

## DAFTAR PUSTAKA

- Agustin, E. E., & Maisyarah, W. (2020). Hubungan pengetahuan lingkungan terhadap sikap dan perilaku peduli lingkungan pada siswa SMAN 5 Jember Tahun Pelajaran 2018/2019. *Alveoli: Jurnal Pendidikan Biologi*, 1(2), 81–90. <https://doi.org/10.35719/alveoli.v1i2.16>
- Ajzen, I. (1980). Understanding attitudes and predicting social behavior. *Englewood cliffs*.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Ali, S. S. (2019). Problem based learning: A student-centered approach. *English Language Teaching*, 12(5), 73–78. <https://doi.org/10.5539/elt.v12n5p73>
- Allen, D. E., Duch, B. J., & Groh, S. E. (1996). The power of *Problem-Based Learning* in teaching introductory science courses. In L. Wilkerson & W. H. Gijselaers (Eds.), *Bringing Problem-Based Learning to Higher Education: Theory and Practice* (pp. 43–52). San Francisco: Jossey-Bass.
- Alkhasanah, N., Darsinah, & Ernawati. (2023). Peran guru dalam membentuk karakter siswa SD. *Jurnal Ilmiah Pendidikan Citra Bakti*, 10(2), 355–365. <https://doi.org/10.38048/jipcb.v10i2.1271>
- Almulla, M. A. (2020). The effectiveness of the *Project-Based Learning* (PBL) approach as a way to engage students in learning. *SAGE Open*, 1–15. <https://doi.org/10.1177/2158244020938702>
- Antara News. (2024, 4 November). Kemendikbud: Pendidikan perubahan iklim masuk dalam kurikulum. Diakses 4 November 2024, dari <https://www.antaranews.com/berita/4397665/kemendikbud-pendidikan-perubahan-iklim-masuk-dalam-kurikulum>
- Asmani, J. M. (2013). Buku panduan internalisasi pendidikan karakter di sekolah. Yogyakarta: DIVA Pres
- Badan Pusat Statistik (BPS). (2024). Bonus demografi dan visi Indonesia Emas 2045. Diakses 20 Oktober 2024, dari [https://bigdata.bps.go.id/documents/datain/2023\\_01\\_2\\_Bonus\\_Demografi\\_da\\_n\\_Visi\\_Indonesia%20Emas\\_2045.pdf](https://bigdata.bps.go.id/documents/datain/2023_01_2_Bonus_Demografi_da_n_Visi_Indonesia%20Emas_2045.pdf)
- Badan Standar, Kurikulum, dan Asesmen Pendidikan. (2024). Pendidikan perubahan iklim: Panduan implementasi untuk satuan pendidikan dan pemangku kepentingan. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.
- Barron, B., & Darling-Hammond, L. (2008). How can we teach for meaningful learning? In L. Darling-Hammond (Ed.), *Powerful learning: What we know about teaching for understanding* (pp. 11–70). Jossey-Bass.

