

## DAFTAR PUSTAKA

- Amelia, D., Wibowo, F. C., & Sanjaya, L. A. (2023). MODUL DIGITAL FLUIDA BERBASIS STEM (MD-FISTEM) SEBAGAI BAHAN AJAR FISIKA. *Prosiding Seminar Nasional Fisika*, 23–30. <https://doi.org/10.21009/03.1102.pf04>
- Arikunto, S. (2018). Dasar–Dasar Evaluasi Pendidikan. In R. Damayanti (Ed.), *Edisi Revisi, Cetakan kesebelas, Jakarta: Bumi Aksara* (3rd ed.). Bumi Aksara.
- Arumingtyas, P. (2021). Peningkatan Kedisiplinan Belajar Peserta Didik Melalui Media Google Sites. *Kalam Cendekia: Jurnal Ilmiah Kependidikan*, 9(1), 343–349. <https://doi.org/10.20961/jkc.v9i1.53839>
- Azlan, C. A., Wong, J. H. D., Tan, L. K., Huri, M. S. N. A. D., Ung, N. M., Pallath, V., Tan, C. P. L., Yeong, C. H., & Ng, K. H. (2020). Teaching and learning of postgraduate medical physics using Internet-based e-learning during the COVID-19 pandemic – A case study from Malaysia. *Physica Medica*, 80, 10–16. <https://doi.org/10.1016/j.ejmp.2020.10.002>
- Bagiyono. (2017). Analisis Tingkat Kesukaran dan Daya Pembeda Butir Soal Ujian Pelatihan Radiografi Tingkat. *Jurnal Widyanuklida.*, 16(1), 1–12.
- Barry, D. M., Kanematsu, H., Ogawa, N., Nakahira, K., Banavar, M., & Rivera, S. (2019). STEM activities for exploring Mars using innovative e-learning. *Procedia Computer Science* 159, 159, 1126–1134. <https://doi.org/10.1016/j.procs.2019.09.281>
- Borg, W. R., & Gall, M. D. (1983). *Educational Research: An Introduction* (4th ed.). Longman Inc.
- Branch, R. M. (2009). Instructional design: The ADDIE approach. In *Instructional Design: The ADDIE Approach*. Springer. <https://doi.org/10.1007/978-0-387-09506-6>
- Bunyamin, M. A. H., & Finley, F. (2016). STEM Education in Malaysia: Reviewing the current physics curriculum. *International Conference of Association for Science Teacher Education*.
- Cárdenas-Sainz, B. A., Barrón-Estrada, M. L., Zatarain-Cabada, R., & Chavez-Echeagaray, M. E. (2023). Evaluation of eXtended reality (XR) technology on motivation for learning physics among students in mexican schools. *Computers & Education: X Reality*, 3, 1–12. <https://doi.org/10.1016/j.cexr.2023.100036>
- Darpiyah, & Sulastri. (2023). The Effectiveness of Using an Interactive e-Module to Improve Learning Outcomes. *Journal of Accounting and Business Education*, 8(2). <https://doi.org/10.17977/jabe.v8i2.47605>
- Dominguez, A., Garza, J. D. la, Espinoza, M. Q., & Zavala, G. (2024). Integration of Physics and Mathematics in STEM Education: Use of Modeling. *Education Science*, 14(1). <https://doi.org/10.3390/educsci14010020>

- English, L. D. (2016). STEM education K-12: perspectives on integration. In *International Journal of STEM Education* (Vol. 3, Issue 1). <https://doi.org/10.1186/s40594-016-0036-1>
- Fikri, M. R., Muslim, Purwana, U., & Karyawan. (2019). Upaya Meningkatkan Kreativitas Siswa Dalam Membuat Karya Fisika Melalui Model Pembelajaran Berbasis STEM (Science, Technology, Engineering and Mathematics) Pada Materi Fluida Statis. *Jurnal Wahana Pendidikan Fisika (WaPFI)*, 4(1), 73–76. <https://doi.org/10.17509/wapfi.v4i1.15771>
- 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>
- Halliday, D., Resnick, R., & Walker, J. (2018). *Fundamentals of Physics: Extended* (10th ed.). John Wiley & Sons.
