7v8CuqcsaVAzK5Z8Pc4DRJf7WGKGej87v4DzoS%2B8T0qHp7KE0ha%2FGPh%2BNYQL0prQy5cgpG%2FdeyoKylA%3D%3D&crl=c>
- Arrosyad, M., Antika, D., Dzulqa, E., & ... (2023). Analisis Penggunaan Wordwall Sebagai Media Pembelajaran Terpadu untuk Meningkatkan Daya Tarik Belajar Siswa di Sekolah Dasar. ... *Indonesian Journal of ...*, *Query date: 2024-06-29 06:18:59*. <http://journal.csspublishing.com/index.php/ijm/article/view/150>
- Atwood-Blaine, D. (2017). Mobile Gaming and Student Interactions in a Science Center: The Future of Gaming in Science Education. *International Journal of Science and Mathematics Education*, *15*(Query date: 2024-06-22 20:31:27), 45–65. <https://doi.org/10.1007/s10763-017-9801-y>
- August, S. E. (2016). Virtual Engineering Sciences Learning Lab: Giving STEM Education a Second Life. *IEEE Transactions on Learning Technologies*, *9*(1), 18–30. <https://doi.org/10.1109/TLT.2015.2419253>
- Bahri, A., Damayanti, C., Sirait, Y., & ... (2022). Aplikasi tiktok sebagai media pembelajaran bahasa inggris di indonesia. *Jurnal Indonesia ...*, *Query date: 2024-06-27 15:39:38*. <https://jiss.publikasiindonesia.id/index.php/jiss/article/view/525>
- Batubara, H. (2020). Media pembelajaran efektif. *Semarang: Fatawa Publishing*, *Query date: 2024-06-27 15:39:38*. [https://www.academia.edu/download/65071226/Media\\_Pembelajaran\\_Efektif.pdf](https://www.academia.edu/download/65071226/Media_Pembelajaran_Efektif.pdf)
- Benitti, F. (2012). Exploring the educational potential of robotics in schools: A systematic review. *Computers & Education*, *Query date: 2024-06-22 14:58:09*. <https://www.sciencedirect.com/science/article/pii/S0360131511002508>
- Berns, A. (2013). Game-like language learning in 3-D virtual environments. *Computers and Education*, *60*(1), 210–220. <https://doi.org/10.1016/j.compedu.2012.07.001>
- Blikstein, P. (2013). Digital fabrication and 'making' in education: The democratization of invention. *FabLabs: Of machines, makers and inventors*, *Query date: 2024-06-22 14:58:09*. <https://ccst.us/wp-content/uploads/pblikstein-democratizinginvention.pdf>
- Bower, M., Howe, C., McCredie, N., & ... (2014). Augmented Reality in education—cases, places and potentials. *Educational Media ...*, *Query date: 2024-06-22 14:58:09*. <https://doi.org/10.1080/09523987.2014.889400>
- Bueno, M., Perez, F., Valerio, R., & Areola, E. (2022). A usability study on Google Site and Wordwall. Net: Online instructional tools for learning basic integration amid pandemic. *Journal of Global Business and ...*, *Query date: 2024-06-22 20:57:53*.

- [http://gbse.my/V8%20NO.23%20\(JANUARY%202022\)/Paper-288-.pdf](http://gbse.my/V8%20NO.23%20(JANUARY%202022)/Paper-288-.pdf)
- Bybee, R. (2010). Advancing STEM education: A 2020 vision. *Technology and engineering teacher*, *Query date: 2024-06-22 14:58:09*.  
<https://search.proquest.com/openview/75bbe8b13bf3f54ebd755333ffd8621e/1?pq-origsite=gscholar&cbl=34845>
- Cheng, K., & Tsai, C. (2013). Affordances of augmented reality in science learning: Suggestions for future research. *Journal of science education and technology*, *Query date: 2024-06-22 14:58:09*.  
<https://doi.org/10.1007/s10956-012-9405-9>
- Creswell, J. W. (2004). Designing a mixed methods study in primary care. *Annals of Family Medicine*, 2(1), 7–12. <https://doi.org/10.1370/afm.104>
- Creswell, J. W. (2007). Qualitative Research Designs: Selection and Implementation. *The Counseling Psychologist*, 35(2), 236–264. <https://doi.org/10.1177/0011000006287390>
- Dananjaya, U. (2023). *Media pembelajaran aktif*. books.google.com.  
[https://books.google.com/books?hl=en&lr=&id=UN-wEAAAQBAJ&oi=fnd&pg=PP1&dq=media+pembelajaran&ots=V6gnwqxoeF&sig=1mlpPH\\_fhygbVnlKCKoLA51ivi4](https://books.google.com/books?hl=en&lr=&id=UN-wEAAAQBAJ&oi=fnd&pg=PP1&dq=media+pembelajaran&ots=V6gnwqxoeF&sig=1mlpPH_fhygbVnlKCKoLA51ivi4)
- Daniyati, A., Saputri, I., Wijaya, R., & ... (2023). Konsep dasar media pembelajaran. *Journal of Student ...*, *Query date: 2024-06-27 15:39:38*.  
<https://ejurnal.stie-trianandra.ac.id/index.php/jsr/article/view/993>
- DeBoer, G. (2019). *A history of ideas in science education*. books.google.com.  
[https://books.google.com/books?hl=en&lr=&id=f0qjDwAAQBAJ&oi=fnd&pg=PT9&dq=science+technology+and+education&ots=E3MpDP-VCR&sig=jg1rHEDCLyx4hGFS\\_nD7Mic0dyM](https://books.google.com/books?hl=en&lr=&id=f0qjDwAAQBAJ&oi=fnd&pg=PT9&dq=science+technology+and+education&ots=E3MpDP-VCR&sig=jg1rHEDCLyx4hGFS_nD7Mic0dyM)
- Desstya, A. (2014). *Kedudukan dan aplikasi pendidikan sains di sekolah dasar*. publikasiilmiah.ums.ac.id.  
<https://publikasiilmiah.ums.ac.id/xmlui/handle/11617/5214>
- Dicheva, D., Dichev, C., Agre, G., & Angelova, G. (2015). Gamification in education: A systematic mapping study. ... *of educational technology & ...*, *Query date: 2024-06-22 14:58:09*.  
<https://www.jstor.org/stable/pdf/jeductechsoci.18.3.75.pdf>
- Dwistia, H., Sajdah, M., Awaliah, O., & ... (2022). Pemanfaatan Media Sosial Sebagai Media Pembelajaran Pendidikan Agama Islam. *Ar-Rusyd: Jurnal ...*, *Query date: 2024-06-27 15:39:38*. <http://ojs.stai-ibnurusyd.ac.id/index.php/arrusyd/article/view/33>
- Echlin, P. S. (2010). A prospective study of concussion education in 2 junior ice hockey teams: Implications for sports concussion education. *Neurosurgical Focus*, 29(5), 1–4. <https://doi.org/10.3171/2010.9.FOCUS10187>
- Elmunyah, H., Herwanto, H., & ... (2021). DEGRAF educational game as a supplement for basic graphic design subjects for vocational high school students. *2021 7th ...*, *Query date: 2024-06-22 20:26:56*.  
<https://ieeexplore.ieee.org/abstract/document/9616829/>
- Fadillah, N., Rustaman, N., & ... (2021). Analisis kemampuan scientific literacy siswa SMA dalam soal PISA pada materi virus dan bakteri. ... : *Indonesian*

