

DAFTAR PUSTAKA

- Akbar, J. S., Dasna, I., dan Wonorahardjo, S. (2019). The Effect of Guided Inquiry-Based Practicum Learning and Prior Knowledge on Learning Outcomes and Science Process Skills of High School Students on Solubility and Solubility Products.
- Al Idrus, S. W., Purwoko, A. A., Hadisaputra, S., dan Junaidi, E. (2020). Pengembangan Modul Praktikum Kimia Lingkungan Berbasis Green Chemistry Pada Mata Kuliah Kimia Lngkungan. *Jurnal Pijar Mipa*, 15(5), 541–547.
- Anastas, P. T., dan Warner, J. C. (1998). *Principles of Green Chemistry. Green Chemistry: Theory and Practice*. Oxford University Press.
- Apa Itu Perangkat Ajar? – Merdeka Mengajar*. (t.t.). Diambil 11 Januari 2023, dari <https://pusatinformasi.guru.kemdikbud.go.id/hc/en-us/articles/7211744742425-Apa-Itu-Perangkat-Ajar->
- Arifin, M. (1995). *Pengembangan program pengajaran bidang studi kimia* (1 ed.). Airlangga University Press.
- Ariska, R., dan Ramadhan, M. F. (2015). Pengembangan Buku Petunjuk Praktikum IPA Fisika untuk Meningkatkan Motivasi Belajar Siswa Kelas VII SMPN 1 Lembar Tahun Pelajaran 2014/2015. *Jurnal Fisika dan Pendidikan Fisika*, 1(1), 10–18.
- Auliah, A., Mulyadi, Prof., dan Muharram, Prof. (2017). Development of Integrated Analysis Practicum Module based on Green Chemistry. *2nd International Conference on Education, Science, and Technology (ICEST 2017)*, March.
- Ballard, J., dan Mooring, S. R. (2021). Cleaning Our World through Green Chemistry: Introducing High School Students to the Principles of Green Chemistry Using a Case-Based Learning Module. *Journal of Chemical Education*, 98(4), 1290–1295.
- Blewitt, J. (2006). *The Ecology of Learning: Sustainability, Lifelong Learning, and Everyday Life*. Earthscan.
- Borg, W. R., dan Gall, M. D. (2003). *Educational Research: An Introduction* (7th ed.). Longman.
- BSKAP Kemdikbudristek. (2022). *Keputusan Kepala BSKAP Kemdikbudristek Nomor 033/H/KR/2022 tentang Capaian Pembelajaran pada PAUD, Jenjang Pendidikan Dasar, dan Jenjang Pendidikan Menengah pada Kurikulum Merdeka*.
- Chen, T. L., Kim, H., Pan, S. Y., Tseng, P. C., Lin, Y. P., dan Chiang, P. C. (2020). Implementation of Green Chemistry Principles in Circular Economy System Towards Sustainable Development Goals: Challenges and Perspectives. *Science of the Total Environment*, 716(1), 136998.

