

DAFTAR PUSTAKA

- Botari, A., Botari, J. C., Brito C. d. R. and Ciampi, M. M. (2022). Educational Tools and Interventional Analysis of Meaningful Learning: Case Studies Applied to Teaching Acoustic Physics in the Discipline of Environmental Comfort. *IEEE Revista Iberoamericana de Tecnologias del Aprendizaje*, 17(2). 115–124. <https://10.1109/RITA.2022.3166860>.
- Ali, K., Du, X., & Lundberg, A. (2022). Does Problem-based Learning Facilitate Enactment of Learner Agency in Undergraduate Dental Curricula? A Q Study. *European Journal of Dental Education*, 823–832. <https://doi.org/10.1111/eje.12872>
- Almulhem, M. A., & Almulhem, J. A. (2022). Evaluation of Problem - Based Learning Implementation in a College of Medicine , Kingdom of Saudi Arabia : A Cross Sectional Comparative Study. *BMC Medical Education*, 22, 1–12. <https://doi.org/10.1186/s12909-022-03347-1>
- Amalina, I. K., & Vidakovich, T. (2023). Development and Differences in Mathematical Problem-Solving Skills: A Cross-sectional Study of Differences in Demographic Backgrounds. *A Cell Press Heliyon*, 9, 1–11. <https://doi.org/10.1016/j.heliyon.2023.e16366>
- Amerstorfer, C. M., & Münster-kistner, C. F. Von. (2021). Student Perceptions of Academic Engagement and Student-Teacher Relationships in Problem-Based Learning. *Frontiers in Psychology*, 12, 1–18. <https://doi.org/10.3389/fpsyg.2021.713057>
- Amin, A. M., & Aloysius, D. C. (2016). Analisis Persepsi Dosen Terhadap Strategi Pembelajaran Reading Questioning and Answering (RQA) Dan Argumment-Driven Inquiry (ADI) Pada Program Studi Pendidikan Biologi Di Kota Makasar. *Prosiding Seminar Nasional*, 3333–3347. https://www.researchgate.net/profile/Astuti-Amin/publication/321144722_Analisis_Persepsi_Dosen_terhadap_Strategi_Pembelajaran_Reading_Questioning_and_Answering_RQA_dan_Argument-Driven_Inquiry_ADI_pada_Program_Studi_Pendidikan_Biologi_di_Kota_Makassar/links/
- Andari, R. M., & Setianingsih, R. (2021). Students ' Mathematical Literacy in Solving PISA Problem Using Indonesian Cultural Context. *Jurnal Review Pembelajaran Matematika*, 6(1), 52–67. <https://doi.org/10.15642/jrpm.2021.6.1.52-67>