- Journal of ...*, Query date: 2024-06-17 10:17:02.  
<https://ejournal.upi.edu/index.php/asimilasi/article/view/41485>
- Fakhrudin, A., Firdaus, M., & ... (2021). Wordwall application as a media to improve arabic vocabulary mastery of junior high school students. ... : *Jurnal Bahasa Arab*, Query date: 2024-06-29 06:18:59.  
<https://pdfs.semanticscholar.org/89bd/1db7ebd97420ce4096eeaf491aca6aabef7b.pdf/1000>
- Faturochman, F., & Yuniarti, S. (2023). WORDWALL'S INTERACTIVE ONLINE GAME AGAINST FINE MOTOR SKILLS IN GRADE 6 ELEMENTARY SCHOOL STUDENTS. *SENTRI: Jurnal Riset Ilmiah*, Query date: 2024-06-29 06:18:59.  
<https://scholar.archive.org/work/7ve5qqbjk5eqbkbhvgaxdasea/access/wayback/https://ejournal.nusantaraglobal.ac.id/index.php/sentri/article/download/433/543>
- Fenwick, T., & Edwards, R. (2010). *Actor-network theory in education*. taylorfrancis.com. <https://doi.org/10.4324/9780203849088>
- Fitria, A., & Hamdu, G. (2021). Pengembangan Aplikasi Mobile Learning untuk Perangkat Pembelajaran Berbasis Education for Sustainable Development. *JINOTEP (Jurnal Inovasi dan Teknologi Pembelajaran): Kajian dan Riset Dalam Teknologi Pembelajaran*, 8(2), 134–145.  
<https://doi.org/10.17977/um031v8i22021p134>
- Ghani, M. A., Hamzah, M., Daud, W. W., & ... (2022). The Impact of Mobile Digital Game in Learning Arabic Language at Tertiary Level. ... *Educational Technology*, Query date: 2024-06-22 20:26:56.  
<https://eric.ed.gov/?id=EJ1331727>
- Ghavifekr, S., & Rosdy, W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. ... *journal of research in education and science*, Query date: 2024-06-22 14:58:09.  
<https://eric.ed.gov/?id=EJ1105224>
- Gonzalez, H., & Kuenzi, J. (2012). *Science, technology, engineering, and mathematics (STEM) education: A primer*. Query date: 2024-06-22 14:58:09.  
[https://www2.law.umaryland.edu/marshall/crsreports/crsdocuments/R42642\\_04052013.pdf](https://www2.law.umaryland.edu/marshall/crsreports/crsdocuments/R42642_04052013.pdf)
- Guetterman, T. C. (2019). Mixed methods grant applications in the health sciences: An analysis of reviewer comments. *PLoS ONE*, 14(11).  
<https://doi.org/10.1371/journal.pone.0225308>
- Hanannika, L., & Sukartono, S. (2022). Penerapan Media Pembelajaran Berbasis TIK pada Pembelajaran Tematik di Sekolah Dasar. *Jurnal Basicedu*, Query date: 2024-06-27 15:39:38.  
<https://jbasic.org/index.php/basicedu/article/view/3269>
- Haraway, D. (2013). A manifesto for cyborgs: Science, technology, and socialist feminism in the 1980s. *Feminism/postmodernism*, Query date: 2024-06-22 14:58:09.  
<https://api.taylorfrancis.com/content/chapters/edit/download?identifierName=doi&identifierValue=10.4324/9780203699386-12&type=chapterpdf>

- Hasan, M., Milawati, M., Darodjat, D., Harahap, T., & ... (2021). *Media pembelajaran*. eprints.unm.ac.id. <http://eprints.unm.ac.id/20720>
- Hasan, M., Rahmatullah, R., Fuadi, A., Inanna, I., & ... (2023). Strategi Pembelajaran. ... *Tahta Media*, *Query date: 2024-06-27 15:39:38*. <http://tahtamedia.co.id/index.php/issj/article/view/494>
- Hasram, S. (2021). The effects of wordwall online games (Wow) on english language vocabulary learning among year 5 pupils. *Theory and Practice in Language Studies*, *11*(9), 1059–1066. <https://doi.org/10.17507/tpls.1109.11>
- Hidayani, R., Sabekti, A., & Yulita, I. (2020). The practicality and effectiveness of educational game developed using lectora inspire in chemical equilibrium. ... *of Chemistry Education ...*, *Query date: 2024-06-22 20:26:56*. <https://journal.unesa.ac.id/index.php/jcer/article/view/7582>
- Hidayat, T., Rustaman, N., & ... (2021). Developing Students' Research Skills with Adapted Primary Literature. *THABIEA: JOURNAL OF ...*, *Query date: 2024-06-17 10:17:02*. <https://journal.iainkudus.ac.id/index.php/Thabiea/article/view/11966>
- Hidayat, T., Rustaman, N., & Siahaan, P. (2021). Adapted Primary Literature in Authentic Science: Students' Perception. *Journal of Science Learning*, *Query date: 2024-06-17 10:17:02*. <https://eric.ed.gov/?id=EJ1320719>
- Hidayati, E., & Afifah, A. (2022). Digitalization Learning Media: Review of Students Interest in Using Wordwall Web Learning Media. ... : *International Conference on ...*, *Query date: 2024-06-29 06:18:59*. <https://prosiding.iainponorogo.ac.id/index.php/icis/article/view/797>
- Hilton, M. (2010). *Exploring the intersection of science education and 21st century skills: A workshop summary*. books.google.com. [https://books.google.com/books?hl=en&lr=&id=SZVhAgAAQBAJ&oi=fnd&pg=PP1&dq=science+technology+and+education&ots=ACzPDEfL Sz&sig=zsQjc7cIz8vjH-RQh\\_VR5AZi7mA](https://books.google.com/books?hl=en&lr=&id=SZVhAgAAQBAJ&oi=fnd&pg=PP1&dq=science+technology+and+education&ots=ACzPDEfL Sz&sig=zsQjc7cIz8vjH-RQh_VR5AZi7mA)
- Honey, M. (2014). *Committee on Integrated STEM Education Margaret Honey, Greg Pearson, and Heidi Schweingruber, Editors*. *Query date: 2024-06-22 14:58:09*. <http://www.middleweb.com/wp-content/uploads/2015/01/STEM-Integration-in-K12-Education.pdf>
- Hsiao, H. (2016). Using a gesture interactive game-based learning approach to improve preschool children's learning performance and motor skills. *Computers and Education*, *95*(Query date: 2024-06-22 20:31:27), 151–162. <https://doi.org/10.1016/j.compedu.2016.01.005>
- Hutauruk, A., Subakti, H., Simarmata, J., Soputra, D., & ... (2022). *Media Pembelajaran dan TIK*. *Query date: 2024-06-27 15:39:38*. [https://repository.unugiri.ac.id:8443/id/eprint/4834/1/2022\\_Book%20Chapter%20DAI\\_Publikasi%20Media%20Pembelajaran%20dan%20TIK%20Desember.pdf](https://repository.unugiri.ac.id:8443/id/eprint/4834/1/2022_Book%20Chapter%20DAI_Publikasi%20Media%20Pembelajaran%20dan%20TIK%20Desember.pdf)
- Hwang, G. J. (2015). A contextual game-based learning approach to improving students' inquiry-based learning performance in social studies courses. *Computers and Education*, *81*(Query date: 2024-06-22 20:31:27), 13–25. <https://doi.org/10.1016/j.compedu.2014.09.006>



