

DAFTAR PUSTAKA

- Abdulrahaman, M. D., Faruk, N., Oloyede, A. A., Surajudeen-Bakinde, N. T., Olawoyin, L. A., Mejabi, O. V., Imam-Fulani, Y. O., Fahm, A. O., & Azeez, A. L. (2020). Multimedia tools in the teaching and learning processes: A systematic review. *Heliyon*, 6(1-14). <https://doi.org/10.1016/j.heliyon.2020.e05312>
- Adeoye, M. A., Wirawan, K. A. S. I., Pradnyani, M. S. S., & Septiarini, N. I. (2024). Revolutionizing education: Unleashing the power of the ADDIE model for effective teaching and learning. *Jurnal Pendidikan Indonesia*, 13(1), 202–209.
- Adinugraha, F. (2021). Students' creativity in producing biology learning media. *Proceedings of the 2nd Annual Conference on Blended Learning, Educational Technology and Innovation (ACBLETI 2020)*, 560, 228–233. <https://doi.org/10.2991/assehr.k.210615.045>
- Agwei, C. A. (2022). Effect of context-based and conventional teaching approaches on students' achievement in genetics. *British Journal of Education*, 10(11), 121–139. <https://doi.org/10.37745/bje.2013/vol10n11121139>
- Aka, K. A. (2019). Integration Borg & Gall (1983) and Lee & Owen (2004) models as an alternative model of design-based research of interactive multimedia in elementary school. *Journal of Physics: Conference Series*, 1318(1), 1–8. <https://doi.org/10.1088/1742-6596/1318/1/012022>
- Amalia, K., Rasyad, I., & Gunawan, A. (2023). Pembelajaran berdiferensiasi sebagai inovasi pembelajaran. *Journal Of Education And Teaching Learning (JETL)*, 5(2), 185–193. <https://doi.org/10.51178/jetl.v5i2.1351>
- Amoah, J. E. M., Eminah, J. K., Ngman-Wara, E. I. D., & Azure, J. A. (2023). The status of biology teaching and learning materials in selected central regional schools, ghana. *Cogent Education*, 10(1), 1-14. <https://doi.org/10.1080/2331186X.2023.2198939>
- Amos, S., Eghan, M. P. K., & Oppong, E. (2022). The impact of instructional materials in teaching and learning of biology in the colleges of education in the central region of ghana. *Open Journal of Educational Research*, 2(5), 213–221. <https://doi.org/10.31586/ojer.2022.400>
- Anakara, H. R. S. (2021). Assessment of biological literacy levels among third-grade secondary school students in medina. *International Education Studies*, 14(7), 47-58. <https://doi.org/10.5539/ies.v14n7p47>
- Ananda, O. T., Mahanal, S., & Susanto, H. (2023). Literasi digital siswa: Studi deskriptif pada pembelajaran biologi di SMA. *Bioscientist : Jurnal Ilmiah Biologi*, 11(2), 1100-1110. <https://doi.org/10.33394/bioscientist.v11i2.8815>
- Anazifa, R. D. (2022). The role of technology in biology teaching during and post pandemic era. *Proceedings of the 5th International Conference on Current Issues in Education (ICCIE 2021)*, 640, 46–51. <https://doi.org/10.2991/assehr.k.220129.009>
- Appiah-Adjei, A. A., Agwei, C. A., & Gyamfi, M. (2025). From theory to real life: elevating biology students' performance in ecology with context-based learning. *American J Sci Edu Re*, 4(6), 943–953.

- Ariyati, S., & Misriati, T. (2016). Perancangan animasi interaktif pembelajaran asmaul husna. *Jurnal Khatulistiwa Informatika*, 2(1), 116–121. <https://doi.org/10.31294/jtk.v2i1.369>
- Borg, W. R., & Gall, M. D. (1984). Educational research: An introduction. *British Journal of Educational Studies*, 32(3), 274. <https://doi.org/10.2307/3121583>
- Branson, R. K. (1978). The interservice procedures for instructional systems development. *Educational Technology*, 18(3), 11–14. <http://www.jstor.org/stable/44418942>
- Bukoye, R. O. (2019). Utilization of instruction materials as tools for effective academic performance of students: implications for counselling. *The 2nd Innovative and Creative Education and Teaching International Conference*, 2, 1395-1401. <https://doi.org/10.3390/proceedings2211395>
- Cahyana, U., Luhukay, J. R., Lestari, I., Irwanto, I., & Suroso, J. S. (2023). Improving students' literacy and numeracy using mobile game-based learning with augmented reality in chemistry and biology. *International Journal of Interactive Mobile Technologies*, 17(16), 4–15. <https://doi.org/10.3991/ijim.v17i16.42377>
- Colvard, N. B., Watson, C. E., & Park, H. (2018). The impact of open educational resources on various student success metrics. *International Journal of Teaching and Learning in Higher Education*, 30(2), 262–276.
