

DAFTAR PUSTAKA

- Ahmadi, S. A., & Khoiru, I. (2010). *Proses Pembelajaran Kreatif Dan Inovatif Dalam Kelas*. PT Prestasi Pustakaraya.
- Ananda, R. (2019). *Perencanaan Pembelajaran* (Amiruddin (ed.)). Lembaga Peduli Pengembangan Pendidikan Indonesia (LPPPI).
- Arends, R. (2012). *Learning to Teach (volume 9)*. McGraw-Hill.
- Arifin. (2011). *Metode Penelitian Kualitatif, Kuantitatif, dan R & D*. Alfabeta.
- Aryuntini, N., Astuti, I., & Yuliana, Y. G. S. (2018). Development of Learning Media Based on VideoScribe to Improve Writing Skill for Descriptive Text of English Language Study. *JETL (Journal Of Education, Teaching and Learning)*, 3(2), 187. <https://doi.org/10.26737/jetl.v3i2.746>
- Astawa, I. N. B. (2022). Penerapan Metode Pembelajaran Kooperatif Student Team Achievement Division untuk Meningkatkan Motivasi dan Hasil Belajar Siswa di SMA Negeri 1 Tanjung. *Jurnal Teknologi Pendidikan : Jurnal Penelitian Dan Pengembangan Pembelajaran*, 7(1), 68. <https://doi.org/10.33394/jtp.v7i1.5052>
- Astuti, J., Novita, M., & Ismail, M. S. (2020). Peningkatan Motivasi Belajar Menggunakan Contextual Teaching and Learning di Madrasah Ibtidaiyah Swasta Raudhatul Mujawwidin Tebo. *Journal Educative : Journal of Educational Studies*, 5(1), 16. <https://doi.org/10.30983/educative.v5i1.1630>
- Asyhar, R. (2012). *Kreatif Mengembangkan Media Pembelajaran*. Referensi.
- Azizah, U., & Nasrudin, H. (2018). Development of chemistry instructional materials based on Cooperative Group Investigation (CGI) to empower thinking skills. *Journal of Physics: Conference Series*, 1108(1). <https://doi.org/10.1088/1742-6596/1108/1/012122>
- Bakri, H. (2009). Peningkatan minat belajar praktek menggulung trafo melalui pendekatan pembelajaran berbasis masalah (PBL) pada siswa Smk Negeri 3 Makassar. *Jurnal Medtek*, 1(1), 2–8.
- Bilgin, I., Şenocak, E., & Sözbilir, M. (2009). The effects of problem-based learning instruction on university students' performance of conceptual and quantitative problems in gas concepts. *Eurasia Journal of Mathematics, Science and Technology Education*, 5(2), 153–164. <https://doi.org/10.12973/ejmste/75267>
- Chen, T., Li, F., & BS, C. (2009). Cross-talks of sensory transcription networks in response to various environmental stresses. *Interdisciplinary Sciences, Computational Life Sciences*, 1(1), 46–54.