- Jacobsen, M. (2023). Educational design research: Grappling with methodological fit. *Educational Technology Research and Development*, *Query date: 2024-06-30 07:13:01*. <https://doi.org/10.1007/s11423-023-10282-5>
- Juhaeni, S., Nurhayati, R., & Tanzila, A. (2020). Konsep dasar media pembelajaran. *JIEES: Journal of Islamic ...*, *Query date: 2024-06-27 15:39:38*. <https://www.academia.edu/download/106568848/2.pdf>
- Jumriani, J., Syaharuddin, S., Hadi, N., Mutiani, M., & ... (2021). Telaah Literatur; Komponen Kurikulum IPS Di Sekolah Dasar pada Kurikulum 2013. *Jurnal Basicedu*, *Query date: 2024-08-08 17:24:29*. <https://jbasic.org/index.php/basicedu/article/view/1111>
- Justitia, A., Zaman, B., Hendradi, R., & ... (2021). Training of kahoot! As an interactive game-based learning evaluation platform for students. *Darmabakti ...*, *Query date: 2024-06-22 20:26:56*. <http://download.garuda.kemdikbud.go.id/article.php?article=2259875&val=16012&title=TRAINING%20OF%20KAHOOT%20AS%20AN%20INTERACTIVE%20GAME-BASED%20LEARNING%20EVALUATION%20PLATFORM%20FOR%20STUDENTS>
- Kahn, A. S. (2014). Why we distort in self-report: Predictors of self-report errors in video game play. *Journal of Computer-Mediated Communication*, *19*(4), 1010–1023. <https://doi.org/10.1111/jcc4.12056>
- Kelley, T., & Knowles, J. (2016). A conceptual framework for integrated STEM education. *International Journal of STEM education*, *Query date: 2024-06-22 14:58:09*. <https://doi.org/10.1186/s40594-016-0046-z>
- Kennedy, T., & Odell, M. (2014). Engaging students in STEM education. *Science education international*, *Query date: 2024-06-22 14:58:09*. <https://eric.ed.gov/?id=EJ1044508>
- Kholis, M., Fitriani, L., Gunawan, R., & ... (2022). Can Wordwall application improve students' Arabic mastery? *Al-Ta'rib: Jurnal ...*, *Query date: 2024-06-29 06:18:59*. <http://repository.uin-malang.ac.id/12801/>
- Kim, A. S. (2017). A pedagogical analysis of online coding tutorials. *Proceedings of the Conference on Integrating Technology into Computer Science Education, ITiCSE*, *Query date: 2024-06-22 20:31:27*, 321–326. <https://doi.org/10.1145/3017680.3017728>
- Kiong, T., Roslen, K., Putra, A., Heong, Y., & ... (2021). Pembangunan Modul Pengajaran Berasaskan Permainan Digital Bagi Kursus Teknologi Elektrik 1: Development of Module for Digital Game-Based Learning for .... *Sains ...*, *Query date: 2024-06-22 20:26:56*. <https://sainsinsani.usim.edu.my/index.php/sainsinsani/article/view/263>
- Kocobatmaz, H. (2024). The Effect of Educational Digital Games on Academic Success and Attitude in 3rd Grade Mathematics Class. *Participatory Educational Research*, *11*(2), 230–244. <https://doi.org/10.17275/per.24.28.11.2>
- Koehler, M., Mishra, P., Kereluik, K., Shin, T., & ... (2014). The technological pedagogical content knowledge framework. ... *research on educational ...*, *Query date: 2024-06-22 14:58:09*. <https://doi.org/10.1007/978-1->