- Bembridge, K., et al. (2025). Reflections on Environmental Education: The Role of Feedback and Journaling. *Journal of Affective Learning*, 12(3), 45-67.
- Blumenfeld, P. C., Soloway, E., Marx, R. W., Krajcik, J. S., Guzdial, M., & Palincsar, A. (1991). *Motivating project-based learning: Sustaining the doing, supporting the learning*. *Educational Psychologist*, 26(3–4), 369–398. [https://doi.org/10.1207/s15326985ep2603&4\\_8](https://doi.org/10.1207/s15326985ep2603&4_8)
- Bramwell-Lalor, S., et al. (2020). Effective Implementation of Project-Based Learning: A Teacher's Guide. *International Journal of Pedagogical Studies*, 18(2), 123-140.
- Chang, C., & Pascua, L. (2015). Localizing Global Issues: Enhancing Environmental Awareness through Contextualized Learning. *Environmental Education Research*, 21(4), 567-580.
- Chang, R. (2005). Kimia dasar (Edisi ke-3, Jilid 1). Erlangga.
- Chen, J., & Yang, H. (2019). The Impact of Duration on *Project-Based Learning* Outcomes. *Educational Research Review*, 14(1), 89-102.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Lawrence Erlbaum Associates.
- Cresswell, J. W. (2012). Educational research: Planning, conducting, and evaluating quantitative and qualitative research (4th ed). Boston, MA: Pearson
- Das, K. R., & Imon, A. H. M. R. (2016). A brief review of tests for normality. *American Journal of Theoretical and Applied Statistics*, 5(1), 5–12. <https://doi.org/10.11648/j.ajtas.20160501.12>
- Dewi, N., & Novianti, N. (2023). Upaya meningkatkan kompetensi afektif peserta didik peduli lingkungan melalui model pembelajaran Problem Based Learning. *Report of Biological Education*, 4(1), 1–15. <https://doi.org/10.58258/robe.v4i1.407>
- Donella Meadows (1999) Leverage Points: Places to Intervene in A System. The Sustainability Institute. Hartland, USA.
- Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 75–109). Academic Press.
- Fatah, A. (2023). Penerapan model pembelajaran berbasis proyek atau *Project-Based Learning* (PJBL) melalui poster kreatif dalam pembelajaran daring materi pemanasan global untuk meningkatkan keterampilan komunikasi ilmiah. *Amerta: Jurnal Ilmu Sosial dan Humaniora*, 3 (2), 45-54.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). London, UK: SAGE Publications.
- Filonchyk, M., Peterson, M. P., Zhang, L., Hurynovich, V., & He, Y. (2024). Greenhouse gases emissions and global climate change: Examining the influence of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. *Science of The Total Environment*, Vol. 935, 173359. <http://doi.org/10.1016/j.scitotenv.2024.173359>

- Fishman, J., Yang, C., & Mandell, D. (2021). Attitude theory and measurement in implementation science: A secondary review of empirical studies and opportunities for advancement. *Implementation Science*, 16(1), 87. <https://doi.org/10.1186/s13012-021-01153-9>
- Fitriani, M., Sapura, R., Lestari, I. (2019). Pengaruh pembelajaran berbasis lingkungan terhadap sikap peduli lingkungan pada materi pencemaran lingkungan. *Jurnal Pendidikan dan Pembelajaran Khatulistiwa*, 8(1), 1-8.
- Fitriati, M., Sahputra, R., & Lestari, I. (2019). Pengaruh pembelajaran berbasis lingkungan terhadap sikap peduli lingkungan pada materi pencemaran lingkungan. *Program Studi Pendidikan Kimia FKIP Untan Pontianak..*
- Gastwirth, J. L., Gel, Y. R., & Miao, W. (2009). *The Impact of Levene's Test of Equality of Variances on Statistical Theory and Practice*. Statistical Science, 24(3), 343–360.
- George, R. (2000). Measuring change in students' attitudes toward science over time: an application of latent variable growth modeling. *Journal of Science Education and Technology*, 9(3), 213-225. <http://doi.org/10.1023/A:1009491500456>
- Glen, S. (2021). *Levene's Test for Homogeneity of Variance: Definition, Formula, Examples*. StatisticsHowTo.com.
- Gulbahar, Y., & Tinmaz, H. (2006). Integrating Technology in Project-Based Learning: Challenges and Opportunities. *Journal of Educational Technology & Society*, 9(1), 176-187.
- Hallermann, S., Larmer, J., & Mergendoller, J. R. (2011). *PBL in the elementary grades: Step-by-step guidance, tools and tips for standards-focused K–5 projects* (1st ed.). Buck Institute for Education.
- Hamidah, H., Rabbani, T. A. S., Fauziah, S., Puspita, R. A., Gasalba, R. A., & Nirwansyah. (2020). *HOTS-oriented module: Project-based learning*. SEAMEO QITEP in Language. <https://www.qiteplanguage.org>
- Handayani, A., Soenarno, S. M., & A'in, Z. F. (2022). Hubungan pengetahuan lingkungan hidup terhadap sikap peduli lingkungan siswa SMPN 20 Depok. *EduBiologia: Biological Science and Education Journal*, 2(1), 80–86. <https://doi.org/10.30998/edubiologia.v2i1.11827>
- Hanel, P., Foad, C., & Maio, G. (2021). Attitudes and Values. *Oxford Research Encyclopedia of Psychology*. Diakses pada 22 Desember 2024, dari <https://oxfordre.com/psychology/view/10.1093/acrefore/9780190236557.001.0001/acrefore-9780190236557-e-248>.
- Hindun, I., Nurwidodo, N., Wahyuni, S., & Fauziah, N. (2024). *Effectiveness of Project-Based Learning in improving science literacy and collaborative skills of Muhammadiyah middle school students*. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, 10(1), 58–69. <https://doi.org/10.22219/jpbi.v10i1.31628>
- IPCC. (2023). Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental

- Panel on Climate Change [Core Writing Team, H. Lee & J. Romero (Eds.)]. IPCC. <https://doi.org/10.59327/IPCC/AR6-9789291691647.001>
- Katadata. (2024). 57% rumah tangga Indonesia rutin bakar sampah. Diakses 20 Oktober 2024, dari <https://databoks.katadata.co.id/lingkungan/statistik/c6a9ee250f4a5c6/57-rumah-tangga-indonesia-rutin-bakar-sampah#:~:text=57%25%20Rumah%20Tangga%20Indonesia%20Rutin,JavaScrip%20in%20your%20web%20browser>.
- Katadata. (2024). Daftar isu yang paling diperhatikan anak muda dalam pemilu 2024: Kesejahteraan teratas. Diakses 20 Oktober 2024, dari <https://databoks.katadata.co.id/politik/statistik/75c4b8ed62b3f79/daftar-isu-yang-paling-diperhatikan-anak-muda-dalam-pemilu-2024-kesejahteraan-teratas>
- Keller, G., & Marchev, A. (2022). ANCOVA assumptions and applications. *International Encyclopedia of Education*. Elsevier.
- Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi (Kemdikbud). (2024, Agustus). Bergerak bersama untuk pendidikan: Perubahan iklim dalam Kurikulum Merdeka. Diakses 4 November 2024, dari <https://www.kemdikbud.go.id/main/blog/2024/08/bergerak-bersama-untuk-pendidikan-perubahan-iklim-dalam-kurikulum-merdeka>
- Keselman, H. J., Algina, J., & Kowalchuk, R. K. (2017). *The analysis of covariance: Assessing assumptions and evaluating applicability*. Psychological Methods, 22(3), 471–486.
- Kim, T. K. (2015). *T test as a parametric statistic*. Korean Journal of Anesthesiology, 68(6), 540–546. [DOI:10.4097/kjae.2015.68.6.540](https://doi.org/10.4097/kjae.2015.68.6.540)
- Krajcik, J.S., & Czerniak, C.M. (2018). Teaching Science in Elementary and Middle School: A *Project-Based Learning* Approach (5th ed.). Routledge. <https://doi.org/10.4324/9781315205014>
- Lakens, D. (2021). *Sample Size Justification*. Collabra: Psychology, 7(1), 33267. [DOI:10.1525/collabra.33267](https://doi.org/10.1525/collabra.33267)
- Larmer, J., Mergendoller, J., Boss, S. (2015). Setting the standard for project-based learning: A proven approach to rigorous classroom instruction. USA: Buck Institute for Education.
- Marshall, G. R., Hine, D. W., & East, M. J. (2017). Can community-based governance strengthen citizenship in support of climate change adaptation? Testing insights from self-determination theory. *Environmental Science and Policy*, 72, 1-9.
- Mergendoller, J. R., et al. (2006). Cognitive and Social Readiness in Problem-Based Learning. *Journal of the Learning Sciences*, 15(2), 193-206.
- Nadlir, Fitriyah, A. ., & sholihah, L. F. . (2024). Peran Guru Dalam Menerapkan Pembelajaran Project Based Learning Pada Kurikulum Merdeka. *Jurnal Ilmu Pendidikan Dan Sosial*, 3(1), 69–79. <https://doi.org/10.58540/jipsi.v3i1.557>