- Cowden, C. D., & Santiago, M. F. (2016). Interdisciplinary Explorations: Promoting Critical Thinking via Problem-Based Learning in an Advanced Biochemistry Class. *Journal of Chemical Education*, 93(3), 464–469. <https://doi.org/10.1021/acs.jchemed.5b00378>
- Datreini, N. L. (2022). Model Pembelajaran Problem Based Learning Meningkatkan Hasil Belajar Matematika Siswa Kelas III Sekolah Dasar. *Journal of Education Action Research*, 6(3), 369–375. <https://doi.org/10.23887/jear.v6i3.49468>
- Dwi, A., & Tri, A. (2015). Penerapan Model Pembelajaran Problem Based Instruction Dengan Pendekatan Predict-Observe-Explain. *Jurnal Inovasi Pendidikan Kimia*, 7(2), 1189–1200.
- Emda, A. (2015). *KEDUDUKAN MOTIVASI BELAJAR SISWA DALAM PEMBELAJARAN*. 5(2).
- Emzir. (2013). *Metodologi Penelitian Pendidikan*. PT. raja Grafindo Prasada.
- Fadilah Pane, R., & Sugiharti, G. (2022). Penggunaan Bahan Ajar Berbasis Masalah terhadap Peningkatan Hasil Belajar dan Motivasi Siswa pada Materi Laju Reaksi. *Jurnal Teknologi Pendidikan : Jurnal Penelitian Dan Pengembangan Pembelajaran*, 7(2), 260. <https://doi.org/10.33394/jtp.v7i2.5663>
- Fakhriyah, F. (2014). Penerapan problem based learning dalam upaya mengembangkan kemampuan berpikir kritis mahasiswa. *Jurnal Pendidikan IPA Indonesia*, 3(1), 95–101. <https://doi.org/10.15294/jpii.v3i1.2906>
- Fauzia, D. N., & Sobiruddin, D. (2021). *Development of Teaching Materials Based on Case-*. 3(1), 27–40.
- Fitriani, R. (2019). Peningkatan Kemampuan Berpikir Kritis Peserta Didik SMP Kelas VII melalui Pembelajaran Berbasis Masalah. *Bioedusiana*, 4(2), 8–14. <https://doi.org/10.34289/277877>
- Fridiani, A., Purwati, H., & Murtianto, Y. H. (2018). Analisis Kemampuan Berpikir Kritis Dalam Menyelesaikan Soal Aljabar Kelas Vii Smp N 2 Pangkah Ditinjau Dari Gaya Kognitif Reflektif Dan Kognitif Impulsif. *AKSIOMA : Jurnal Matematika Dan Pendidikan Matematika*, 9(1), 11. <https://doi.org/10.26877/aks.v9i1.2221>
- Genc, M. (2015). The project-based learning approach in environmental education. *International Research in Geographical and Environmental Education*, 24(2), 105–117. <https://doi.org/10.1080/10382046.2014.993169>
- Gultom, E., Situmorang, M., & Silaban, R. (2015). Pengembangan Bahan Ajar Inovatif dan Interaktif Melalui Pendekatan Saintifik Pada Pengajaran Termokimia. <Http://Jurnal.Unimed.Ac.Id/2012/Index.Php/Jpk>, 7(2), 49–56. <http://digilib.unimed.ac.id/30114/>

- Jonassen, D. H. (2000). Toward a design theory of problem solving. *Educational Technology Research and Development*, 48(4), 63–85. <https://doi.org/10.1007/BF02300500>
- Kharismawan, B., Haryani, S., & Nuswowati, M. (2018). Application of a pbl-based modules to increase critical thinking skills and independence learning. *Journal of Innovative Science Education*, 7(1), 78–86.
- Lestari, F., Egok, A. S., & Febriandi, R. (2021). Pengembangan Bahan Ajar Matematika Berbasis Problem Based Learning Pada Siswa Sekolah Dasar. *Jurnal Basicedu*, 5(1), 394–405. <https://doi.org/10.31004/basicedu.v5i1.628>
- Lestari, I. (2013). *Pengembangan Bahan ajar Berbasis Kompetensi (sesuai dengan kurikulum tingkat satuan pendidikan)*. Akademia Permata.
- Listiani, I. (2018). Efektivitas lembar kerja untuk memberdayakan kemampuan berpikir kritis mahasiswa pendidikan guru sekolah dasar. *Jurnal Penelitian Pendidikan*, 35(1), 17–26.
- López-Fernández, M. del M., González-García, F., & Franco-Mariscal, A. J. (2022). How Can Socio-scientific Issues Help Develop Critical Thinking in Chemistry Education? A Reflection on the Problem of Plastics. *Journal of Chemical Education*, 99(10), 3435–3442. <https://doi.org/10.1021/acs.jchemed.2c00223>
- Mahmuzah, R. (2015). Meningkatkan Kemampuan Berpikir Kritis Matematik Siswa Smp Melalui Pendekatan Problem Posing. *Jurnal Peluang*, 4(1). <https://doi.org/10.35194/jp.v6i2.123>
- Majid, A. (2013). *Strategi Pembelajaran*. PT Remaja Rosdakarya.
- Murniati, A., & Hermawan, A. (2018). E- PROBLEM BASED LEARNING (E-PBL) PADA MATA KULIAH AKUNTANSI MANAJEMEN SEBAGAI ALTERNATIF PEMBELAJARAN INOVATIF. *Jurnal Ilmiah Bisnis Dan Ekonomi Asia*, 11(1), 1–10. <https://doi.org/https://doi.org/10.32812/jibeka.v11i1.25>
- Nagarajan, S., & Overton, T. (2019). Promoting Systems Thinking Using Project-And Problem-Based Learning. *Journal of Chemical Education*, 2901–2909. <https://doi.org/10.1021/acs.jchemed.9b00358>
- Nasrah, A. M. (2020). Analisis Motivasi Belajar dan Hasil Belajar Daring Mahasiswa Pada Masa Pandemik Covid-19. *Riset Pendidikan Dasar*, 3(2), 207–213.
- Noel, B. M., & Parker, R. (1986). *Critical Thinking Evaluating Claims And Arguments In Everyday Life*. Mayfield publishing company.
- Nuryanti, L., Zubaidah, S., & Diantoro, markus. (2018). Analisis Kemampuan Berpikir Kritis Siswa SMP. *Jurnal Pendidikan: Teori, Penelitian, Dan*