- Aprilia, A. V., Parmin, P., & Wusqo, I. U. (2020). The Influence of Problem-Based Learning Model on Heat and Its Transfer Topic Toward Junior High School Students Problem-Solving Skills. *Unnes Science Education Journal*, 9(2), 116–119. <https://doi.org/10.15294/usej.v9i2.42906>
- Arends, R. I. (2015). *Learning to Teach*. In McGraw-Hill Education.
- Aryana, I. B. P. (2019). Pembelajaran untuk Meningkatkan Kompetensi 4C (Communication, Collaboration, Critical Thinking dan Creatif Thinking) untuk Menyongsong Era Abad 21. *Konferensi Nasional Matematika Dan IPA Universitas PGRI Banyuwangi*, 1(1).
- Aslam, L. K., Suparji, & Rijanto, T. (2021). The Effect of Application of Problem Based Learning Model on Mathematics Learning Outcomes of Junior High School Students. *Jurnal Akademik Pendidikan Matematika*, 3(4), 264–267. <https://doi.org/10.29103/ijevs.v3i4.3958>
- Bahri, A. (2016). Strategi pembelajaran Reading Questioning and Answering (RQA) pada Perkuliahan Fisiologi Hewan untuk Meningkatkan Hasil Belajar Kognitif Mahasiswa. *Jurnal Bionature*, 17(2), 107–114.
- Bahri, A., & Idris, I. S. (2018). Development and Validation of Learning Strategy for Metacognitive Skills Empowerment: PBLRQA (PBL integrated with Reading, Questioning, and Answering). *Journal of Physics: Conference Series*, 1028(1), 1–8. <https://doi.org/10.1088/1742-6596/1028/1/012028>
- Bahri, A., Idris, I. S., Muis, H., Arifuddin, M., & Fikri, M. J. N. (2020). Blended Learning Integrated with Innovative Learning Strategy to Improve Self-Regulated Learning. *International Journal of Instruction*, 14(1), 779–794. <https://doi.org/10.29333/IJI.2021.14147A>
- Bandura, A. (1982). *Self-Efficacy Mechanism in Human Agency*. 37(2), 122–147. <https://doi.org/10.1037/0003-066X.37.2.122>
- Bandura, A. (1994). Self-Efficacy. *Encyclopedia of Human Behavior*, 4(pp), 71–81. <https://doi.org/10.1002/9781118970843.ch243>
- Bandura, A., & Adams, N. E. (1977). Analysis of Self-Efficacy Theory of Bahavioral Change. *Cognitive Therapy and Research*, 1(4), 287–310. <https://doi.org/10.1007/BF01663995>
- Barrows, H. S. (1996). Problem-Based Learning in Medicine and Beyond: A Brief Overview. *New Directions for Teaching and Learning*, 1996(68), 3–12.

<https://doi.org/10.1002/tl.37219966804>

- Brod, G. (2021). Toward an understanding of when prior knowledge helps or hinders learning. *Npj Science of Learning*, 6(24), 1–3. <https://doi.org/10.1038/s41539-021-00103-w>
- Bryce, T. G. K., & Blown, E. J. (2023). Ausubel ' s meaningful learning re-visited. *Current Psychology*, 43, 4579–4598. <https://doi.org/10.1007/s12144-023-04440-4>
- Chen, T., Zhao, Y., Huang, F., Liu, Q., Li, Y., Alolga, R. N., Zhang, L., & Ma, G. (2024). *The Effect of Problem-Based Learning on Improving Problem-Solving, Self-Directed Learning, and Critical Thinking Ability for the Pharmacy Students : A Randomized Controlled Trial and Meta-analysis*. 19, 1–11. <https://doi.org/10.1371/journal.pone.0314017>
- Chinchua, S., Kantathanawat, T., & Tuntiwigwanich, S. (2022). Increasing Programming Self-Efficacy (PSE) Through a Problem-Based Gamification Digital Learning Ecosystem (DLE) Model. *Journal of Higher Education Theory and Practice*, 22(9), 131–143.
- Choi, J., Bae, S., Shin, S., Shin, B., & Lee, H. (2022). Effects of Problem-Based Learning on the Problem-Solving Ability and Self-Efficacy of Students Majoring in Dental Hygiene. *International Journal of Environmental Research and Public Health Article*, 19(7491), 1–8. <https://doi.org/10.3390/ijerph19127491>
- Chueh, H., & Kao, C. (2024). Exploring the Impact of Integrating Problem Based Learning and Agile in the Classroom on Enhancing Professional Competence. *Heliyon*, 10, 1–11. <https://doi.org/10.1016/j.heliyon.2024.e24887>
- Citrawathi, D. M., Bakar, A. Y. A., Adnyana, P. B., Widiyanti, N. L. P. M., & Sudiana, I. K. (2022). Effect of The Problem-Based Adolescent Reproductive Health Module on Students ' Life Skills and Attitudes. *Cakrawala Pendidikan: Jurnal Ilmiah Pendidikan*, 41(3), 731–741. <https://doi.org/10.21831/cp.v41i3.48303>
- Darussyamsu, R., & Fadilah, M. (2017). Pengaruh Strategi Pembelajaran Reading, Questioning and Answering terhadap Kemampuan Berpikir Kreatif Mahasiswa Jurusan Biologi FMIPA Universitas Negeri Padang pada Matakuliah Evolusi. *Bioeducation Journal*, 1(1), 10–21. <https://doi.org/10.24036/bioedu.v1i1.19>
- Diani, R., Khotimah, H., Khasanah, U., & Syarlisjisman, M. R. (2019). Scaffolding

dalam Pembelajaran Fisika Berbasis Problem Based Instruction (PBL): Efeknya Terhadap Pemahaman Konsep dan Self Efficacy. *Indonesian Journal of Science and Mathematics Education*, 2(3), 310–319. <https://doi.org/10.24042/ijsme.v2i3.4356>

