

DAFTAR PUSTAKA

- Adair, J. G. (1984). The Hawthorne effect: A reconsideration of the methodological artifact. In *Journal of Applied Psychology* (Vol. 69, Issue 2, pp. 334–345). American Psychological Association.
<https://doi.org/10.1037/0021-9010.69.2.334>
- Afandi, M., Chamalah, E., & Wardani, O. P. (2013). *Model dan metode pembelajaran di sekolah*. Unissula Press.
- Afandi, M., & Handayani, T. (2020). Penerapan problem based learning (PBL) untuk meningkatkan higher order thinking skills ditinjau dari hasil belajar mahasiswa pada mata kuliah IPA MI. *Jurnal Ilmiah PGMI*, 6(1), 88–106.
<https://doi.org/https://doi.org/10.19109/jip.v6i1.4330>
- Agustianti, R., Nussifera, L., Angelianawati, L., Meliana, I., Sidik, E. A., & Nurlaila, Q. (2022). *Metode penelitian kuantitatif dan kualitatif*. Tohar Media.
- Ahimsa-Putra, H. S. (1998). Antropologi ekologi: beberapa teori dan perkembangannya. *Jurnal Antropologi FISIP Universitas Andalas*, 1(1).
- Aikenhead, G. S. (2006). *Science education for everyday life: Evidence-based practice*. Teachers College Press.
- Alexon, & Sukmadinata, N. S. (2010). Pengembangan model pembelajaran terpadu berbasis budaya untuk meningkatkan apresiasi siswa terhadap budaya lokal. *Jurnal Cakrawala Pendidikan*, 2(2), 189–203.
<https://doi.org/10.21831/cp.v2i2.339>
- Amalia, F., Reffiane, F., & Subekti, E. E. (2020). Pengaruh model problem based learning berbasis etnosains terhadap hasil belajar IPA di sekolah dasar. *Dwijaloka*, 1(3), 362–369.
- Amini, J. N., Irwandi, D., & Bahriah, E. S. (2021). The effectiveness of problem based learning model based on ethnoscience on Student's critical thinking skills. *Journal of Chemistry Education Research*, 5(2), 77–87.
<https://doi.org/10.26740/jcer.v5n2.p77-87>
- Arfianawati, S., Sudarmin, & Sumarni, W. (2016). Model pembelajaran kimia

- berbasis etnosains untuk meningkatkan kemampuan berpikir kritis siswa. *Jurnal Pengajaran Matematika Dan Ilmu Pengetahuan Alam*, 21(1), 83–90. <https://doi.org/http://dx.doi.org/10.18269/jpmipa.v21i1.669>
- Arikunto, S. (2017). *Pengembangan instrumen penelitian dan penilaian program*. Pustaka Pelajar.
- Asmara, A., & Septiana, A. (2023). *Model pembelajaran berkonteks masalah*. Azka Pustaka.
- Atmojo, S. E. (2012). Profil keterampilan proses sains dan apresiasi siswa terhadap profesi pengrajin tempe dalam pembelajaran IPA berpendekatan etnosains. *Jurnal Pendidikan IPA Indonesia*, 1(2), 115–122. <https://doi.org/10.15294/jpii.v1i2.2128>
- Atmojo, S. E. (2018). Pengembangan perangkat pembelajaran IPA terpadu berpendekatan etnosains. *Jurnal Pendidikan Sains*, 6(1), 5. <https://doi.org/10.26714/jps.6.1.2018.5-13>
- Benson, J., & Clark, F. (1982). A guide for instrument development and validation. *The American Journal of Occupational Therapy*, 36(12), 789–800. <https://doi.org/10.5014/ajot.36.12.789>
- Blasch, J., Boogen, N., Filippini, M., & Kumar, N. (2017). Explaining electricity demand and the role of energy and investment literacy on end-use efficiency of Swiss households. *Energy Economics*, 68, 89–102. <https://doi.org/10.1016/j.eneco.2017.12.004>
- Chen, K. L., Huang, S. H., Liu, S. Y., & Chen, P. H. (2014). Energy literacy of secondary students in Taiwan: a computer-based assessment. *Third International Conference on E-Learning and E-Technologies in Education*, 87–96.
- Chen, K. L., Liu, S. Y., & Chen, P. H. (2015). Assessing multidimensional energy literacy of secondary students using contextualized assessment. *International Journal of Environmental and Science Education*, 10(2), 201–218. <https://doi.org/10.12973/ijese.2015.241a>
- Chen, S. J., Chou, Y. C., Yen, H. Y., & Chao, Y. L. (2015). Investigating and structural modeling energy literacy of high school students in Taiwan.