- Coppi, M., Fialho, I., & Cid, M. (2023). Developing a scientific literacy assessment instrument for portuguese 3rd cycle students. *Education Sciences*, 13(9), 941-965. <https://doi.org/10.3390/educsci13090941>
- Damayanti, G. A., & Muhroji, M. (2022). The difficulties of elementary school teacher in developing thematic learning tools for the merdeka curriculum. *Jurnal Kependidikan: Jurnal Hasil Penelitian Dan Kajian Kepustakaan Di Bidang Pendidikan, Pengajaran Dan Pembelajaran*, 8(3), 703-715. <https://doi.org/10.33394/jk.v8i3.5770>
- Deta, U. A., Arisanti, A., Nur Hudha, M., Apridiana Lestari, N., Kurnia Prahani, B., & Suprpto, N. (2023). *Literasi sains berbasis framework PISA 2025*. Mitra Edukasi dan Publikasi. <https://doi.org/10.1787/79913c69-en>
- Dewdney, A., & Ride, P. (2006). *The new media handbook* (2nd ed.). Routledge.
- Djamahar, R., Rifan, M., & Ristanto, R. H. (2021). Bio-repropedia website based on reading, mapping, and sharing (RMS): A way to improve biological literacy. *Journal of Physics: Conference Series*, 1796(1), 1-10. <https://doi.org/10.1088/1742-6596/1796/1/012067>
- Fathiyati, R., & Utami, R. P. (2012). *Pengembangan media pembelajaran biologi berbasis macromedia flash sebagai sumber belajar bagi siswa SMA/MA kelas XI semester 2 materi pokok sistem reproduksi manusia*. Bachelor thesis, UIN Sunan Kalijaga Yogyakarta. Institutional Repository. <https://digilib.uin-suka.ac.id/id/eprint/57186/>
- Flew, T. (2005). *New media: An introduction*. Oxford University Press.

- García-Ojeda, M. E., & Nishiguchi, M. K. (2022). The metamorphosing professor: Adapting teaching to fulfill the promise of biology education. *Integrative and Comparative Biology*, 62(6), 1519–1527. <https://doi.org/10.1093/icb/icac149>
- Ghozali, I. (2009). *Aplikasi analisis multivariate dengan program SPSS*. UNDIP.
- Gultepe, N., & Kilic, Z. (2017). Effect of scientific argumentation on the development of scientific process skills in the context of teaching chemistry. *International Journal of Environmental and Science Education*, 10(1), 111–132. <https://doi.org/10.1037/t51058-000>
- Hafni, F., Azhar, A., & Nasir, M. (2022). Development of interactive learning media using lectors inspire on motion and force materials in junior high school. *Jurnal Geliga Sains: Jurnal Pendidikan Fisika*, 9(2), 107–114. <https://doi.org/10.31258/jgs.9.2.107-114>
- Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*, 66(1), 64–74. <https://doi.org/10.1119/1.18809>
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>
- Hamani, Y., Sciaki-Tamir, Y., Deri-Hasid, R., Miller-Pogrud, T., Milwidsky, A., & Haimov-Kochman, R. (2007). Misconceptions about oral contraception pills among adolescents and physicians. *Human Reproduction*, 22(12), 3078–3083. <https://doi.org/10.1093/humrep/dem259>
- Heinich, R., Smaldino, S. E., Molenda, M., & Russell, J. D. (1996). *Instructional media and technologies for learning (7th edition)*. Prentice Hall, Inc.