- Korol, A. (2021). Web-technologies and multimedia systems in the training of professionals in the education system. *Vide. Tehnologija. Resursi - Environment, Technology, Resources*, 2(Query date: 2024-06-22 20:53:16), 244–248. <https://doi.org/10.17770/etr2021vol2.6570>
- Koschmann, T. (2012). Paradigm shifts and instructional technology: An introduction. *Cscl*, Query date: 2024-06-22 14:58:09. <https://doi.org/10.4324/9780203052747-1>
- Kristanto, A., & Mariono, A. (2019). Development of education game media for xii multimedia class students in vocational school. *Journal of Physics: Conference Series*, Query date: 2024-06-22 20:26:56. <https://doi.org/10.1088/1742-6596/1387/1/012117>
- Kusnadi, K., Rustaman, N., Redjeki, S., & ... (2012). Analisis kemunculan keterampilan spesifik lab mikrobiologi melalui pembelajaran mikrobiologi berbasis proyek inkuiri “mini-riset” mahasiswa biologi. *Jurnal Pengajaran ...*, Query date: 2024-06-17 10:17:02. <https://ejournal.upi.edu/index.php/jpmipa/article/view/36052/0>
- Kusuma, E. (2024). Pemanfaatan Game Edukasi Wordwall untuk Meningkatkan Hasil Belajar Bahasa Indonesia Siswa Kelas V Sekolah Dasar. *Jurnal Basicedu*, Query date: 2024-06-22 20:26:56. <https://jbasic.org/index.php/basicedu/article/view/7433>
- Laurillard, D. (2013). *Teaching as a design science: Building pedagogical patterns for learning and technology*. taylorfrancis.com. <https://doi.org/10.4324/9780203125083>
- Leksono, S., Rustaman, N., & Redjeki, S. (2013). Kemampuan profesional guru biologi dalam memahami dan merancang model pembelajaran konservasi biodiversitas di SMA. *Jurnal Cakrawala ...*, Query date: 2024-06-17 10:17:02. <http://journal.uny.ac.id/index.php/cp/article/view/1628>
- Lestari, K., Arcana, I., Susetyo, A., & Kuncoro, K. (2022). *Development of Online Learning Quiz and Educational Game Using Word Walls in Mathematics for Grade 10*. [ejournal.uinsaizu.ac.id](https://ejournal.uinsaizu.ac.id). <https://ejournal.uinsaizu.ac.id/index.php/insania/article/view/6924>
- Liu, D. (2015). Integration of Virtual Labs into Science E-learning. *Procedia Computer Science*, 75(Query date: 2024-06-22 20:31:27), 95–102. <https://doi.org/10.1016/j.procs.2015.12.224>
- Magasvaran, V., Ukat, J., & Yunus, M. (2022). Boosting vocabulary mastery in primary school pupils by revolutionizing Wordwall through C&K. *International Journal of ...*, Query date: 2024-06-29 06:18:59. [https://www.researchgate.net/profile/Vanisa-Mag/publication/357679443\\_Boosting\\_Vocabulary\\_Mastery\\_in\\_Primary\\_School\\_Pupils\\_by\\_Revolutionizing\\_Wordwall\\_through\\_CK/links/62d7e9a011afc23ee4ceaed8/Boosting-Vocabulary-Mastery-in-Primary-School-Pupils-by-Revolutionizing-Wordwall-through-C-K.pdf](https://www.researchgate.net/profile/Vanisa-Mag/publication/357679443_Boosting_Vocabulary_Mastery_in_Primary_School_Pupils_by_Revolutionizing_Wordwall_through_CK/links/62d7e9a011afc23ee4ceaed8/Boosting-Vocabulary-Mastery-in-Primary-School-Pupils-by-Revolutionizing-Wordwall-through-C-K.pdf)
- Magdalena, I. (2021). *Tulisan Bersama Tentang Media Pembelajaran SD*. [books.google.com](https://books.google.com). <https://books.google.com/books?hl=en&lr=&id=w0Y->

EAAAQBAJ&oi=fnd&pg=PP1&dq=media+pembelajaran&ots=eOTcG  
ODjEv&sig=R4uD35FN5LRY70P\_SqksRSp\_sM4

- Malegiannaki, I. (2017). Analyzing the educational design, use and effect of spatial games for cultural heritage: A literature review. *Computers and Education*, 108(Query date: 2024-06-22 20:31:27), 1–10. <https://doi.org/10.1016/j.compedu.2017.01.007>
- Malik, A., Handayani, W., & Nuraini, R. (2015). *Model praktikum problem solving laboratory untuk meningkatkan keterampilan proses sains mahasiswa*. etheses.uinsgd.ac.id. <https://etheses.uinsgd.ac.id/id/eprint/14915>
- Malik, R. (2018). Educational challenges in 21st century and sustainable development. *Journal of Sustainable Development Education and ...*, Query date: 2024-06-22 14:58:09. <https://ejournal.upi.edu/index.php/jsder/article/view/12266>
- Maryam, D., Febiola, F., Agami, S., & ... (2020). Inovasi media pembelajaran pendidikan agama Islam melalui media audiovisual. ... *Dan Pembelajaran ...*, Query date: 2024-06-27 15:39:38. <https://ejournal.radenintan.ac.id/index.php/terampil/article/view/6081>
- Maryuningsih, Y., Manfaat, B., Riandi, R., & ... (2019). Design Development Research Approach in Developing Gel Electrophoresis Virtual Laboratory to substitute Real Practicum. ... *Pendidikan Sains*, Query date: 2024-06-17 10:17:02. <https://jurnal.syekh Nurjati.ac.id/index.php/sceducatia/article/view/3961>
- Mauliansyah, S., Rendi, R., Rosita, R., & ... (2023). Analisis Kebutuhan Media Pembelajaran Interaktif Berbasis Web pada Mata Kuliah Pemrograman Web. *Jurnal Locus ...*, Query date: 2024-06-27 15:39:38. <https://locus.rivierapublishing.id/index.php/jl/article/view/924>
- Maulida, U., Yuliani, R., & Anggraeni, I. (2022). PEMBELAJARAN MATEMATIKA TERPADU PADA ANAK USIA DINI. *Jurnal Anak Bangsa*, Query date: 2024-07-12 05:39:55. <http://jas.lppmbinabangsa.ac.id/index.php/home/article/view/24>
- Mayer, R. (2014). The Cambridge handbook of multimedia learning, second edition. Dalam *The Cambridge Handbook of Multimedia Learning, Second Edition* (hlm. 930). <https://doi.org/10.1017/CBO9781139547369>
- Megawaty, D., Damayanti, D., Assubhi, Z., & ... (2021). Aplikasi Permainan Sebagai Media Pembelajaran Peta Dan Budaya Sumatera Untuk Siswa Sekolah Dasar. *Jurnal ...*, Query date: 2024-06-27 15:39:38. <https://jurnal.fmipa.unila.ac.id/komputasi/article/view/2779/0>
- Miftah, M., & Rokhman, N. (2022). Kriteria pemilihan dan prinsip pemanfaatan media pembelajaran berbasis TIK sesuai kebutuhan peserta didik. *Educenter: Jurnal Ilmiah ...*, Query date: 2024-06-27 15:39:38. <https://jurnal.arkainstitute.co.id/index.php/educenter/article/view/92>
- Mikropoulos, T., & Natsis, A. (2011). Educational virtual environments: A ten-year review of empirical research (1999–2009). *Computers & education*, Query date: 2024-06-22 14:58:09. <https://www.sciencedirect.com/science/article/pii/S0360131510003052>
- Moran, J., Briscoe, G., & Peglow, S. (2018). Current technology in advancing