- Harsanto, B. (2014). *Inovasi Pembelajaran di Era Digital menggunakan Google Sites dan Media Sosial* (S. Sonjaya, Ed.). Unpad Press.
- Hermawan, I. (2019). *Metodologi Penelitian Pendidikan Kuantitatif, Kualitatif, dan Mixed Methode*. Hidayatul Quran Kuningan.
- Juwariyah, S., Prihandono, T., & Sudarti. (2018). Analisis Jenis Kesalahan Siswa dalam Menyelesaikan Soal Fisika Materi Listrik Statis di MAN 6 Jombang. *Jurnal Pembelajaran Fisika*, 7(3), 255–262.
- Kosasih, E. (2021). *Pengembangan Bahan Ajar*. Bumi Aksara.
- Krajcik, J., & Delen, İ. (2017). Engaging Learners in STEM Education. *Estonian Journal of Education*, 5(1), 35–58. <https://doi.org/10.12697/eha.2017.5.1.02b>
- Lafifa, F., Parno, P., Hamimi, E., & Setiawan, A. M. (2022). Development of STEM Animation Learning Media with Feedback to Facilitate Students' Critical Thinking Ability on Global Warming Materials. *Proceedings of the Eighth Southeast Asia Design Research (SEA-DR) & the Second Science, Technology, Education, Arts, Culture, and Humanity (STEACH) International Conference (SEADR-STEACH 2021)*, 627, 8–15. <https://doi.org/10.2991/assehr.k.211229.002>
- Michailidi, E., & Stavrou, D. (2021). Mentoring in-service teachers on implementing innovative teaching modules. *Teaching and Teacher Education*, 105, 1–15. <https://doi.org/10.1016/j.tate.2021.103414>
- Mukti, W. M., Puspita, Y. B., & Anggraeni, Z. D. (2020). Media Pembelajaran Fisika Berbasis Web Menggunakan Google Sites pada Materi Listrik Statis. *FKIP E-Proceeding*, 5(1), 51–59. <https://jurnal.unej.ac.id/index.php/fkip-epro/article/view/21703>
- Mulyani, T. (2019). Pendekatan Pembelajaran STEM untuk menghadapi Revolusi Industry 4.0. *SEMINAR NASIONAL PASCASARJANA*, 2(1), 453–460. <https://proceeding.unnes.ac.id/index.php/snpasca/article/view/325>
- Muqdamien, B., Umayah, U., Juhri, J., & Raraswaty, D. P. (2021). Tahap Definisi dalam Four-D Model pada Penelitian Research & Development (R&D) Alat

- Peraga Edukasi Ular Tangga untuk Meningkatkan Pengetahuan Sains dan Matematika Anak Usia 5-6 Tahun. *Intersections*, 6(1), 23–33. <https://doi.org/10.47200/intersections.v6i1.589>
- Murdayanti, Y., & Khan, M. N. A. A. (2021). The development of internet financial reporting publications: A concise of bibliometric analysis. *Heliyon*, 7(12), 1–12. <https://doi.org/10.1016/j.heliyon.2021.e08551>
- Mushlihah, K., Yetri, & Yuberti. (2018). Pengembangan Media Pembelajaran Berbasis Multi Representasi Bermuatan Sains Keislaman dengan Output Instagram pada Materi Hukum Newton. *Indonesian Journal of Science and Mathematics Education*, 1(3), 207–215. <https://doi.org/10.24042/ijjsme.v1i3.3595>
- Osman, K., & Lay, A. N. (2022). MyKimDG module: an interactive platform towards development of twenty-first century skills and improvement of students' knowledge in chemistry. *Interactive Learning Environments*, 30(8), 1–14. <https://doi.org/10.1080/10494820.2020.1729208>
- Paramansyah, A. (2020). *Manajemen Pendidikan dalam Menghadapi Era Digital* (R. Hidayat & M. C. Rizky, Eds.). Fakultas Ekonomi Universitas Pembangunan Panca Budi.