- Energy Efficiency*, 8(4), 791–808. <https://doi.org/10.1007/s12053-015-9327-5>
- Chun, J., & Hsuan, T. (2023). Learning effectiveness of energy education in junior high schools: Implementation of action research and the predict – observe – explain model to STEM course. *Heliyon*, 9(3). <https://doi.org/10.1016/j.heliyon.2023.e14058>
- Darwati, I. M., & Purana, I. M. (2021). Problem based learning: suatu model pembelajaran untuk mengembangkan cara berpikir kritis peserta didik. *Widya Accarya*, 12(1), 61–69. <https://doi.org/10.46650/wa.12.1.1056.61-69>
- DeWaters, J., & Powers, S. (2008). Energy literacy among middle and high school youth. *Proceedings - Frontiers in Education Conference, FIE*, 6–11. <https://doi.org/10.1109/FIE.2008.4720280>
- DeWaters, J., & Powers, S. E. (2011). Energy literacy of secondary students in New York State (USA): A measure of knowledge, affect, and behavior. *Energy Policy*, 39(3), 1699–1710. <https://doi.org/10.1016/j.enpol.2010.12.049>
- DeWaters, J., Qaqish, B., Graham, M., & Powers, S. (2013). Designing an energy literacy questionnaire for middle and high school youth. *Journal of Environmental Education*, 44(1), 56–78. <https://doi.org/10.1080/00958964.2012.682615>
- Djamaruddin, A. W. (2019). *Belajar dan pembelajaran 4 pilar peningkatan kompetensi pedagogis*. Kaaffah Learning Center.
- Dolmans, D. H. J. M., Loyens, S. M. M., Marcq, H., & Gijbels, D. (2015). Deep and surface learning in problem-based learning : a review of the literature. *Advances in Health Sciences Education*, 21(5), 1087–1112. <https://doi.org/10.1007/s10459-015-9645-6>
- Duch, B. J. et al. (2001). *The power of problem-based learning*. Stylus Publishing.
- Dwyer, C. (2011). The relationship between energy literacy and environmental sustainability. *Low Carbon Economy*, 02(03), 123–137. <https://doi.org/10.4236/lce.2011.23016>
- Eitel, K. B., Hougham, J., Laninga, T., Fizzell, G., Schon, J., & Hendrickson, D.