- Hikmawati, V., Rustaman, N., & Saefudin, S. (2014). Efektivitas SQ5R terhadap pengetahuan konseptual dan retensi siswa SMA pada pembelajaran sistem reproduksi manusia. *Jurnal Pengajaran Matematika Dan Ilmu Pengetahuan Alam*, 19(2), 199–205. <https://doi.org/10.18269/jpmipa.v19i2.36180>
- Holbrook, J., & Rannikmae, M. (2009). The meaning of scientific literacy. *International Journal of Environmental & Science Education*, 4(3), 275–288. <http://www.ijese.com/>
- Julita, T., Yunus, Y., & Wijaya, I. (2023). Uji praktikalitas media pembelajaran berbasis android pada mata pelajaran pendidikan jasmani olahraga dan kesehatan kelas xi di SMK N 2 padang. *PIJAR: Jurnal Pendidikan Dan Pengajaran*, 2(1), 1–11. <https://doi.org/10.58540/pijar.v2i1.390>
- Kassa, M. M., Azene, M. K., Mengstie, S. M., & Ferede, M. W. (2024). Effect of using multimedia and dynamic classroom integrated instruction on grade 11 students' biology academic achievement. *Heliyon*, 10(18), 1–15. <https://doi.org/10.1016/j.heliyon.2024.e37315>
- Krauja, I., & Birzina, R. (2018). *Meaningful reading skills for improvement of biological literacy in primary school. 11*, 185–193. <https://doi.org/10.22616/REEP.2018.022>

- Kukliansky, I., & Eshach, H. (2014). Evaluating a contextual-based course on data analysis for the physics laboratory. *Journal of Science Education and Technology*, 23(1), 108–115. <https://doi.org/10.1007/s10956-013-9456-6>
- Kuswanto, J. (2018). Media pembelajaran berbasis web pada mata pelajaran biologi kelas x. *Jurnal Perspektif Pendidikan*, 12(2), 11–20. <https://doi.org/10.31540/jpp.v12i2.203>
- Laugksch, R. C. (2000). Scientific literacy: A conceptual overview. *Science Education*, 84(1), 71–94. [https://doi.org/https://doi.org/10.1002/\(SICI\)1098-237X\(200001\)84:1<71::AID-SCE6>3.0.CO;2-C](https://doi.org/https://doi.org/10.1002/(SICI)1098-237X(200001)84:1<71::AID-SCE6>3.0.CO;2-C)
- Maigoro, I. L., Danjuma Nansoh, M., Pam, E. D., & Manji, W. M. (2017). The relationship between types of misconceptions and achievement in genetics among senior secondary school biology students in jos north LGA of plateau state. *European Centre for Research Training and Development UK*, 5(3), 2056–3639.
- Marpanaji, E., Mahali, M. I., & Putra, R. A. S. (2018). Survey on how to select and develop learning media conducted by teacher professional education participants. *Journal of Physics: Conference Series*, 1140, 1-10. <https://doi.org/10.1088/1742-6596/1140/1/012014>
- Maulinda, N. S., Mahrawi, & Ratnasari, D. (2023). Pengembangan website sebagai media pembelajaran biologi pada materi evolusi. *Jurnal Biologi Edukasi*, 15(31), 150–157.
- Maydiantoro, A. (2021). Research model development: Brief literature review. *Jurnal Pengembangan Profesi Pendidik Indonesia (JPPPI)*, 1(2), 29–35.
- Mellisa, M., & Yanda, Y. D. (2019). Developing audio-visual learning media based on video documentary on tissue culture explant of *Dendrobium bigibbum*. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, 5(3), 379–386. <https://doi.org/10.22219/jpbi.v5i3.9993>
- Mohd. Tohit, N. F., & Haque, M. (2024). Forbidden conversations: A comprehensive exploration of taboos in sexual and reproductive health. *Cureus*. <https://doi.org/10.7759/cureus.66723>
- Mukti, I. N. C., & Nurcahyo, H. (2017). Pengembangan media pembelajaran biologi berbantuan komputer untuk meningkatkan hasil belajar peserta didik. *Jurnal Inovasi Pendidikan IPA*, 3(2), 137-149. <https://doi.org/10.21831/jipi.v3i2.7644>
- Mulyaningsih, S., Tisna Putri, M. M., Saputra, I. D., & Amalia, L. (2024). Identifikasi miskonsep yang dialami siswa pada materi sistem reproduksi dengan menggunakan CRI (certainty of response index). *Jurnal Life Science : Jurnal Pendidikan dan Ilmu Pengetahuan Alam*, 6(2), 69–78. <https://doi.org/10.31980/lsciences.v6i2.1606>
- Mustadi, A., Sayekti, O. M., Rochmah, E. N., Zubaidah, E., Sugiarsih, S., & Schulze, K. M. (2021). Pancalis: android-based leaning media for early reading in new normal. *Jurnal Cakrawala Pendidikan*, 41(1), 71–82. <https://doi.org/10.21831/cp.v41i1.45883>
- Ngazizah, I. N., & Nugraheni, A. S. (2022). PUEBI daring sebagai alternatif pembelajaran ejaan bahasa indonesia di sman 1 tunjungan. *Caraka: Jurnal Ilmu Kebahasaan, Kesastraan, dan Pembelajarannya*, 8(2), 120–138. <https://doi.org/10.30738/caraka.v8i2.10597>

- Ningrum, R. A., Widodo, W., & Sudibyo, E. (2024). The influence of website-based learning media on science learning outcomes in elementary school students in the era of society 5.0. *IJORER : International Journal of Recent Educational Research*, 5(1), 12–28. <https://doi.org/10.46245/ijorer.v5i1.445>
- Oztas, F., & Oztas, H. (2016). What do beginner biology teacher candidates know of genetics and genes? *Journal of Education and Practice*, 7(30), 131-138.