- Pawilen, G. T., & Yuzon, M. R. A. (2019). Planning a Science, Technology, Engineering, and Mathematics (STEM) Curriculum for Young Children: A Collaborative Project for Pre-Service Teacher Education Students. *International Journal of Curriculum and Instruction*, 11(2), 130–146.
- Permanasari, A. (2016). STEM Education : Inovasi dalam Pembelajaran Sains. *Seminar Nasional Pendidikan Sains*, 23–34. <https://jurnal.fkip.uns.ac.id/index.php/snps/article/view/9810>
- Ponto, H. (2018). *Dasar Teknik Listrik* (D. Olii, Ed.). Deepublish.
- Prawiradilaga, D. S., Ariani, D., & Handoko, H. (2016). Mozaik Teknologi Pendidikan E-learning. In *Penerbit. Kencana Prenadamedia Group*. Prenadamedia Group.
- Priatna, I. K., Putrama, I. M., & Divayana, D. G. H. (2017). Pengembangan E-Modul Berbasis Model Pembelajaran Project Based Learning Pada Mata Pelajaran Videografi untuk Siswa Kelas X Desain Komunikasi Visual di SMK Negeri 1 Sukasada. *Jurnal Nasional Pendidikan Teknik Informatika (JANAPATI)*, 6(1), 70–78. <https://doi.org/10.23887/janapati.v6i1.9931>
- Prihatiningtyas, S., Arrofi'uddin, M. H., & Pertiwi, N. A. S. (2022). Learning Media of Physics-Based on Google Sites with QR Code on Particle Dynamics Material. *Jurnal Geliga Sains: Jurnal Pendidikan Fisika*, 10(2), 134–143. <https://doi.org/10.31258/jgs.10.2.134-143>
- Prihatiningtyas, S., & Sholihah, F. N. (2020). *Physics Learning by E-Module* (K. Wulandari, Ed.). Fakultas Pertanian Universitas KH. A. Wahab Hasbullah.

- Puspitasari, A. D. (2019). Penerapan Media Pembelajaran Fisika Menggunakan Modul Cetak dan Modul Elektronik Pada Siswa SMA. *Jurnal Pendidikan Fisika (JPF)*, 7(1), 17–25. <https://doi.org/10.24252/jpf.v7i1.7155>
- Putri, N. K., Yuberti, Y., & Hasanah, U. (2021). Pengembangan media pembelajaran berbasis web google sites materi hukum Newton pada gerak benda. *Physics and Science Education Journal (PSEJ)*, 1(3), 133–143. <https://doi.org/10.30631/psej.v1i3.1033>
- Riduwan. (2018). *Skala Pengukuran Variabel - Variabel Penelitian*. Alfabeta.
- Rohman, M., & Amri, S. (2013). *Strategi dan Desain Pengembangan Sistem Pembelajaran*. Prestasi Pustakaraya.
- Rustono, Sumarno, & Buchori, A. (2023). Pengembangan Electronic Book Berbasis STEM untuk Meningkatkan Literasi Sains Materi Energi dan Perubahannya pada Siswa Kelas IV Sekolah Dasar. *Jurnal Ilmiah PGSD FKIP Universitas Mandiri*, 9(3), 372–388. <https://doi.org/10.36989/didaktik.v9i04.1611>
- Sari, N., Sunarno, W., & Sarwanto, S. (2018). Analisis Motivasi Belajar Siswa dalam Pembelajaran Fisika Sekolah Menengah Atas. *Jurnal Pendidikan Dan Kebudayaan*, 3(1), 17–32. <https://doi.org/10.24832/jpnk.v3i1.591>
- Selisne, M., Sari, Y. S., & Ramli, R. (2019). Role of learning module in STEM approach to achieve competence of physics learning. *Journal of Physics: Conference Series*, 1185(1), 1–6. <https://doi.org/10.1088/1742-6596/1185/1/012100>
- Sevtia, A. F., Taufik, M., & Doyan, A. (2022). Pengembangan Media Pembelajaran Fisika Berbasis Google Sites untuk Meningkatkan Kemampuan Penguasaan Konsep dan Berpikir Kritis Peserta Didik SMA. *Jurnal Ilmiah Profesi Pendidikan*, 7(3), 1167–1173. <https://doi.org/10.29303/jipp.v7i3.743>
- Stohlmann, M., Moore, T., & Roehrig, G. (2012). Considerations for Teaching Integrated STEM Education. *Journal of Pre-College Engineering Education Research*, 2(1), 28–34. <https://doi.org/10.5703/1288284314653>
- Sugianto, D., Abdullah, A. G., Elvyanti, S., & Muladi, Y. (2013). MODUL VIRTUAL: MULTIMEDIA FLIPBOOK DASAR TEKNIK DIGITAL. *Innovation of Vocational Technology Education*, 9(2), 101–116. <https://doi.org/10.17509/invotec.v9i2.4860>
- Sugiyono. (2015). *Metode penelitian pendidikan : Pendekatan kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Suparman, M. A. (2012). *Desain Instruksional Modern : Panduan Para Pengajar dan Inovator Pendidikan* (R. Rahmat, Ed.; 4th ed.). Erlangga.