- medical education: Perspectives for learning and providing care. *Academic psychiatry*, Query date: 2024-06-22 14:58:09. <https://doi.org/10.1007/s40596-018-0946-y>
- Munisah, E. (2020). Artikel Pengelolaan Media Pembelajaran Sekolah Dasar. *Edukasi Lingua Sastra*, Query date: 2024-06-27 15:39:38. <https://jurnal.umko.ac.id/index.php/elsa/article/view/231>
- Mursid, R., & Yulia, E. (2019). *Pengembangan pembelajaran dalam teknologi pendidikan di era ri 4.0*. Query date: 2024-06-22 12:33:59.
- Nashihin, H., Baroroh, A., & Ali, A. (2020). Implikasi hukum teknologi informasi dalam perkembangan teknologi pendidikan islam (Telaah atas Hukum Moore, Hukum Metcalfe, dan Hukum Coase). *At Tuots: Jurnal Pendidikan ...*, Query date: 2024-06-22 12:33:59. <http://journal.stitmadani.ac.id/index.php/JPI/article/download/39/33>
- Nenohai, J. A. (2022). Development of Gamification-Based Wordwall Game Platform on Reaction Rate Materials. *Orbital*, 14(2), 116–122. <https://doi.org/10.17807/orbital.v14i2.16206>
- Nenohai, J., Garak, S., & ... (2021). Pelatihan dan Pendampingan Implementasi Aplikasi Wordwall dalam Pembelajaran Matematika Bagi Guru Kelas Rendah Sekolah Dasar Inpres Maulafa Kota .... *Jurnal Nasional ...*, Query date: 2024-06-29 06:18:59. <http://journal.jis-institute.org/index.php/jnpm/article/view/574>
- Noperman, F. (2020). *Pendidikan Sains dan Teknologi: Transformasi sepanjang masa untuk kemajuan peradaban*. books.google.com. [https://books.google.com/books?hl=en&lr=&id=NJ\\_pDwAAQBAJ&oi=fnd&pg=PA8&dq=%22feri+noperman%22+sains+dan+teknologi&ots=iOgj88Lxs8&sig=aF6VJ1ZAe\\_KKeoYpp6irh21oDJY](https://books.google.com/books?hl=en&lr=&id=NJ_pDwAAQBAJ&oi=fnd&pg=PA8&dq=%22feri+noperman%22+sains+dan+teknologi&ots=iOgj88Lxs8&sig=aF6VJ1ZAe_KKeoYpp6irh21oDJY)
- Novriansyah, N., Chotimah, U., & ... (2024). Analysis of the Needs of Games-Based Interactive Learning Media on Scale and Dena Materials in Elementary Schools. *Journal of Curriculum ...*, Query date: 2024-06-29 06:18:59. <http://hipkinjateng.org/jurnal/index.php/jci/article/view/104>
- Nugraha, C., & Sulistyowati, E. (2023). Improving The Learning Activity Of Grade 3 Elementary School Students Using The Team Games Tournament Learning Model. *Proceedings of International ...*, Query date: 2024-06-29 06:18:59. <https://seminar.ustjogja.ac.id/index.php/ICoTPE/article/view/1080>
- Nurbani, N., & Puspitasari, H. (2022). Analisis Kebutuhan Pengembangan Media Pembelajaran Berbasis Android pada Mata Pelajaran Matematika di SMA. *Edukatif: Jurnal Ilmu Pendidikan*, Query date: 2024-06-27 15:39:38. <https://edukatif.org/index.php/edukatif/article/view/2357>
- Nurmala, M., Wibowo, T., & ... (2021). Efektivitas penggunaan aplikasi google meet sebagai media pembelajaran online pada mahasiswa saat pandemi covid-19. *National ...*, Query date: 2024-06-27 15:39:38. <http://ncabet.conferences-binabangsa.org/index.php/home/article/view/32>
- Nuryani, R. (2007). Keterampilan proses sains. *Sekolah Pasca Sarjana Universitas Indonesia ...*, Query date: 2024-06-17 10:17:02.
- Onyema, E., Eucheria, N., & ... (2020). Impact of Coronavirus pandemic on

- education. ... of education and ..., Query date: 2024-06-22 14:58:09. <https://pdfs.semanticscholar.org/25a7/a1a86bc84a0cae928b005dee64f3c8c8aeb3.pdf>
- Pagarra, H., Syawaluddin, A., & Krismanto, W. (2022). *Media Pembelajaran*. eprints.unm.ac.id. <http://eprints.unm.ac.id/25438/>
- Panjaitan, S., Sitepu, C., & Pintubatu, S. (2023). Analisis Penerapan Media Pembelajaran Wordwall Terhadap Peningkatan Keaktifan Belajar Siswa pada Materi Persamaan Dan Pertidaksamaan Linear Satu .... *Innovative: Journal Of Social ...*, Query date: 2024-06-29 06:18:59. <http://j-innovative.org/index.php/Innovative/article/view/5700>
- Penuel, W. R. (2016). Organizing design-based implementation research in research-practice partnerships: A workshop. *Proceedings of International Conference of the Learning Sciences, ICLS*, 2(Query date: 2024-06-30 07:13:01), 1342–1345.
- Permadi, R., Ramdani, A., Nurmatin, S., & ... (2023). Pelatihan Pembuatan Media Pembelajaran Multiliterasi Digital bagi Calon Guru Praktik Pengalaman Lapangan di Kampus Islam Swasta Kota Tasikmalaya. *Jurnal Pengabdian ...*, Query date: 2024-07-12 05:39:55. <https://journal.kurasinstitute.com/index.php/japamul/article/view/658>
- Permanasari, A. (2016). STEM education: Inovasi dalam pembelajaran sains. *Prosiding SNPS (Seminar Nasional Pendidikan Sains)*, Query date: 2024-06-22 12:33:59. <https://core.ac.uk/download/pdf/289792418.pdf>
- Popenici, S., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and practice in technology enhanced ...*, Query date: 2024-06-22 14:58:09. <https://doi.org/10.1186/s41039-017-0062-8>
- Potkonjak, V., Gardner, M., Callaghan, V., Mattila, P., & ... (2016). Virtual laboratories for education in science, technology, and engineering: A review. ... & Education, Query date: 2024-06-22 14:58:09. <https://www.sciencedirect.com/science/article/pii/S0360131516300227>
- Pramono, I., & Mushafanah, Q. (2024). Analisis Penggunaan Media Wordwall Pada Pembelajaran Bahasa Indonesia Kelas 1 SD Supriyadi. *Innovative: Journal Of Social ...*, Query date: 2024-06-29 06:18:59. <http://j-innovative.org/index.php/Innovative/article/view/10861>
- Pratama, R. (2021). Utilization of Quizizz educational game media to increase learning interest and achievement. *Indonesian Journal of Educational Research ...*, Query date: 2024-06-22 20:26:56. <https://ejournal.undiksha.ac.id/index.php/IJERR/article/view/30690>
- Pratiwi, A., Hikmah, F., Adiansha, A., & ... (2021). Analisis penerapan metode games education dalam meningkatkan motivasi belajar siswa sekolah dasar. ... *Matematika Dan IPA*, Query date: 2024-06-22 20:26:56. <http://jurnal.bimaberilmu.com/index.php/jagomipa/article/view/27>
- Purwanti, L. (t.t.). Analysis Of The Use Of Interactive Media In Improving The Indonesian Language Skills Of Grade 6c Spk Kinderfield Cirebon Students. *Social, Humanities, and Educational Studies (SHES) ...*, Query date: 2024-06-29 06:18:59.