- Dewi, U., dan Sulistiowati. (2017). Development Electronic Module On Subject Matter Kalor for Junior High School Student. *Proceedings of 9th International Conference for Science Educators and Teachers (ICSET)*, 118, 658–660.
- Dick, W., Carey, L. M., dan Carey, J. O. (1978). *The systematic design of instruction*.
- Direktorat Pembinaan SMA. (2017). *Panduan Praktis Penyusunan E-Modul Pembelajaran* (hlm. 1–57). Ditjen Pendidikan Dasar dan Menengah.
- Dirgha Raj, J. (2019). Green Chemistry: Beginning, Recent Progress, and Future Challenges. *World Journal of Pharmacy and Pharmaceutical Sciences*, 8(7), 280–293.
- Djamarah, S. B., dan Zain, A. (2006). *Strategi belajar mengajar*. Rineka Cipta.
- Ellysia, A., dan Irfan, D. (2021). Pengembangan e-Modul dengan Flip PDF Professional pada Mata Pelajaran Dasar Listrik dan Elektronika. *Jurnal Vocational Teknik Elektronika dan Informatika*, 9(3).
- Evans, D. C. (1937). Experimental soap making. *Journal of Chemical Education*, 534–536.
- Gustiani, S. (2019). Research and Development (R&D) Method As a Model Design in Educational Research and Its Alternatives. *Holistics Journal*, 11(2), 12–22.
- Hakim, A., Jamaluddin, J., Jufri, A. W., Loka, I. N., Sukib, S., dan Mahmudah, S. (2019). Development of Laboratory Module of Isolation Trimyristin from Nutmeg (*Garcinia mangostana*) to Support Meaningful Learning in Natural Product Chemistry Course. *Jurnal Penelitian dan Pembelajaran IPA*, 5(1), 39.
- Harefa, N., Fransisca, N., dan Silalahi, D. (2020). Improvement of Student's Learning Outcomes and Motivation with Chemical Practicum E-Module. *Jurnal Pendidikan Kimia*, 12(1), 10–19.
- Hayudinna, H. G. (2018). Penyelenggaraan Pendidikan Untuk Pembangunan Berkelanjutan di Sekolah Dasar. *Jurnal Madaniyah*, 8(2), 189–202.
- Karo, M. Br. (2017). Identifikasi Sifat Asam Basa Menggunakan Indikator Alami Bunga Karamunting (*Rhodomyrtus tomentosa*). *Jurnal Ilmiah Kanderang Tingang*, 8(2), 81–89.
- Kemdikbud. (2022). *Konsep dan Komponen Modul Ajar*. <https://guru.kemdikbud.go.id/kurikulum/perkenalan/perangkat-ajar/konsep-komponen-modul-ajar/>
- Kurniawan, C., dan Kuswandi, D. (2021). *Pengembangan e-Modul Sebagai Media Literasi Digital pada Pembelajaran Abad 21*. Academia Publication.
- Laboy-Rush, D. (2010). *Integrated STEM Education through Project-Based Learning*. 5. www.learning.com

- Lee, S. (2017). Effects of Eco-STEAM Program on Elementary School Students' Environmental Literacy and STEAM Attitude. *Journal of Korean Society of Earth Science Education*, 10(April), 62–75.
- Lee, S.-H. (2013). Development of Eco-STEAM Educational Programs Based on Smart Learning. *Elementary Science Education*, 32(3), 250–259.
- Liljequist, D., Elfving, B., dan Roaldsen, K. S. (2019). Intraclass correlation – A discussion and demonstration of basic features. *PLoS ONE*, 14(7).
- Luthfiana, A. D., dan Hidayah, R. (2022). E-Module of Chemistry Practicum Based on Cooperative Learning on Salt Hydrolysis Material to Improve Students' Scientific Literacy. *Prisma Sains : Jurnal Pengkajian Ilmu dan Pembelajaran Matematika dan IPA IKIP Mataram*, 10(1), 36.
- Luthfiani, I., Dua, K. M., Sari, M. Y., dan Mukhzalifah, R. (2021). Pengembangan Modul Berbantuan Flipbook Maker Sebagai Sumber Praktikum Kelas X Berbasis Android. *Jurnal Ilmiah Mahasiswa Pendidikan Fisika*, 2(2), 116–123.
- Maharani, M. M., Bakrie, M., dan Nurlela, N. (2021). Pengaruh Jenis Ragi, Massa Ragi Dan Waktu Fermentasi pada Pembuatan Bioetanol dari Limbah Biji Durian. *Jurnal Redoks*, 6(1), 57.
- Mahardika, A., dan Destiana, H. (2014). Animasi Interaktif Pembelajaran Pengenalan Hewan dan Alat Transportasi untuk Siswa Taman Kanak - Kanak. *Pilar Nusa Mandiri*, 10(1), 103.
- Maydiantoro, A. (2019). Model-Model Penelitian Pengembangan (Research and Development). *Jurnal Metode Penelitian*, 10, 1–8.
- Munir. (2012). Multimedia konsep dan aplikasi dalam pendidikan. Dalam *Alfabeta* (Vol. 58, Nomor 12). Penerbit Alfabeta.
- Munzil*, M., Affriyenni, Y., Mualifah, S., Fardhani, I., Fitriyah, I. J., dan Muntholib, M. (2022). Development of Problem Based Learning Based E-modules in the form of Flipbooks on Environmentally Friendly Technology Materials As an Independent Learning Material for Students Especially Online Learning. *Jurnal Pendidikan Sains Indonesia*, 10(1), 37–46.
- Nainggolan, B., Sri Apika Pinem, I., dan Hutabarat, W. (2018). Development of Chemical Practice Guides Class XI Project Based to Improve Student's Chemical Learning Outcomes on Acid Base Materials. *Jurnal Pendidikan Kimia*, 10(2), 393–396.
- Najuah, Lukitoyo, P. S., dan Wirianti, W. (2020). Modul Elektronik: Prosedur Penyusunan dan Aplikasinya. Dalam J. Simarmata (Ed.), *Yayasan Kita Menulis*. Yayasan Kita Menulis.
- Nikmatin, M., dan Yushardi, Y. (2022). Analisis Kebutuhan Guru terhadap E Module Berbasis STEAM dan Kurikulum Merdeka pada Materi Pemanasan Global. *Jurnal Pendidikan Mipa*, 12(2), 205–213.

