

## DAFTAR PUSTAKA

- Alqahtani, A. Y., & Rajkhan, A. A. (2020). E-learning critical success factors during the COVID-19 pandemic: A comprehensive analysis of e-learning managerial perspectives. *Education Sciences*, 10(9), 216. <https://doi.org/10.3390/educsci10090216>
- Amellya, D., & Khasanah, U. (2021). E-Modul Interaktif Berbasis Proyek terhadap Hasil Belajar Siswa. *Jurnal Ilmiah Pendidikan dan Pembelajaran*, 4(3), 433–441.
- Anissa, I. (Penyusun). (2020). *Modul pembelajaran gelombang bunyi dan cahaya fisika kelas XI*. Kementerian Pendidikan dan Kebudayaan.
- Aufa, M. N., Rusmansyah, R., Hasbie, M., Jaidie, A., & Yunita, A. (2021). The effect of using e-module model problem based learning (PBL) based on wetland environment on critical thinking skills and environmental care attitudes. *Jurnal Penelitian Pendidikan IPA*, 7(3), 401-407.
- Branch, R. M. (2009). Instructional design: The ADDIE approach. Springer. DOI: 10.1007/978-1-4419-1114-5
- Delita, F., Berutu, N., & Nofrion, N. (2022). Online learning: The effects of using e-modules on self-efficacy, motivation and learning outcomes. *Turkish Online Journal of Distance Education*, 23(4), 93-107.
- Fathi, J., & Amini, D. (2020). The effect of the ADDIE model on instructional design: A review study. *International Journal of Educational Research Review*, 5(4), 578–585.
- Fiteriani, I., Diani, R., & Anwar, C. (2021, February). Project-based learning through STEM approach: Is it effective to improve students' creative problem-solving ability and metacognitive skills in physics learning?. In *Journal of Physics: Conference Series* (Vol. 1796, No. 1, p. 012058). IOP Publishing.

- Fitriyani, D., Herlina, & Widodo, A. (2021). Keterbatasan penelitian pengembangan modul digital pada tugas akhir mahasiswa. *Jurnal Pendidikan dan Pengajaran*, 54(2), 145–153.
- Girwidz, R., & Kohnle, A. (2022). Multimedia and digital media in physics instruction. In *Physics education* (pp. 297-336). Cham: Springer International Publishing.
- Gonzalez, L. (2019, October). The problem-based learning model. In 2019 eighth international conference on educational innovation through technology (Eitt) (pp. 180-183). IEEE.
- Hardiah, M. (2019). Improving students listening skill by using audio visual media. *Al-Lughah: Jurnal Bahasa*, 7(2), 39-49.
- Hutchins, N. M., Biswas, G., Maróti, M., Lédeczi, Á., Grover, S., Wolf, R., ... & McElhaney, K. (2020). C2STEM: A system for synergistic learning of physics and computational thinking. *Journal of Science Education and Technology*, 29, 83-100.
- Hwang, G.-J., & Chang, H.-F. (2019). A review of research trends in digital game-based learning in the context of STEAM education. *Educational Technology & Society*, 22(2), 50-62.
- Kanyesigye, S. T., Uwamahoro, J., & Kemeza, I. (2022). Difficulties in understanding mechanical waves: Remediated by problem-based instruction. *Physical Review Physics Education Research*, 18(1), 010140.
- Koehler, M. J., & Mishra, P. (2019). The educational technology handbook. Routledge.
- Kutty, A. A., Abdella, G. M., Kucukvar, M., Onat, N. C., & Bulu, M. (2020). A system thinking approach for harmonizing smart and sustainable city initiatives with United Nations sustainable development goals. *Sustainable Development*, 28(5), 1347-1365.