- <https://jurnal.uns.ac.id/SHES/article/view/68629>
- Putra, W., Zakir, S., & Sesmiarni, Z. (2022). Desain Media Pembelajaran Game Edukasi pada Mata Pelajaran Sejarah Kebudayaan Islam Kelas X di MAN Sibolga. ... *Journal of Learning ...*, Query date: 2024-06-22 20:26:56. <https://journal.makwafoundation.org/index.php/intellect/article/view/61>
- Qureshi, M., Khan, N., Raza, H., Imran, A., & Ismail, F. (2021). *Digital technologies in education 4.0. Does it enhance the effectiveness of learning?* ir.unikl.edu.my. <https://ir.unikl.edu.my/xmlui/handle/123456789/25661>
- Rahmawati, D., & Jamaludin, D. (2023). Analisis Kualitas Penilaian Virtual Program Wordwall Game Quiz Materi Sistem Reproduksi Manusia. *JEID: Journal of Educational ...*, Query date: 2024-06-29 06:18:59. <https://embada.com/index.php/jeid/article/view/153>
- Rahmawati, F., & Atmojo, I. (2021). Analisis media digital video pembelajaran abad 21 menggunakan aplikasi canva pada pembelajaran IPA. *Jurnal Basicedu*, Query date: 2024-06-27 15:39:38. <https://jbasic.org/index.php/basicedu/article/view/1717>
- Rahmayanti, B., & Andayani, Y. (2023). Validasi E-Modul IPA Berbasis Socio-Scientific Issue (SSI) untuk Meningkatkan Motivasi Belajar dan Literasi Sains Peserta Didik. *Journal of Classroom Action ...*, Query date: 2024-08-08 13:01:25. <https://jppipa.unram.ac.id/index.php/jcar/article/view/4614>
- Ramdani, P. (2021). *Media Pembelajaran Animasi*. books.google.com. <https://books.google.com/books?hl=en&lr=&id=QI9JEAQAQBAJ&oi=fnd&pg=PA28&dq=media+pembelajaran&ots=pPTkGttOxs&sig=bkxmXU0qJMwGXMU5Vg2w5VARfEA>
- Rohani, R. (2020). *Media pembelajaran*. Query date: 2024-06-27 15:39:38. <http://repository.uinsu.ac.id/17641/1/Diktat%20Media%20Pembelajaran%20Naik%20Pangkat.pdf>
- Rosero, V., Novay, E., & ... (2024). Interactive games for meaningful learning in the area of Language and Literature. *Revista ...*, Query date: 2024-06-29 06:18:59. <http://revista-iberoamericana.consultorioampuero.com/index.php/es/article/view/268>
- Rosli, M., Hamid, M. A., & Basiron, B. (2018). Integrasi Pendidikan Antara Islam Serta Sains dan Teknologi. *Prosiding Seminar Tamadun ...*, Query date: 2024-06-22 12:33:59. [http://eprints.utm.my/78462/1/8%20Mohd%20Aiman%20Shazlishah%20Rosli2018\\_IntegrasiPendidikanantaraIslamsertaSains.95-110.pdf](http://eprints.utm.my/78462/1/8%20Mohd%20Aiman%20Shazlishah%20Rosli2018_IntegrasiPendidikanantaraIslamsertaSains.95-110.pdf)
- Ross, S. M. (2008). Research Designs. *Handbook of Research on Educational Communications and Technology, Third Edition*, Query date: 2024-06-30 07:08:43, 715–761. <https://doi.org/10.4324/9780203880869-60>
- Rustaman, N. (2007a). Kemampuan Dasar Bekerja Ilmiah dalam Pendidikan Sains dan Asesmennya. *Makalah kunci Seminar Internasional Pendidikan IPA ...*, Query date: 2024-06-17 10:17:02.
- Rustaman, N. (2007b). Keterampilan Proses Sains. *Bandung: UPI*, Query date: 2024-06-17 10:17:02.

- Rustaman, N. (2008a). Habits of Mind in Learning Science and its Assessment. *Bandung: Indonesia University of Education*, Query date: 2024-06-17 10:17:02.  
[http://file.upi.edu/Direktori/SPS/PRODI.PENDIDIKAN\\_IPA/195012311979032-NURYANI\\_RUSTAMAN/Habts\\_of\\_Mind\\_08\\_makalah.pdf](http://file.upi.edu/Direktori/SPS/PRODI.PENDIDIKAN_IPA/195012311979032-NURYANI_RUSTAMAN/Habts_of_Mind_08_makalah.pdf)
- Rustaman, N. (2008b). Kebiasaan Berpikir dalam Pembelajaran Sains dan Asesmennya. *Konaspi VI FPMIPA Universitas Pendidikan Indonesia*, Query date: 2024-06-17 10:17:02.
- Rustaman, N. (2017). Mewujudkan sistem pembelajaran sains/biologi berorientasi pengembangan literasi peserta didik. *Research Report*, Query date: 2024-06-17 10:17:02.
- Rustaman, N. (2018). Integrasi Aspek Afektif-Kognitif melalui Pembelajaran Bioresources Berorientasi Local Wisdom dan Berpikir Sistem untuk Membekali Perilaku Konservasi melalui .... *Prosiding Seminar Nasional Biologi, Teknologi ...*, Query date: 2024-06-17 10:17:02. <https://jurnal.ar-raniry.ac.id/index.php/PBiotik/article/view/2602>
- Sakaria, S., & Kurniawan, A. (2022). Augmented Reality for Topeng Malangan Face Recognition as a Media for Cultural Education. *Journal Of Informatics And ...*, Query date: 2024-06-22 20:26:56.  
<http://ojs.uma.ac.id/index.php/jite/article/view/6218>
- Saleh, M., Syahrudin, S., Saleh, M., Azis, I., & ... (2023). *Media pembelajaran*. repository.penerbiteureka.com.  
<https://repository.penerbiteureka.com/publications/563021/media-pembelajaran>
- Salfina, R., Musril, H., Okra, R., & ... (2023). Perancangan Game Edukasi untuk Mata Pelajaran Bahasa Jepang Kelas X Menggunakan Aplikasi Educandy di SMKN 4 Payakumbuh. ... *and Education ...*, Query date: 2024-06-22 20:26:56.  
<http://journal.mwsfoundation.or.id/index.php/jised/article/view/1>
- Salsabila, U., Fitrah, P., & Nursangadah, A. (2020). Eksistensi teknologi pendidikan dalam kemajuan pendidikan islam abad 21. *Jurnal Eduscience (JES)*, Query date: 2024-06-22 12:33:59.  
<https://jurnal.ulb.ac.id/index.php/eduscience/article/view/1913>
- Sani, R. (2022). *Inovasi pembelajaran*. books.google.com.  
<https://books.google.com/books?hl=en&lr=&id=B4d-EAAQBAJ&oi=fnd&pg=PP1&dq=pembelajaran&ots=gXcVF56M0E&sig=-z70dw5hd-xzrMnqYIQeo1ZqsBw>
- Saptaaji, A., Burhanudin, B., & Basukiyatno, B. (2023). Meningkatkan Kemampuan Berpikir Kritis dan Hasil Belajar Siswa Menggunakan Desain Pembelajaran Blended Learning dengan Wordwall. *Journal of Education Research*, Query date: 2024-06-29 06:18:59.  
<https://www.jer.or.id/index.php/jer/article/view/388>
- Saputra, E. R., & Rusmana, N. (2021). Students' experience of online game-based assessment tool during emergency remote teaching. *Journal of Physics: Conference Series*, 1987(1), 012012. <https://doi.org/10.1088/1742-6596/1987/1/012012>