Elvinasti, M., Kharisma, N. A. N., Irdalisa, & Yarza, H. N. (2022). Analisis Kemampuan Pemecahan Masalah Sains Peserta Didik pada Materi Perubahan Lingkungan. *Jurnal Penelitian Dan Pembelajaran Fisika*, 8(1), 1–9. <https://doi.org/10.36655/sepren.v4i0.815>

Elzomor, M., Mann, C., Doten-Snitker, K., Parrish, K., & Chester, M. (2018). Leveraging Vertically Integrated Courses and Problem-Based Learning to Improve Students' Performance and Skills. *Journal of Professional Issues in Engineering Education and Practice*, 144(4). [https://doi.org/10.1061/\(ASCE\)EI.1943-5541.0000379](https://doi.org/10.1061/(ASCE)EI.1943-5541.0000379)

Field, A. (2003). *Discovering Statistics Using SPSS*. SAGE Publications Ltd.

Fitriani, A., Zubaidah, S., Susilo, H., & Al Muhdhar, M. H. I. (2020). The Effects of Integrated Problem-Based Learning, Predict, Observe, Explain on Problem-Solving Skills and Self-Efficacy. *Eurasian Journal of Educational Research*, 1(85), 45–64. <https://doi.org/10.14689/ejer.2020.85.3>

Ford, C. J., Usher, E. L., Scott, V. L., & Chen, X.-Y. (2022). The Perfect Lens Perfectionism and Early Adolescents Math Self-efficacy Development. *Br J Edu Psychol*, 211–277. <https://doi.org/10.1111/bjep.12550>

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How To Design and Evaluate Research in Educations*. The McGraw-Hill Companies.

Funa, A. A., & Prudente, M. S. (2021). Effectiveness of Problem- Based Learning on Secondary Students ' Achievement in Science: A Meta-Analysis. *Internasional Journal of Instruction*, 14(4), 69–84. <https://doi.org/10.29333/iji.2021.1445a>

Geitz, G., Brinke, D. J., & Kirschner, P. A. (2016). Changing Learning Behaviour: Self-Efficacy and Goal Orientation in PBL Groups in Higher Education. *International Journal of Educational Research*, 75(1), 146–158. <https://doi.org/10.1016/j.ijer.2015.11.001>

Ghani, A. S. A., Rahim, A. F. A., Yusoff, M. S. B., & Hadie, S. N. H. (2021). Effective Learning Behavior in Problem-Based Learning: a Scoping Review. *Medical Science Educator*, 31(3), 1199–1211. <https://doi.org/10.1007/s40670-021-01292-0>