- (2015). Teacher professional development for energy literacy: a comparison of two approaches. *Journal of Sustainability Education*, 8.
- Energy, U. S. D. of. (2012). *Energy literacy: essensial principles and fundamental concepts for energy education*. Washington, DC. <https://doi.org/10.1145/3362789.3362938>
- Gay, G. (2010). *Culturally responsive teaching (2nd ed)*. Teachers College Press.
- Goodenough, W. H. (1964). *Cultural anthropology and linguistics in language in culture and society*. Harper and Row.
- Hamruni. (2012). *Strategi pembelajaran*. Insan Madaw.
- Handayani, E. (2023). Penerapan model problem based learning bermuatan etnoscience terhadap hasil belajar kognitif siswa sekolah dasar. *Jurnal Citra Pendidikan*, 3, 1288–1297. <https://doi.org/10.38048/jcp.v3i4.1935>
- Haryanti, Y. D. (2017). Model problem based learning membangun kemampuan berpikir kritis siswa sekolah dasar. *Jurnal Cakrawala Pendas*, 3(2). <https://doi.org/https://doi.org/10.31949/jcp.v3i2.596>
- Hidayanti, I., & Wulandari, F. (2023). The effect of problem-based learning based ethnoscience on science literacy ability of elementary school. *Edunesia: Jurnal Ilmiah Pendidikan*, 4(3), 967–982. <https://doi.org/10.51276/edu.v4i3.475>
- Hidayat, R. H. (2025). Pengaruh literasi digital terhadap etika komunikasi di media sosial pada siswa SMAN 1 Sungai Mandau. *Jurnal Ilmiah Penelitian Mahasiswa*, 3(4), 349–357. <https://doi.org/https://doi.org/10.61722/jipm.v3i4.1087>
- Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, 16(3), 235–266. <https://doi.org/10.1023/B:EDPR.0000034022.16470.f3>
- Holden, C. C., & Barrow, L. H. (1984). Validation of the test of energy concepts and values for high school. *Journal of Research in Science Teaching*, 21(2), 187–196. <https://doi.org/10.1002/tea.3660210209>
- Ismail, R., Inayah, S., Imawan, O., & Trisnawati. (2024). *Pembelajaran dengan model problem based learning: Strategi dan implementasi*. Edupedia

Publisher.

- Kemendikbud. (2015). *Materi pelatihan guru implementasi kurikulum 2013. edisi revisi*. Kementerian Pendidikan dan Kebudayaan.
- Khatimah, H. (2022). Pengaruh implementasi pendidikan karakter terhadap sikap sosial pada siswa. *Jurnal Widya Accarya*, 13(2), 127–132. <https://doi.org/https://doi.org/10.46650/wa.13.2.1266.127-132>
- Khoerunnisa, R. F., Murbangun, N., & Sudarmin. (2016). Pengembangan modul IPA terpadu etnosains untuk menumbuhkan minat kewirausahaan. *Journal of Innovative Science Education*, 1(1), 1–9.
- Krisna, E., Sudiarta, & Suweken, G. (2013). Pengaruh model pembelajaran berbasis masalah berbantuan pertanyaan metakognitif terhadap prestasi belajar matematika siswa ditinjau dari motivasi berprestasi. *E-Journal Program Pascasarjana Universitas Pendidikan Ganesha Program Studi Matematika*, 2, 1–11.
- Leahy, W., & Sweller, J. (2019). Cognitive load theory, resource depletion and the delayed testing effect. *Educational Psychology Review*, 31(2), 457–478. <https://doi.org/10.1007/s10648-019-09476-2>
- Lee, L. S., Lee, Y. F., Altschuld, J. W., & Pan, Y. J. (2015). Energy literacy: Evaluating knowledge, affect, and behavior of students in Taiwan. *Energy Policy*, 76, 98–106. <https://doi.org/10.1016/j.enpol.2014.11.012>
- Lia, R. M., Udaibah, W., & Mulyatun. (2016). Pengembangan modul pembelajaran kimia berorientasi etnosains dengan mengangkat budaya batik Pekalongan. *Unnes Science Education Journal*, 5(3), 1418–1423.
- Lin, K. Y., & Lu, S. C. (2018). Effects of project-based activities in developing high school students' energy literacy. *Journal of Baltic Science Education*, 17(5), 867–877. <https://doi.org/10.33225/jbse/18.17.867>
- Linn, R. L., & Gronlund, N. E. (2000). *Measurement and assessment in teaching*(8th ed.). Prentice Hall.
- Martins, A., Madaleno, M., & Dias, M. F. (2019). Energy literacy: essential principles and fundamental concepts for energy education. *American Association for the Advancement of Science*, 1, 494–499.