- Saputri, S., Drajati, N., & Sukmawati, F. (t.t.). Development of Wordwall Educative Games Applications as Learning Media For Understanding PJOK Materials For Elementary Students. *Social, Humanities, and Educational ...*, Query date: 2024-06-29 06:18:59. <https://jurnal.uns.ac.id/SHES/article/view/80034>
- Sari, R. (2017). Uji validitas modul pembelajaran biologi pada materi sistem reproduksi manusia melalui pendekatan konstruktivisme untuk kelas IX SMP. *Scientiae Educatia: Jurnal Pendidikan Sains*, Query date: 2024-08-08 13:01:25. <https://www.syekhnurjati.ac.id/jurnal/index.php/sceducatia/article/viewFile/1296/1064>
- Setiawati, I., Wardani, S., & Lestari, W. (2024). Development of Wordwall-based Indonesian Geographical Condition Assessment Instrument in Modipaskogo E-Book for Elementary School Students. *Riwayat: Educational Journal of ...*, Query date: 2024-06-29 06:18:59. <https://jurnal.usk.ac.id/riwayat/article/view/36597>
- Setiyadi, B., Revyta, R., & Fadhilah, A. (2020). Prinsip-prinsip pengembangan kurikulum. *Khazanah Pendidikan*, Query date: 2024-08-08 17:24:29. <http://jurnalnasional.ump.ac.id/index.php/khazanah/article/download/8473/3386>
- Sitepu, E. (2022). Media Pembelajaran Berbasis Digital. *Prosiding Pendidikan Dasar*, Query date: 2024-06-27 15:39:38. <https://www.journal.mahesacenter.org/index.php/ppd/article/download/195/65>
- Soto-Martin, O. (2020). A digital reconstruction of a historical building and virtual reintegration of mural paintings to create an interactive and immersive experience in virtual reality. *Applied Sciences (Switzerland)*, 10(2). <https://doi.org/10.3390/app10020597>
- Suarni, G., Rizka, M., & Zinnurain, Z. (2021). Analisis pengaruh penerapan model pembelajaran sains teknologi masyarakat terhadap hasil belajar siswa. *Jurnal Paedagogy*, Query date: 2024-06-22 12:33:59. <http://e-journal.undikma.ac.id/index.php/pedagogy/article/view/3226>
- Sugiani, W. (2022). Aplikasi Berbasis Word Wall Pada Pembelajaran Bahasa Indonesia. *Jurnal Guru Indonesia*, Query date: 2024-06-29 06:18:59. <https://pdfs.semanticscholar.org/daef/f5942dc4d964eb12f465e1f1e534563e8cdc.pdf>
- Sugiarti, L. (2021). Wordwall Game to Improve Early Reading Skill with the Syllable Method for The First Grade Students in Primary School. *Social, Humanities, and Educational Studies (SHES) ...*, Query date: 2024-06-29 06:18:59. <https://jurnal.uns.ac.id/SHES/article/view/68407>
- Sugiyono, S. (2021). *Integrasi Sains dan Teknologi dalam Sistem Pendidikan Islam Menurut Pandangan Al-Qur'an*. repository.uinsi.ac.id. <https://repository.uinsi.ac.id/handle/123456789/3716>
- Suryani, L., & Hamdu, G. (2021). Education for Sustainable Development in Science National Exam Questions of Elementary School. *ASEAN Journal of Science and Engineering Education*, 1(1), 1–6.



- <https://doi.org/10.17509/ajsee.v1i1.32396>
- Suyati, E., & Rozikin, A. (2021). *Belajar & Pembelajaran*. repository.umpr.ac.id.  
<http://repository.umpr.ac.id/283/>
- Swari, N. (2023). WORDWALL AS A LEARNING MEDIA TO INCREASE STUDENTS'READING INTEREST. *Jurnal Pendidikan Bahasa Inggris Indonesia*, Query date: 2024-06-29 06:18:59.  
<https://ejournal2.undiksha.ac.id/index.php/jpbi/article/view/1572>
- Syamsidar, S., Silalahi, R., & ... (2023). Wordwall on mastery of vocabulary in English learning. *Al-Ishlah: Jurnal ...*, Query date: 2024-06-29 06:18:59.  
<http://journal.staihubbulwathan.id/index.php/alishlah/article/view/3466>
- Tangkui, R., & Keong, T. (2020). ... Berasaskan Permainan Digital Menggunakan Minecraft: Enhancement of Achievement in Fractions: A Conceptual Framework for Digital Game-Based Learning using .... *Journal of ICT in Education*, Query date: 2024-06-22 20:26:56.  
<http://ojs.upsi.edu.my/index.php/JICTIE/article/view/3911>
- Timumun, A. (2020). A COMPARATIVE STUDY BETWEEN WORD WALL AND FLASH CARD TO INCREASE STUDENTS' VOCABULARY OF VIII GRADE STUDENTS AT SMP NEGERI 5 .... *Jurnal Madako Education*, Query date: 2024-06-22 20:57:53.  
<https://ojs.umada.ac.id/index.php/jme/article/view/137>
- Tisdell, F. (2012). *Science and technology policy: Priorities of governments*. books.google.com.  
<https://books.google.com/books?hl=en&lr=&id=051fBgAAQBAJ&oi=fnd&pg=PT7&dq=science+technology+and+education&ots=WB3JxsHtZv&sig=EvDaqZwnpF2gHd2E538HBOINQgU>
- Tomczyk, L. (2022). Evaluation of the Quality of the Educational Software From the Perspective of Experiences of Italian and Polish Pre-Service Teachers. *30th International Conference on Computers in Education Conference, ICCE 2022 - Proceedings, I*(Query date: 2024-06-22 20:53:16), 613–618.
- Toquero, C. (2020). Challenges and opportunities for higher education amid the COVID-19 pandemic: The Philippine context. *Pedagogical Research*, Query date: 2024-06-22 14:58:09. <https://eric.ed.gov/?id=EJ1263557>
- Wahidiyat, M., & Tabroni, I. (2020). COLOR GAME OF ONDEL-ONDEL AS CULTURAL EDUCATION MEDIA FOR CHILDREN. *Capture: Jurnal Seni Media Rekam*, Query date: 2024-06-22 20:26:56. <https://jurnal.isi-ska.ac.id/index.php/capture/article/view/3263>
- Wahyu, E., & Markos, S. (2016). Analisis buku siswa mata pelajaran IPA kelas VIII SMP/Mts berdasarkan kategori literasi sains. *Jurnal Inovasi Dan Pembelajaran Fisika*, Query date: 2024-08-08 13:01:25.  
<https://ejournal.unsri.ac.id/index.php/jipf/article/view/3837>
- Wang, M., & Degol, J. (2017). Gender gap in science, technology, engineering, and mathematics (STEM): Current knowledge, implications for practice, policy, and future directions. *Educational psychology review*, Query date: 2024-06-22 14:58:09. <https://doi.org/10.1007/s10648-015-9355-x>
- Widyaningsih, Y., Nadiroti, N., Hamdani, N., & ... (2023). WordWall Application as an Interactive Learning Media in Mastering English Vocabulary at