- Ghufron, M. A., & Ermawati, S. (2018). The strengths and weaknesses of cooperative learning and problem-based learning in EFL writing class: Teachers and students' perspectives. *International Journal of Instruction*, 11(4), 657–672. <https://doi.org/10.12973/iji.2018.11441a>
- Gregory, R. J. (2000). Psychological Testing: History, principles, and Applications. In Pearson. Allyn and Bacon. <https://psycnet.apa.org/record/2003-88183-000>
- Gulo, A. (2022). Penerapan Model Pembelajaran Problem Based Learning Dalam Meningkatkan Motivasi Dan Hasil Belajar IPA. *Educativo: Jurnal Pendidikan*, 1(1), 334–341. <https://doi.org/10.56248/educativo.v1i1.58>
- Hadiyanti, P. O. (2023). Penerapan Strategi Pembelajaran Problem Based Learning (PBL), Dan Reading Questioning And Answering (RQA) Pada Pembelajaran Biologi Untuk Memberdayakan Motivasi Siswa Putra Dan Putri Sma Kusuma Pekanbaru. *Education and Learning Journal*, 2(6), 777–780. <https://doi.org/10.31004/author.v2i6.257>
- Halim, A., Halim, L., Meerah, S. M., & Osman, K. (2010). Pembangunan Instrumen Penyelesaian Masalah Sains. *Jurnal Pendidikan Malaysia (Malaysian Journal of Education)*, 35(1), 35–39.
- Hariyadi, S., Corebima, A. D., Zubaidah, S., & Ibrohim, S. (2018). Contribution Of Mind Mapping, Summarizing, And Questioning in The RQA Learning Model to Genetic Learning Outcomes. *Journal of Turkish Science Education*, 15(1), 80–88. <https://doi.org/10.12973/tused.10222a>
- Hernandez-Ramos, J., Pernaa, J., Caceres-Jensen, L., & Rodriguez-Bacerra, J. (2021). The Effects of Using Socio-Scientific Issues and Technology in Problem-Based Learning : A Systematic Review. *Education Science*, 11, 1–16. <https://doi.org/10.3390/educsci11100640>
- Ismawati, Leksono, I. P., & Harwanto. (2023). Kemampuan Literasi Sains Ditinjau dari Gaya Belajar pada Penerapan Model PBL dan PBL Terintegrasi RQA dalam Pembelajaran Biologi Kelas X SMA Negeri 3 Blitar. *Jurnal Pendidikan : Riset Dan Konseptual*, 7(3), 470–480. https://doi.org/10.28926/riset_konseptual.v7i3.752
- Jampel, I. N., Widiana, I. W., & Juliantari, N. M. Y. (2017). Inovasi Pembelajaran Saintifik dengan Snowball Throwing dalam Proses Menanya Terhadap Hasil Belajar Siswa. *Jurnal Ilmiah Sekolah Dasar*, 1(2), 128–137. <https://doi.org/doi.org/10.23887/jisd.v1i2.10159>

- Januadi, D. (2021). Heterogeneity of Problem-based Learning Outcomes for Improving Mathematical Competence: A systematic Literature Review. *Jurnal of Physics: Conference Series*, 1772, 1–7. <https://doi.org/10.1088/1742-6596/1722/1/012108>
- Justisunda, M. G. (2017). Hubungan Self-Efficacy Siswa SMP dengan Kemampuan Pemecahan Masalah Matematis. *Jurnal THEOREMS (The Original Research Of Mathematics)*, 1(2), 24–30. <https://doi.org/10.31949/th.v1i2.375>
- Kartimi, Anugrah, I. R., & Addiin, I. (2021). Systematic Literature Review : Science Self-Efficacy in Science Learning. *Al-Khwarizmi: Jurnal Pendidikan Matematika Dan Ilmu Pengetahuan Alam*, 9(2), 13–34. <https://doi.org/10.24256/jpmipa.v9i2.2048>
- Kemendikdasmen. (2025). *Naskah Akademik Pembelajaran Mendalam Menuju Pendidikan Bermutu untuk Semua*.
- Khoiriyah, U., & Roberts, C. (2025). Investigating the role of self-assessment in enhancing self-regulated learning amongst medical students in problem-based learning. *BMC Medical Education*, 25, 1–12. <https://doi.org/10.1186/s12909-025-07359-5>
- Kinasih, R. A., Prahani, B. K., Wibowo, F. C., & Costu, B. (2023). Profile of Students' Physics Problem Solving Skills and Implementation PBL Model Assisted by 3D Digital Module to Improve Problem Solving Skills. *Jurnal Penelitian & Pengembangan Pendidikan Fisika*, 9(2), 245–256. <https://doi.org/10.21009/1.09207>
- Kleppang, A. L., Steigen, A. M., & Finbråten, H. S. (2023). Explaining variance in self - efficacy among adolescents: the association between mastery experiences , social support , and self - efficacy. *BMC Public Health*, 23(1665), 1–10. <https://doi.org/10.1186/s12889-023-16603-w>
- Komala, R., Heryanti, E., & Rinawati, A. (2021). Effect of Problem-Based Learning Model on Biodiversity Problem-solving Skills. *Biosfer: Jurnal Pendidikan Biologi*, 14(1), 120–131. <https://doi.org/10.21009/biosferjpb.16325>
- Kwangmuang, P., Jarutkamolpong, S., Sangboonraung, W., & Daungtod, S. (2021). Heliyon The development of learning innovation to enhance higher order thinking skills for students in Thailand junior high schools. *Heliyon*, 7(6), e07309. <https://doi.org/10.1016/j.heliyon.2021.e07309>
- Leasa, M., Abednego, A., & Batlolona, J. R. (2023). Problem-based Learning