- Nahar, N., Hossain, Z., & Mahiuddin, S. (2023). Assessment of the environmental perceptions, attitudes, and awareness of city dwellers regarding sustainable urban environmental management: A case study of Dhaka, Bangladesh. *Environment, Development and Sustainability*, 25(7503–7531). <https://doi.org/10.1007/s10668-022-02354-y>
- Oh, P. S., & Yager, R. E. (2004). Development of constructivist science classrooms and changes in student attitudes toward science learning. *Science Education International*, 15(2), 105-113.
- Panisuswari. (2023, September 7). Desain quasi eksperimen: Nonequivalent control group design. Kompasiana. Diakses dari <https://www.kompasiana.com>
- Pertiwi, T.U., Oetomo, D., & Sugiharto, B. (2024). The effectiveness of STEM-*Project-Based Learning* in improving students' environmental literacy abilities. *JPBI (Jurnal Pendidikan Biologi Indonesia)*. 10(2). 476-485. <https://doi.org/10.22219/jpbi.v10.i2.33562>
- Raju, R. D. (2020). Waste management, environmental pollution, global warming and climate change. *International Journal of Scientific and Technical Research in Engineering (IJSTRE)*, 5(5). <https://www.researchgate.net/publication/345817162>
- Rarasti, A. D. (2007). Kontribusi sampah terhadap pemanasan global. Pusat Pengendalian Pembangunan Ekoregion Kalimantan, Kementerian Lingkungan Hidup dan Kehutanan. [https://drive.google.com/file/d/1b5wSTo5XYpvN4faah6J2l61ytc\\_gCO-j/view?usp=drivesdk](https://drive.google.com/file/d/1b5wSTo5XYpvN4faah6J2l61ytc_gCO-j/view?usp=drivesdk)
- Razali, N. M., & Wah, Y. B. (2011). Power comparisons of Shapiro-Wilk, Kolmogorov-Smirnov, Lilliefors and Anderson-Darling tests. *Journal of Statistical Modeling and Analytics*, 2(1), 21–33.
- Tabachnick, B. G., & Fidell, L. S. (2019). Using multivariate statistics (7th ed.). Pearson.
- Tawfik, A. A., Gish-Lieberman, J. J., Gatewood, J., & Arrington, T. L. (2021). How K-12 teachers adapt problem-based learning. *The Interdisciplinary Journal of Problem-Based Learning*, 15(1), 1–24. <https://doi.org/10.14434/ijpbl.v15i1.29662>
- Thomas, J. W., & Mergendoller, J. R. (2000). Managing Project-Based Learning: Principles from the Field. Paper Presented at the Annual Meeting of the American Educational Research Association, New Orleans.
- Santyasa, I & Rapi, Ni & Sara, I.(2020). Project Based Learning and Academic Procrastination of Students in Learning Physics. *International Journal of Instruction*, 13(1), 489–508. <https://doi.org/10.29333/iji.2020.13132a>
- Sapdi, R. M. (2023). Peran Guru dalam Membangun Pendidikan Karakter di Era Society 5.0. *Jurnal Basicedu*, 7(1), 993–1001. <https://doi.org/10.31004/basicedu.v7i1.4730>
- Saputro, A, N, C, & Nugraha, I. (2008). Bertualang di Dunia Kimia. Yogyakarta: Pustaka Insan Madani.