- Pengembangan*, 6(3), 334. <https://doi.org/10.17977/jptpp.v6i3.14579>
- Pannen, P. (1999). *Cakrawala Pendidikan*. Universitas terbuka.
- Prastowo, A. (2013). *Panduan Kreatif Membuat Bahan Ajar Inovatif*. Diva Press.
- Purba, J., Situmorang, M., & Silaban, R. (2019). The development and implementation of innovative learning resource with guided projects for the teaching of carboxylic acid topic. *Indian Journal of Pharmaceutical Education and Research*, 53(4), 603–612. <https://doi.org/10.5530/ijper.53.4.121>
- Puslitjaknov, T. (2008). *metode penelitian pengembangan*. Pusat penelitian kebijakan dan inovasi pendidikan.Badan penelitian dan pengembangan departemen pendidikan nasional.
- Ramdoniati, N., Muntari, M., & Hadisaputra, S. (2018). Pengembangan Bahan Ajar Kimia Berbasis Problem Based Learning Untuk Meningkatkan Keterampilan Metakognisi. *Jurnal Penelitian Pendidikan IPA*, 5(1). <https://doi.org/10.29303/jppipa.v5i1.148>
- Rosmalinda, D., Rusdi, M., & Hariyadi, B. (2014). Pengembangan Modul Praktikum Kimia SMA Berbasis PBL(Problem Based Learning). *Edu-Sains: Jurnal Pendidikan Matematika Dan Ilmu Pengetahuan Alam*, 2(2). <https://doi.org/10.22437/jmpmipa.v2i2.1666>
- Rowntree, D. (1995). *Teaching through Self-Instruction How to Develop open Learing materials*. Kogan Page London.
- Sari, H., Wahidah, S., & Idrus, A. (2022). *PENGEMBANGAN MODUL PEMBELAJARAN KIMIA BERBASIS MODEL PROBLEM BASED LEARNING (PBL) PADA MATERI KOLOID Development of Chemistry Learning Module Based on Problem Based Learning Model (PBL) on Colloid Material*. 8119. <https://doi.org/10.29303/cep.v5i1.2697>
- Sembiring, H. G., & Sutiani, A. (2022). Pengembang modul berbasis Problem Based Learning (PBL) terintegrasi literasi sains pada materi laju reaksi kimia. *Educenter: Jurnal Ilmiah Pendidikan*, 1(6), 674–682. <https://jurnal.arkainstitute.co.id/index.php/educenter/article/view/238%0Ahttps://jurnal.arkainstitute.co.id/index.php/educenter/article/download/238/186>
- Setyosari, P. (2013). *Metode Penelitian Pendidikan dan Pengembangan*. Kencana Prenadamedia Group.
- Siahaan, R., Sitorus, M., & Silaban, S. (2021). The development of teaching materials oriented to critical thinking skills for chemistry class XI high school. *Jurnal Pendidikan Kimia*, 13(1), 60–68. <https://doi.org/10.24114/jpkim.v13i1.24145>
- Situmorang, M. (2013). Pengembangan Buku Ajar Kimia SMA melalui Inovasi