- (PBL) with Reading Questioning and Answering (RQA) of Preservice Elementary School Teachers. *International Journal of Learning, Teaching and Educational Research*, 22(6), 245–261. <https://doi.org/10.26803/ijlter.22.6.14>
- Leasa, M., Fenanlampir, A., Batlolona, J. R., & Saimima, A. S. (2021). Problem-Solving and Creative Thinking Skills With The PBL model: The Concept of The Human Circulatory System. *Biosfer*, 14(2), 154–166. <https://doi.org/10.21009/biosferjpb.20825>
- Luo, Q., Chen, L., Yu, D., & Zhang, K. (2023). The Mediating Role of Learning Engagement Between Self-Efficacy and Academic Achievement Among Chinese College Students. *Psychology Research and Behavior Management*, 16, 1533–1543. <https://doi.org/10.2147/prbm.s401145>
- Ma, L., Yan, R., Wang, X., Gao, X., Fan, N., Liu, L., & Kang, H. (2024). Enhancing Surgical Nursing Student Performance : Comparative Study of Simulation-Based Learning and Problem-Based Learning. *Journal of Multidisciplinary Healthcare*, 17, 991–1005. <https://doi.org/10.2147/jmdh.s440333>
- Magaji, A. (2021). Promoting Problem-Solving Skills among Secondary Science Students through Problem Based Learning. *International Journal of Instruction*, 14(4), 549–566. <https://doi.org/10.29333/iji.2021.14432a>
- Mair, M., & Halkier, H. (2013). *Problem-Based Learning and Life-Long Learning: Principles, Applications, Challenges*.
- Manuaba, I. B. A. P., -No, Y., & Wu, C. (2022). The Effectiveness of Problem Based Learning in Improving Critical Thinking , Problem-Solving and Self-Directed Learning in First-Year Medical Students : A Meta-Analysis. *Plos One*, 17, 1–12. <https://doi.org/10.1371/journal.pone.0277339>
- Mariana, E., Wardany, K., & Asih, D. A. S. (2022). Pengaruh Model Problem Based Learning terhadap Peningkatan Pemecahan Masalah Siswa pada Pembelajaran IPA. *Jurnal Pendidikan MIPA*, 12(3), 395–401. <https://doi.org/10.37630/jpm.v12i3.621>
- Maso, N., Hatibe, A., & Komang Werdhiana, dan I. (2021). Pengaruh Model Problem Based Learning (PBL) terhadap Pemecahan Masalah pada Siswa The Effect of Problem Based Learning (PBL) Model on Problem Solving. *Jurnal Kreatif Online (JKO)*, 9(3), 157–164. <http://jurnal.fkip.untad.ac.id/index.php/jko>
- Matsuda, Y., Falcon, A., Porter, A., Royer, A., Mohnkern, L., Vergara, D., & Valiente, Y. (2024). Implementation of Problem-based Learning Modules in

an Introduction to Public Health Course. *Frontier in Public Health*, 12, 1–9.
<https://doi.org/10.3389/fpubh.2024.1405227>

Meng, Q., & Zhang, Q. (2023). The Influence of Academic Self-Efficacy on University Students ' Academic Performance : The Mediating Effect of Academic Engagement. *Sustainability*, 15, 1–14.
<https://doi.org/10.3390/su15075767>