- Pratycia, A., Putra, A. D., Salsabila, A. G. M., Adha, F. I., & Fuadin, A. (2023). Analisis perbedaan kurikulum 2013 dengan kurikulum merdeka. *Jurnal Pendidikan Sains Dan Komputer*, 3(01), 58–64.
- Quimat, R. M., & Picardal, M. (2024). Context-based teaching through education for sustainable development in philippine secondary schools: a meta-analysis. *Recoletos Multidisciplinary Research Journal*, 12(1), 25–40. <https://doi.org/10.32871/rmrj2412.01.03>
- Ratumanan, T. G., & Laurens, T. (2011). *Penilaian hasil belajar pada tingkat satuan pendidikan*. Unesa University Press.
- Ratumanan, T., & Tetelepta, Y. (2019). Analisis pembelajaran matematika berdasarkan kurikulum 2013 pada SMA negeri 1 masohi. *Jurnal Magister Pendidikan Matematika (JUMADIK)*, 1(1), 25–34. <https://doi.org/10.30598/jumadikavol1iss1year2019page25-34>
- Ristanto, R. H., Rusdi, R., Mahardika, R. D., Darmawan, E., & Ismirawati, N. (2020). Digital flipbook imunopedia (DFI): A development in immune system e-learning media. *International Journal of Interactive Mobile Technologies (IJIM)*, 14(19), 140-161. <https://doi.org/10.3991/ijim.v14i19.16795>
- Rosyadi, I., Santosa, S., & Fatmawati, U. (2023). Development of website-based learning media using wordpress on virus material to empowered students' learning motivation. *AIP Conf. Proc.* <https://doi.org/10.1063/5.0112435>
- Salema, A., Meha, A. M., & Ngginak, J. (2024). Pengembangan E-LKPD berbasis literasi sains pada materi sistem reproduksi manusia kelas xi SMAN 4 kupang. *Biosfer : Jurnal Biologi dan Pendidikan Biologi*, 9(2), 215–223. <https://doi.org/10.23969/biosfer.v9i2.20026>
- Sanaky, H. A. (2009). *Learning media*. Safiria Insania Press.
- Sarip, M., Amintarti, S., & Utami, N. H. (2022). Validitas dan keterbacaan media ajar e-booklet untuk siswa sma/ma materi keanekaragaman hayati. *JUPEIS : Jurnal Pendidikan dan Ilmu Sosial*, 1(1), 43–59. <https://doi.org/10.57218/jupeis.Vol1.Iss1.30>
- Schwartz Reneé S. and Crawford, B. A. (2006). Authentic scientific inquiry as context for teaching nature of science: Identifying critical element. In N. G. Flick Lawrence B. and Lederman (Ed.), *Scientific Inquiry and Nature of Science: Implications for Teaching, Learning, and Teacher Education*. 331–355. Springer Netherlands. https://doi.org/10.1007/978-1-4020-5814-1_16

- Shareef, S. M., & Nithyanantham, V. (2022). *Fundamentals of educational technology*. Bentham Science Publishers. <https://doi.org/10.2174/97898150398321220101>
- Šorgo, A., & Šiling, R. (2017). Fragmented knowledge and missing connections between knowledge from different hierarchical organisational levels of reproduction among adolescents and young adults. *Center for Educational Policy Studies Journal*, 1, 69-91. <https://doi.org/10.25656/01:12959>
- Sugiyono. (2016). *Metode penelitian pendidikan pendekatan kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Sukenda, Dr., Anjani, M., & Yustim, B. (2019). Learning media for biology subject based on multimedia in junior high school level. *Universal Journal of Educational Research*, 7(4A), 43–51. <https://doi.org/10.13189/ujer.2019.071407>
- Sukmawati, Ina Syam, N., Ibrahim, M., Amaliah, N., & Sujarwo, S. (2023). The lecturers' and students' response on independent learning-independent campus (MBKM) in teaching and learning english. *Jurnal Scientia*, 12(1), 622-630.