- Pembelajaran dan Integrasi Pendidikan Karakter untuk Meningkatkan Hasil Belajar Siswa. *Semirata FMIPA Universitas Lampung*, 1(1), 237–246.
- Situmorang, M. (2014). EFEKTIVITAS MODUL PEMBELAJARAN INOVATIF UNTUK MENINGKATKAN HASIL BELAJAR PADA PENGAJARAN LAJU REAKSI. *Jurnal Penelitian Bidang Pendidikan*, 20(2), 139–147. [https://doi.org/https://doi.org/10.24114/jpbp.v20i2.3038](https://doi.org/10.24114/jpbp.v20i2.3038)
- Sudjana, N. (2007). *Teknologi Pengajaran*. Sinar Baru Algesindom.
- Sugiyono. (2010). *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Alfabeta.
- Sukiman. (2012). Pengembangan Media Pembelajaran. In *Pustaka Insan Madani*.
- Sukmadinata, N. S. (2008). *Metode Penelitian Pendidikan*. PT Remaja Rosdakarya.
- Supriadi, S. (2017). Pemanfaatan Sumber Belajar Dalam Proses Pembelajaran. *Lantanida Journal*, 3(2), 127. <https://doi.org/10.22373/lj.v3i2.1654>
- Surinder. (2012). An Analytical Study Of Moral Values Of Senior Secondary School Students Of Jhunjhunu District. *Indian Streams Research Journal*, 2(9), 1–8.
- Sutiani, A., Silalahi, A., & Situmorang, M. (2017). *The Development of Innovative Learning Material with Problem Based Approach to Improve Students Competence in the Teaching of Physical Chemistry*. 104(Aisteel), 378–382. <https://doi.org/10.2991/aisteel-17.2017.81>
- Syaukani, I., Heinich, R., & Perrin, P. (1993). *Instructional Media and the New Technologies of Instruction*. Macmillan Publishing Company.
- Syifaiyah, R., Tukiran, T., & Erman, E. (2018). Development of Chemistry Instruction Material Using Problem Based Learning Model for Increasing the Student of Senior High School Learning Achievement. *JPPS (Jurnal Penelitian Pendidikan Sains)*, 7(2), 1479. <https://doi.org/10.26740/jpps.v7n2.p1479-1486>
- Trianto. (2007). *Mendesain Model Pembelajaran Inovatif-Progresif*. Kencana Prenada Media Group.
- Tsybulsky, D., & Muchnik-Rozanov, Y. (2019). The development of student-teachers' professional identity while team-teaching science classes using a project-based learning approach: A multi-level analysis. *Teaching and Teacher Education*, 79, 48–59. <https://doi.org/10.1016/j.tate.2018.12.006>
- Uno, H. (2016). *Teori Motivasi dan pengukurannya Analisis di Bidang Pendidikan*. Bumi Aksara.
- Vegatama, M. R. (2019). Pengaruh Penggunaan Media Macromedia Flash Dan

- Powerpoint Pada Pembelajaran Langsung Terhadap Motivasi Dan Hasil Belajar Kognitif Siswa Kelas X1 Ipa Sma Negeri 2 Sungguminasa (Studi Pada Materi Pokok Asam-Basa). *Arfak Chem: Chemistry Education Journal*, 1(2), 68–76. <https://doi.org/10.30862/accej.v1i2.73>
- Wibowo, E., & Pratiwi, D. D. (2018). Pengembangan Bahan Ajar Menggunakan Aplikasi Kvisoft Flipbook Maker Materi Himpunan. *Desimal: Jurnal Matematika*, 1(2), 147. <https://doi.org/10.24042/djm.v1i2.2279>
- Wurdinger, S., & Qureshi, M. (2015). Enhancing College Students' Life Skills through Project Based Learning. *Innovative Higher Education*, 40(3), 279–286. <https://doi.org/10.1007/s10755-014-9314-3>
- Yotiani, Kasmadi, I. S., & Nuswowati, dan M. (2016). Pengembangan Bahan Ajar Hidrolisis Garam Bermuatan Karakter Berbasis Inkuiri Terbimbing Untuk Meningkatkan Kemampuan Berpikir Kritis Siswa. *Jurnal Inovasi Pendidikan Kimia*, 10(2), 1731–1744.
- Yuberti. (2014). *Teori Pembelajaran dan pengembangan bahan ajar dalam pendidikan*. Anugrah Utama Raharja (AURA).