- <https://doi.org/10.1145/3362789.3362938>
- McCambridge, J., Witton, J., & Elbourne, D. R. (2014). Systematic review of the Hawthorne effect: New concepts are needed to study research participation effects. *Journal of Clinical Epidemiology*, 67(3), 267–277. <https://doi.org/10.1016/j.jclinepi.2013.08.015>
- Mega, I. P., Semara, J., & Narsa, I. M. (2020). The spirit of nyepi : philosophy and its implementation in green accounting : conceptual framework. *International Journal of Innovation, Creativity and Change*, 14(2), 854–867.
- Ministry of Environment, I. R. (2018). Brown to green: transisi G20 menuju ekonomi rendah karbon. *Indonesia Fakta Nasional*, 1–15.
- Moore, M. C., Turcotte, A., Winter, J., & Walp, P. B. (2013). Energy and energy literacy in Canada: a survey of business and policy leadership. *The School of Public Policy Research Papers*, 6(10), 1–47. <https://ssrn.com/abstract=2241063>
- Munandar, R. N. R. (2022). Problem based learning berbantuan video animasi terhadap kemampuan berpikir kritis siswa. *Prosiding Seminar Nasional Pendidikan*, 4, 233–238. <https://prosiding.unma.ac.id/index.php/semnasfkip/article/view/803>
- Ningrum. (2018). *Etnosains, kearifan lokal, dan budaya dalam pembelajaran sains*. Radar Semarang.
- Nordin, N., Samsudin, M. A., & Harun, A. H. (2017). Teaching renewable energy using online PBL in investigating its effect on behaviour towards energy conservation among Malaysian students: ANOVA repeated measures approach. *Physics Education*, 52(1), 15001. <https://doi.org/10.1088/0031-9120/52/1/015001>
- Novia, Nurjannah, & Kamaluddin. (2015). Penalaran kausal dan analogi berbasis etnosains dalam memecahkan masalah fisika. *Prosiding Simposium Nasional Inovasi Dan Pembelajaran Sains*, 445–448.
- Nur, M. (2011). *Pembelajaran berbasis masalah*. PSMS Unesa.
- Nur, S. F., Arsih, F., Fadillah, M., & Anggriyani, R. (2023). Pengaruh penerapan model pembelajaran problem based learning berpendekatan etnosains

- terhadap keterampilan berpikir kritis peserta didik pada materi perubahan lingkungan. *Jurnal Pendidikan Tambusai*, 7(2), 16312–16322.
- Oğuz-Ünver, A., & Arabacıoğlu, S. (2011). Overviews on inquiry based and problem based learning. *Western Anatolia Journal of Educational Sciences*, 303–310.
- Pandiangan, C. M., Simorangkir, M. A., Anugerah, R., Sinambela, S., Mukra, R., & Arwita, W. (2025). Solusi Untuk mengatasi keterbatasan sumber belajar di sekolah dalam pembelajaran PBL: Studi kasus di SMA Negeri 14 Medan. *Jurnal Pendidikan Tambusai*, 9(1), 11245–11250.
- Parmin. (2017). *Etnosains*. Swadaya Manunggal.
- Pertiwi, D. E., Samsuri, T., & Muliadi, A. (2019). Peningkatan hasil belajar kognitif siswa menggunakan model pembelajaran kooperatif tipe group investigation. *Jurnal Penelitian Dan Pengkajian Ilmu Pendidikan : E-Saintika*, 2(2), 136–141.
- Pertiwi, U. D., & Firdausi, U. Y. R. (2019). Upaya meningkatkan literasi sains melalui pembelajaran berbasis etnosains. *Indonesian Journal of Natural Science Education*, 2(1), 120–124. <https://doi.org/10.31002/nse.v2i1.476>
- Perwitasari, T., Linuwih, S., Kimia, J. P., Semarang, U. N., Fisika, J. P., & Semarang, U. N. (2016). Peningkatan literasi sains melalui pembelajaran energi dan perubahannya bermuatan etnosains pada pengasapan ikan. *Jurnal Penelitian Pendidikan IPA*, 1(2), 62–70. <https://doi.org/https://doi.org/10.26740/jppipa.v1n2.p62-70>
- Pradana, L. N., Kesmawan, A. P., & Maharani, S. (2019). Energy literacy-based learning activities on female students. *International Journal of Scientific and Technology Research*, 8(8), 1711–1715.
- Qaqish, B. (2006). Developing multiple choice tests for social work trainings. *Training and Development in Human Services*, 3(1), 45–47.
- Rahayu, W. E., & Sudarmin. (2015). Pengembangan modul IPA terpadu berbasis etnosains tema energi dalam kehidupan untuk menanamkan jiwa konservasi siswa. *Unnes Science Education Journal*, 4(2), 919–926. <https://doi.org/10.15294/usej.v4i2.7943>