- Supriatna, Muh. N., Diyanti, I. E., & Sari Dewi, R. (2023). Analisis perbandingan kurikulum KTSP, K13 dan kurikulum merdeka di sekolah dasar. *Journal on Education*, 6(1), 9163–9172. <https://doi.org/https://doi.org/10.31004/joe.v6i1.4418>
- Suryanda, A., Ernawati, E., & Maulana, A. (2018). Pengembangan modul multimedia mobile learning dengan android studio 4.1 materi keanekaragaman hayati bagi siswa SMA kelas x. *BIOSFER: JURNAL PENDIDIKAN BIOLOGI*, 9(1), 55–64. <https://doi.org/10.21009/biosferjpb.9-1.9>
- Susanti, H., Mulyawan, H., Nanang Purnama, R., Aulia, M., & Kartika, I. (2024). Pengembangan kurikulum merdeka untuk meningkatkan kualitas pembelajaran. *Reslaj: Religion Education Social Laa Roiba Journal*, 6(4), 2415–2424. <https://doi.org/10.47467/reslaj.v6i4.1339>
- Suwono, H., Mahmudah, A., & Maulidiah, L. (2017). Scientific literacy of a third year biology student teachers: Exploration study. *The 4th International Conference on Language, Society and Culture in Asian Contexts*, 1(3), 269–278. <https://doi.org/10.18502/kss.v1i3.747>
- Suwono, H., Rizkita, L., & Susilo, H. (2015). Peningkatan literasi saintifik siswa SMA melalui pembelajaran biologi berbasis masalah sosiosains. *Jurnal Ilmu Pendidikan Universitas Negeri Malang*, 21(2), 136–144. <https://doi.org/10.17977/jip.v21i2.8367>
- Szabo, D. A. (2022). Adapting the ADDIE instructional design model in online education. *Studia Universitatis Babeş-Bolyai Psychologia-Paedagogia*, 67(1), 126–140. <https://doi.org/10.24193/subbbsyped.2022.1.08>
- Tamara, M. F., Tulenan, V., & Paturusi, S. (2019). Aplikasi pembelajaran interaktif sistem pencernaan manusia untuk siswa sekolah dasar. *Jurnal Teknik Informatika*, 14(3), 377–386.
- Uno, G. E., & Bybee, R. W. (1994). Understanding the dimensions of biological literacy. *BioScience*, 44(8), 553–557. <https://doi.org/10.2307/1312283>

- van den Akker, J. (1999). Principles and methods of development research. In R. M. and G. K. and N. N. and P. T. van den Akker Jan and Branch (Ed.), *Design Approaches and Tools in Education and Training* (pp. 1–14). Springer Netherlands. https://doi.org/10.1007/978-94-011-4255-7_1
- van den Broek, G. S. E., Wesseling, E., Huijssen, L., Lettink, M., & van Gog, T. (2022). Vocabulary learning during reading: benefits of contextual inferences versus retrieval opportunities. *Cognitive Science*, 46(4). <https://doi.org/10.1111/cogs.13135>
- Vekli, G. S., & Çalik, M. (2023). The effect of web-based biology learning environment on academic performance: a meta-analysis study. *Journal of Science Education and Technology*, 32(3), 365–378. <https://doi.org/10.1007/s10956-023-10033-4>
- Wang, X.-M., Hu, Q.-N., Hwang, G.-J., & Yu, X.-H. (2023). Learning with digital technology-facilitated empathy: An augmented reality approach to enhancing students' flow experience, motivation, and achievement in a biology program. *Interactive Learning Environments*, 31(10), 6988–7004. <https://doi.org/10.1080/10494820.2022.2057549>
- Wenning, C. J. (2008). Dealing more effectively with alternative conceptions in science. *Journal of Physics Teacher Education Online*, 5(1), 11-19.
- Widoyoko, E. P. (2020). *Evaluasi program pembelajaran*. Pustaka Belajar.
- Zakso, A. (2023). Implementasi kurikulum merdeka belajar di indonesia. *Jurnal Pendidikan Sosiologi dan Humaniora*, 13(2), 916. <https://doi.org/10.26418/j-psh.v13i2.65142>