- Syafei, I., Saregar, A., Hairul, Thahir, A., Sari, P. M., & Anugrah, A. (2020). E-learning with STEM-Based Schoology on Static Fluid Material. *Journal of Physics: Conference Series*, 1467(1), 1–9. <https://doi.org/10.1088/1742-6596/1467/1/012052>

- Tang, K., & Williams, P. J. (2019). STEM literacy or literacies? Examining the empirical basis of these constructs . *Review of Education*, 7(3). <https://doi.org/10.1002/rev3.3162>
- Teo, T., Unwin, S., Scherer, R., & Gardiner, V. (2021). Initial teacher training for twenty-first century skills in the Fourth Industrial Revolution (IR 4.0): A scoping review. *Computers and Education*, 170, 1–21. <https://doi.org/10.1016/j.compedu.2021.104223>
- Torlakson, T. (2014). Innovate: a blueprint for science, technology, engineering, and mathematics in California public education. In *Jurnal IPA & Pembelajaran IPA* (Issue 2). State Superintendent of Public Instruction.
- Trna, J., & Trnova, E. (2015). The Current Paradigms of Science Education and Their Expected Impact on Curriculum. *Procedia - Social and Behavioral Sciences*, 197, 271–277. <https://doi.org/10.1016/j.sbspro.2015.07.135>
- Tsai, T. P., Lin, L. C., & Lin, J. (2019). A study on the preview effectiveness of learning contents in ePUB3 eBook-based flip blended learning models. *International Journal of Mobile and Blended Learning (IJMBL)*, 11(2), 50–67. <https://doi.org/10.4018/IJMBL.2019040104>
- Ulfa, E. M., Subiki, S., & Nuraini, L. (2021). Efektivitas Penggunaan Modul Fisika Terintegrasi STEM (Science, Technology, Engineering, and Mathematics) Materi Usaha dan Energi di SMA. *Jurnal Pembelajaran Fisika*, 10(4), 136–142. <https://doi.org/10.19184/jpf.v10i4.27456>
- Umbara, C. M. A., Sari, I. M., Tedja, I., & Novia, H. (2022). E-Modules Based on Multi-Representations on Newton's Law Materials. *Journal of Teaching and Learning Physics*, 7(1), 1–10. <https://doi.org/10.15575/jotalp.v7i1.10999>
- Undang-Undang Republik Indonesia No. 11. (2019). Undang-Undang Republik Indonesia Nomor 11 Tahun 2019 tentang Sistem Nasional Ilmu Pengetahuan dan Teknologi. *Negara Republik Indonesia*.
- Wibowo, A. T., Akhlis, I., & Nugroho, S. E. (2014). Pengembangan LMS (Learning Management System) Berbasis Web untuk Mengukur Pemahaman Konsep dan Karakter Siswa. *Scientific Journal of Informatics*, 1(2), 127–137. <https://doi.org/10.15294/sji.v1i2.4019>