- Elementary School. ... on Education and ..., Query date: 2024-06-29 06:18:59. <https://www.atlantis-press.com/proceedings/icetech-22/125989141>
- Wijayanti, K., & Setyowati, T. (2023). 96. Improving Students' Vocabulary on Descriptive Text by Using Word Wall Media on Seventh Grade of Junior High School. *Prosiding Seminar Nasional ...*, Query date: 2024-06-29 06:18:59. <https://conference.upgris.ac.id/index.php/psnppg/article/view/4034>
- Winangsih, E., & Harahap, R. (2023). Analisis Penggunaan Media Pembelajaran pada Muatan IPA di Sekolah Dasar. *Jurnal Basicedu*, Query date: 2024-06-27 15:39:38. <https://jbasic.org/index.php/basicedu/article/view/4433>
- Winarno, B. (2014). Designing and Developing Interactive Learning Multimedia Using 3D Game Engine. *Jurnal Buana Informatika*, Query date: 2024-06-22 20:26:56. <https://ojs.uajy.ac.id/index.php/jbi/article/view/356>
- Wu, J. P. (2018). A web-based decision tool to improve contraceptive counseling for women with chronic medical conditions: Protocol for a mixed methods implementation study. *JMIR Research Protocols*, 7(4). <https://doi.org/10.2196/resprot.9249>
- Wulandari, S., Rustaman, N., & ... (2021). What Should be Mastered by Elementary, Junior and Senior High School Teachers Related to the Concept of Evolution? ... *Online Journal of ...*, Query date: 2024-06-17 10:17:02. <https://european-science.com/eojnss/article/view/6124>
- Yang, Q. F. (2020). Balancing cognitive complexity and gaming level: Effects of a cognitive complexity-based competition game on EFL students' English vocabulary learning performance, anxiety and behaviors. *Computers and Education*, 148(Query date: 2024-06-22 20:31:27). <https://doi.org/10.1016/j.compedu.2020.103808>
- Yang, Y. (2012). Building virtual cities, inspiring intelligent citizens: Digital games for developing students' problem solving and learning motivation. *Computers and Education*, 59(2), 365–377. <https://doi.org/10.1016/j.compedu.2012.01.012>
- Yantik, F., Sutrisno, S., & Wiryanto, W. (2022). Desain Media Pembelajaran Flash Card Math dengan Strategi Teams Achievement Division (STAD) terhadap Hasil Belajar Matematika Materi Himpunan. *Jurnal Basicedu*, Query date: 2024-06-27 15:39:38. <https://jbasic.org/index.php/basicedu/article/view/2624>
- Yasa, P., & Trimurtini, T. (2024). Analisis Penggunaan Wordwall Sebagai Peran Teknologi Dalam Pembelajaran di Sekolah Dasar. *Socius: Jurnal Penelitian Ilmu-Ilmu Sosial*, Query date: 2024-06-29 06:18:59. <https://ojs.daarulhuda.or.id/index.php/Socius/article/view/328>
- Yasri, D., Yolnasdi, Y., Ermawati, E., & ... (2023). Assistance in Making Interactive Learning Using Online Media for Teachers of SDN 24 Pinggir. *DINAMISIA: Jurnal ...*, Query date: 2024-06-29 06:18:59. <https://pustaka-psm.unilak.ac.id/index.php/dinamisia/article/view/11262>
- Yogica, R., Muttaqiin, A., & Fitri, R. (2020). *Metodologi pembelajaran: Strategi, pendekatan, model, metode pembelajaran*. books.google.com.

[https://books.google.com/books?hl=en&lr=&id=qCrxDwAAQBAJ&oi=fnd&pg=PA1&dq=pembelajaran&ots=qaolhSSJ\\_K&sig=nuFUXtpFBBm1-5Uvoa67jljYk7c](https://books.google.com/books?hl=en&lr=&id=qCrxDwAAQBAJ&oi=fnd&pg=PA1&dq=pembelajaran&ots=qaolhSSJ_K&sig=nuFUXtpFBBm1-5Uvoa67jljYk7c)

- Yuliati, Y., & Saputra, D. (2019). Pembelajaran sains di era revolusi industri 4.0. *Jurnal Cakrawala Pendas*, *Query date: 2024-06-22 12:33:59*. <https://core.ac.uk/download/pdf/228882799.pdf>
- Z, R. S., & Saputra, E. R. (2022). Pengembangan Media Pembelajaran Berbasis ICT pada Mata Pelajaran Agama Islam Materi Huruf Hijaiyah dan Harakatnya. *Jurnal Basicedu*, *6*(1), 552–563. <https://doi.org/10.31004/basicedu.v6i1.1947>
- Zakari, H. M. (2014). A review of serious games for children with autism spectrum disorders (ASD). *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, *8778*(Query date: 2024-06-22 20:31:27), 93–106. [https://doi.org/10.1007/978-3-319-11623-5\\_9](https://doi.org/10.1007/978-3-319-11623-5_9)
- Zakaria, N., & Sili, E. (2023). ... aplikasi Wordwall dalam pengajaran dan pembelajaran gaya bahasa seloka boros dan jimat bagi pelajar tingkatan 4: Efficacy of Wordwall apps in teaching and .... *Al-Azkiyaa-International Journal of ...*, *Query date: 2024-06-29 06:18:59*. <https://azkiyaa.usim.edu.my/index.php/jurnal/article/view/45>