- Rahmayanti, E. (2017). Penerapan problem based learning dalam meningkatkan kemampuan berpikir kritis peserta didik pada pembelajaran pendidikan pancasila dan kewarganegaraan kelas XI SMA. *Prosiding Konferensi Nasional Kewarganegaraan III P-ISSN 2598-5973*, 242–248.
- Ramandanti, S. K., & Supardi, K. I. (2020). Pengaruh model problem based learning terintegrasi etnosains terhadap pemahaman konsep materi redoks siswa MA negeri Blora. *Chemistry in Education*, 9(1), 1–7. <http://journal.unnes.ac.id/sju/index.php/chemined>
- Retnawati, H. (2016). *Analisis kuantitatif instrumen penelitian*. Parama Publishing.
- Ridayati, E., Putri, C. A. D., & Damariswara, R. (2022). Kesulitan calon pendidik dalam mengembangkan perangkat pembelajaran pada kurikulum merdeka. *PTK: Jurnal Tindakan Kelas*, 3(1), 18–27. <https://doi.org/10.53624/ptk.v3i1.104>
- Roediger, H. L., & Butler, A. C. (2011). The critical role of retrieval practice in long-term retention. *Trends in Cognitive Sciences*, 15(1), 20–27. <https://doi.org/10.1016/j.tics.2010.09.003>
- Sahin, M. (2010). The impact of problem-based learning on engineering students' beliefs about physics and conceptual understanding of energy and momentum. *European Journal of Engineering Education*, 35(5), 519–537. <https://doi.org/10.1080/03043797.2010.487149>
- Saputra, R., Falahudin, I., & Testiana, G. (2016). Pengembangan bahan ajar matematika berbasis komputer untuk siswa kelas VIII di SMP Negeri 19 Palembang. *Jurnal Pendidikan Matematika JPM RAFA*, 2(2), 249–268.
- Sari, E., Setiawan, D., & Ayu, I. (2021). Peningkatan literasi sains melalui pembelajaran energi dan perubahannya bermuatan etnosains pada pengasapan ikan. *Panthera: Jurnal Ilmiah Pendidikan Sains Dan Terapan*, 1(1), 25–36.
- Sarkingobir, Y., & Bello, A. (2024). Enhancing critical thinking through ethnoscience-integrated problem-based learning: A comparative study in secondary education. In *International Journal of Ethnoscience and*

Technology in Education (Vol. 1, Issue 1, p. 1).
<https://doi.org/10.33394/ijete.v1i1.10878>