- Nurbaity, Rahmawati, Y., dan Ridwan, A. (2016). Integration Green Chemistry Approach in Teacher Education Program for Developing Awareness of Environmental Sustainability. *ASEAN Comparative Education Research Network Conference, December*, 2148–2156.
- OECD. (1998). *Proceedings of the OECD workshop on sustainable chemistry*.
- Onissiphorou, K. (2022). *The Principles of Sustainable Chemistry*. The Science Blog. <https://www.reagent.co.uk/blog/the-principles-of-sustainable-chemistry/#how-green-chemistry-contributes-to-sustainable-development>
- Prihandana, R. (2007). *Bioetanol Ubi Kayu Bahan Bakar Masa Depan*. PT. Agro Media Pustaka.
- Rahlia, Putri; Andromeda, A. (2022). Pengembangan E-Modul Berbasis Inkuiri Terbimbing Terintergrasi Laboratorium Virtual pada Materi Titrasi Asam Basa Kelas XI. *Entalpi Pendidikan Kimia*, 2774–5171.
- Ravista, N. D., Sutarno, dan Harlita. (2021). An Analysis of the Need for Developing E-Module Based on Problem Based Learning Utilizing Virtual Laboratory on the Digestive System Material. *Proceedings of the 6th International Seminar on Science Education (ISSE 2020)*, 541(Isse 2020), 620–626.
- Undang-undang No 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup, 2 (2009).
- Ridwan, A., Rahmawati, Y., dan Hadinugrahaningsih, T. (2017). STEAM Integration in Chemistry Learning for Developing 21st Century Skills. *MIER Journal of Educational Studies Trends & Practices*, 7(2), 184–194.
- Samsu, N., Mustika, D., Nafaida, R., dan Manurung, N. (2020). Analisis Kelayakan dan Kepraktisan Modul Praktikum Berbasis Literasi Sains untuk Pembelajaran IPA. *Jurnal IPA & Pembelajaran IPA*, 4(1), 29–40.
- Sanders, M. (2006). A Rationale for New Approaches to STEM Education and STEM Education Graduate Programs. *Invited paper presented at the 93rd meeting of the Mississippi Valley Technology Education Conference*.
- Sin, L. T., Rahmat, A. R., dan Rahman, W. A. W. A. (2013). Degradation and Stability of Poly (lactic Acid). Dalam *Polylactic Acid*.
- Syafitri, Y., Dwiridal, L., Afrizon, R., dan Pengajar Jurusan Fisika, S. (2019). Pembuatan E-Modul Berorientasi Higher Order Thinking Skills (HOTS) untuk Pembelajaran Fisika pada Materi Kalor dan Teori Kinetik Gas di Kelas XI SMA/MA. *Pillar of Physics Education*, 12(4), 777–784.
- Tan, Y. H., Abdullah, M. O., dan Nolasco-Hipolito, C. (2015). The Potential of Waste Cooking Oil-Based Biodiesel Using Heterogeneous Catalyst Derived from Various Calcined Eggshells Coupled with an Emulsification Technique: A Review on The Emission Reduction and Engine Performance. *Renewable and Sustainable Energy Reviews*, 47, 589–603.
- Tandjung, D. (1996). *Ekologi, Lingkungan dan Sumberdaya*. GMKI.

Tegeh, I. M. (2014). *Model Penelitian Pengembangan*. Yogyakarta Graha Ilmu.

Thiagarajan. (1974). *Instructional Development For Training Teachers of Exceptional Children*. Indiana University Bloomington.

Wena, M. (2016). *Strategi Pembelajaran Inovatif Kontemporer: Suatu Tinjauan Konseptual Operasional (XIII)*. Bumi Aksara.