- Sasea, L. I., Ibrohim, I., & Sueb, S. (2023). The relationship of environmental knowledge and environmental care attitude of students. *Inornatus: Biology Education Journal*, 3(2), 85–91. <https://doi.org/10.30862/inornatus.v3i2.426>
- Sasson, I., Yehuda, I., & Malkinson, N. (2018). Fostering The Skills of Critical Thinking and Question-Posing in A *Project-Based Learning* Environment. *Thinking Skills and Creativity*, 29, 203–212. <https://doi.org/10.1016/j.tsc.2018.08.001>
- Silberberg, M. S. (2015). Chemistry: The Molecular Nature of Matter and Change. McGraw-Hill Education.
- SIPSN. (2024). Sistem Informasi Pengelolaan Sampah Nasional [Diakses 20 Oktober 2024]. <https://sipsn.menlhk.go.id/sipsn/>
- SK-BSKAP No. 033-2022. (2022). Keputusan Sekretaris Jenderal Badan Standar Kurikulum dan Asesmen Pendidikan No. 033 Tahun 2022.
- Soedjajadi, K. (2007). Perubahan iklim global, kesehatan manusia. *Jurnal Kesehatan Lingkungan*, 3(2), 195-204.
- Stoller, F. (2006). Establishing a theoretical foundation for *Project-Based Learning* in second and foreign language contexts. In G. H. Beckett & P. C. Miller (Eds.), *Project-based second and foreign language education: Past, present, and future* (pp. 19–40). Greenwich, CT: Information Age.
- Suhartinah, S., Hidayati, Y., Qomaria, N., & Hadi, W. P. (2019). Studi korelasi antara sikap peduli lingkungan dengan kemampuan literasi sains siswa smp pada materi ekosistem. *Natural Science Education Research*, 2(1), 77–84. <https://doi.org/10.21107/nser.v2i1.5574>
- Tanco, M., Viles, E., Ilzarbe, L., & Alvarez, M. J. (2009). Implementation of design of experiments projects in industry. *Applied Stochastic Models in Business and Industry*, 25(4), 478–505. <https://doi.org/10.1002/asmb.779>
- Tanjung, R., Dalimunthe, E. M., Ramadhini, F., & Sari, D. M. (2021). Penerapan model pembelajaran berbasis proyek untuk meningkatkan kepedulian siswa terhadap lingkungan pada pembelajaran IPS kelas IV B MI Model Panyabungan. *Institut Agama Islam Negeri Padangsidiimpuan*.
- Ulrich, C. (2016). John Dewey and the project-based learning: landmarks for nowadays Romanian education. *Journal of Educational Sciences and Psychology*, 6(68), 54-60.
- UNESCO. (2024, October 23). *What you need to know about education for sustainable development*. Diakses pada 26 Desember 2024 dari <https://www.unesco.org/en/sustainable-development/education/need-know>
- United Nations Statistics Division (UNSD). (1992). United Nations Conference on Environment & Development: AGENDA 21. Rio de Janeiro, Brazil.
- Van Breukelen, G. J. P. (2013). *ANCOVA versus change from baseline: more power in randomized studies, more bias in nonrandomized studies*. *Journal of Clinical Epidemiology*, 66(8), 920–925.

W.A. Gerungan, Psikologi Sosial, ( Bandung: PT Rafika Aditama, 2004), hal. 160-161

Wihardjo, S. D., Hartati, S., Nurani, Y., & Sujarwanta, A. (2017). The Effects Of Green Schooling Knowledge Level and Intensity of Parental Guidance on the Environmental Awareness of The Early Age Student. *Educational Research and Reviews*, 12(5), 251-257.

Wolf, L., Haddock, G., & Maio, G. (2020). Attitudes. *Oxford Research Encyclopedia of Psychology*. Diakses pada 22 Desember 2024, dari <https://oxfordre.com/psychology/view/10.1093/acrefore/9780190236557.001.0001/acrefore-9780190236557-e-247>.

Yampap, U., Rahayu, D. P., & Ruma, R. (2019). Application of the method of outdoor study to improve environment care attitude class IV elementary school. *IOP Conference Series: Earth and Environmental Science*, 343(1), 012246. <https://doi.org/10.1088/1755-1315/343/1/012246>

Zhao, L., Zhao, B., & Li, C. (2023). Alignment analysis of teaching–learning–assessment within the classroom: How teachers implement *Project-Based Learning* under the curriculum standards. *Disciplinary and Interdisciplinary Science Education Research*, 5(13). <https://doi.org/10.1186/s43031-023-00078-1>

Zsóka, Á., Marjainé Szerényi, Z., Széchy, A., & Kocsis, T. (2013). Greening due to environmental education? Environmental knowledge, attitudes, consumer behavior and everyday pro-environmental activities of Hungarian high school and university students. *Journal of Cleaner Production*, 48, 126-138. <https://doi.org/10.1016/j.jclepro.2012.11.030>