- Setiawan, A., Hamidah, I., Aisyah, S., Nasrudin, D., Utami, N., & Saputra, N. A. (2023). Pelatihan peningkatan literasi energi bagi guru di Kabupaten Pangandaran. *Jurnal Abmas*, 23(2), 52–59.
- Shidiq, A. syahidul. (2016). Pembelajaran sains kimia berbasis etnoscience untuk meningkatkan minat dan prestasi belajar siswa. *Seminar Nasional Kimia Dan Pendidikan Kimia VIII*, 1(1), 17–30.
- Shoimin, A. (2016). *68 Model pembelajaran inovatif dalam kurikulum 2013*. Ar-Ruzz Media Group.
- Sudarmin. (2014). Pendidikan karakter, etnoscience dan kearifan lokal. In *Fakultas Matematika dan Ilmu Pengetahuan Alam, UNNES* (Pertama). Swadaya Manunggal.
- Sugiyono. (2017). *Statistika untuk penelitian*. Alfabeta.
- Sugiyono. (2020). *Metode penelitian kuantitatif, kualitatif dan R&D*. Alfabeta.
- Sumarni, W. (2018). *Etnoscience dalam pembelajaran kimia: Prinsip, pengembangan, dan implementasinya*. Unnes Press.
- Sunyianto, Pasaribu, I. M., Zakiah, D. M., Azmi, M. F., KErisman, & Markus. (2024). Pengaruh literasi informasi terhadap model pembelajaran problem based learning. *Jurnal Ilmu Teknologi, Kesehatan, Dan Humaniora*, 5(4), 632–643. <https://doi.org/10.33650/trilogi.v5i4.9739>
- Supriadi, A., Darmawan, A., & Prasetyo, B. E. (2015). *Data Inventory Emisi GRK Sektor Energi*. Pusat Data dan Teknologi Informasi Kementerian Energi dan Sumber Daya Mineral. https://www.esdm.go.id/assets/media/content/KEI-Data_Inventory_Emisi_GRK_Sektor_Energi.pdf
- Supriatna, A., Kuswandi, S., & Sopyan, Y. (2020). Upaya meningkatkan hasil belajar IPA materi energi alternatif melalui penerapan model project based. *Jurnal Tahsinia*, 2(1), 12–25.
<https://doi.org/https://doi.org/10.57171/jt.v2i1.273>
- Suriani, N., Risnita, & Jailani, M. S. (2023). Konsep populasi dan sampling serta pemilihan partisipan ditinjau dari penelitian ilmiah pendidikan. *Jurnal*

- Pendidikan Islam*, 1(2), 24–36.
- Temuningsih, Peniati, E., & Marianti, A. (2017). Pengaruh penerapan model problem based learning berpendekatan etnosains pada materi sistem reproduksi terhadap kemampuan berpikir kritis siswa. *Journal of Biology Education*, 6(1), 70–79.
<https://doi.org/https://doi.org/10.15294/jbe.v6i1.14060>
- Wood, D. . (2003). ABC of learning and teaching in medicine: Problem based learning. *Clinical Review BMJ*, 326.
<https://doi.org/https://doi.org/10.1136/bmj.326.7384.328>
- Wulandari, P., W.H, E. H., & Nurwahyunani, A. (2018). Efektifitas pembelajaran transpor membran bermuatan etnosains terhadap hasil belajar kognitif dan minat berwirausaha pada siswa SMA. *Bioma : Jurnal Ilmiah Biologi*, 7(1), 53–64. <https://doi.org/10.26877/bioma.v7i1.2537>
- Yuliana, I. (2017). Pembelajaran berbasis etnosains dalam mewujudkan pendidikan karakter siswa sekolah dasar. *Jurnal Pendidikan Dan Pembelajaran Sekolah Dasar*, 1(2a), 98–106.
<https://doi.org/https://doi.org/10.30651/else.v1i2a.1051>
- Yulianto, I. (2024). Analisis classrooms assessment: remedial, pengayaan, pendekatan acuan patokan (PAP) dan pendekatan acuan normatif (PAN). *Grata : Jurnal Inovasi Pendidikan*, 1(1), 27–36.
<https://ejournal.mejailmiah.com/index.php/grata/article/view/29>
- Zografakis, N., Menegaki, A. N., & Tsagarakis, K. P. (2008). Effective education for energy efficiency. *Energy Policy*, 36(8), 3226–3232.
<https://doi.org/10.1016/j.enpol.2008.04.021>