- Latif, M., Rahayu, Y. S., & Nurrita, T. (2020). Pengembangan media pembelajaran berbasis masalah untuk meningkatkan hasil belajar. *Jurnal Inovasi Pendidikan*, 12(2), 88–96.
- Lee, M. J. (2019). Designing Audio-Based Learning Materials for Mobile Devices.
- Logan, R. M., Johnson, C. E., & Worsham, J. W. (2021). Development of an e-learning module to facilitate student learning and outcomes. *Teaching and Learning in Nursing*, 16(2), 139-142.
- Milton, A., & Rodgers, P. (2023). Research methods for product design. Hachette UK
- Ningsih, F., & Deswita, R. (2023). Developing an e-Module on Blended Learning-based Calculus Courses. *Mosharafa: Jurnal Pendidikan Matematika*, 12(3).
- Nugraha, E., Suhandi, A., & Kaniawati, I. (2022). *Implementation of the Problem Based Learning Model in Science Education: Trend and Opportunity of Research Using SLNA*. *Jurnal Pendidikan Fisika Indonesia*, 18(1), 45–54.
- 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>
- Parkita, E. (2021). Digital tools of universal music education. *Central European Journal of Educational Research*, 3(1), 60-66.
- Pham, D. T. T. (2021). The effects of audiovisual media on students' listening skills. *International Journal of TESOL & Education*, 1(1), 13-21.
- Rahmayanti, R., & Nurlatifah, S. (2023). Pengembangan instrumen penilaian kinerja peserta didik pada pembelajaran kimia berbasis proyek. *Jurnal Pendidikan Kimia Undiksha*, 7(2). Retrieved from <https://id.scribd.com/document/687430927/Artikel-ke-5>
- Riduwan. (2016). Skala Pengukuran Variabel-Variabel Penelitian. Bandung : Alphabeta

- Smaldino, S. E., Lowther, D. L., & Russell, J. D. (2019). Instructional technology and media for learning. Pearson.
- Smith, K., Maynard, N., Berry, A., Stephenson, T., Spiteri, T., Corrigan, D., ... & Smith, T. (2022). Principles of problem-based learning (PBL) in STEM education: Using expert wisdom and research to frame educational practice. *Education Sciences*, 12(10), 728
- Speaks, C. E. (2024). *Introduction to sound: acoustics for the hearing and speech sciences*. Plural Publishing.
- Sukmadinata, N. S. (2019). *Metode penelitian pendidikan*. Bandung: Remaja Rosdakarya.
- Syahfitri, J. (2024). The utilization of local wisdom-based interactive digital module to improve students' critical thinking skills. *International Journal of STEM Education for Sustainability*, 4(1), 110-119.
- Talan, T., Gulsecen, S., & Aytekin, C. (2023). Evaluating digital learning objects: The role of formative assessment in instructional design. *International Journal of Educational Technology in Higher Education*, 20(1), 25. <https://doi.org/10.1186/s41239-023-00377-0>
- Tan, O. S. (2021). Problem-based learning innovation: Using problems to power learning in the 21st century. Gale Cengage Learning.
- Tarigan, W. P. L., Sipahutar, H., & Harahap, F. (2021). The effect of interactive digital learning module on student's learning activity and autonomy. *BIOEDUKASI: JPB*, 14(2), 196-208.
- Thornhill-Miller, B., Camarda, A., Mercier, M., Burkhardt, J. M., Morrisseau, T., Bourgeois-Bougrine, S., ... & Lubart, T. (2023). Creativity, critical thinking, communication, and collaboration: assessment, certification, and promotion of 21st century skills for the future of work and education. *Journal of Intelligence*, 11(3), 54.
- Umar, U., Purwanto, M. B., & Al Firdaus, M. M. (2023). Research And Development: As The Primary Alternative to Educational Research Design

Frameworks. *JELL (Journal of English Language and Literature) STIBA-IEC Jakarta*, 8(01), 73-82

Wijaya, D., & Maulidah, N. (2021). Pengembangan e-modul interaktif berbasis problem based learning untuk pembelajaran fisika. *Jurnal Pendidikan Sains Indonesia*, 9(3), 413–422.

Yulianti, D., & Jatmiko, B. (2020). Tantangan integrasi media digital dalam pembelajaran sains di sekolah menengah. *Jurnal Inovasi Pendidikan IPA*, 6(1), 10–18.