Mundilarto, & Ismoyo, H. (2017). *Effect of Problem-Based Learning on Improvement Physics Achievement and Critical Thinking of Senior High School Student*. 16(5), 761–779. <https://oaji.net/articles/2017/987-1509214187.pdf>

Musna, R. R., Januadi, D., & Jupri, A. (2018). A Meta-Analysis Study of The Effect of Problem- Based Learning Model on Students' Mathematical Problem Solving Skills. *Journal of Physics: Conference Series*, 1882, 1–8.
<https://doi.org/10.1088/1742-6596/1882/1/012090>

Mustofa, Z., Susilo, H., & Al Muhdhar, M. H. I. (2016). Penerapan Model Pembelajaran Problem Based Learning Melalui Pendekatan Kontekstual Berbasis Lesson Study Untuk Meningkatkan Kemampuan Memecahkan Masalah Dan Hasil Belajar Kognitif Siswa SMA. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 1(5), 885–889.

Nicholus, G., Muwonge, C. M., & Joseph, N. (2023). The Role of Problem-Based Learning Approach in Teaching and Learning Physics : A Systematic Literature. *F1000 Research*, 12, 1–23.
<https://doi.org/10.12688/f1000research.136339.2>

OECD. (2023). Program For International Student (PISA) 2022 Assessment and Analytical Framework. In *OECD (Organisation for Economic Co-operation and Development) Publishing*. https://www.oecd-ilibrary.org/education/pisa-2022-assessment-and-analytical-framework_dfe0bf9c-en

Ofem, U. J., Idika, D., Otu, B., Victor, S., Arikpo, I., Laetitia, A., Akpo, C., Anake, M., Ntui, N., Edam-agbor, I. B., Orim, S., Eunice, A., Undie, R., Nwinyinya, E., & Effiong, E. (2024). Academic Optimism, Capital Indicators As Predictors Of Cognitive, Affective, And Psychomotor Learning Outcome Among Students In Secondary School. Hierarchical Regression Approach (HRA). *Heliyon*, 10, 1–20. <https://doi.org/10.1016/j.heliyon.2024.e30773>

Oktariani. (2018). Peranan Self-efficacy dalam Meningkatkan Prestasi Belajar Siswa. *Kognisi Jurnal*, 2(2), 136–145.

- Oktavia, R. S., Harir, A. H., & Rosdiana, L. (2024). Problem Based Learning: Melatihkan Keterampilan Pemecahan Masalah untuk Meningkatkan Hasil Belajar Peserta Didik pada Materi IPA. *PENDIPA Journal of Science Education*, 8(2), 171–175. <https://doi.org/10.33369/pendipa.8.2.171-175>
- Ooi, P. B., Jaafar, W. M. W., & Crosling, G. (2021). Malaysian School Counselor 's Self-Efficacy : The Key Roles of Supervisor Support for Training , Mastery Experience , and Access to Training. *Fronters in Psychology*, 12, 1–16. <https://doi.org/10.3389/fpsyg.2021.749225>
- Paidi. (2013). Model Pemecahan Masalah dalam Pembelajaran Biologi di SMA. *Artikel Seminar Nasional*, 3(1), 1–10.
- Palenti, C. D., Putra, A., & Gusti, R. (2023). Improving Metacognitive Ability Through The Reading Questioning Answering (RQA) Model Assisted With Learning Journals In Nonformal Educational Study Programs. *Jurnal Ilmiah Pendidikan Dan Tenaga Kependidikan Non Formal*, 18(2), 80–86. <https://doi.org/10.21009/JIV.182.2>
- Paudi, R. I., Jamhari, M., & Mawadah, M. (2019). Self Efficacy Dan Motivasi Belajar: Pengaruhnya Terhadap Hasil Belajar Siswa Pada Mata Pelajaran IPA Di MTsN Kota Palu. *Prosiding Seminar ...*, 1(1), 48–55. <https://jurnal.fkip.untad.ac.id/index.php/psnb/article/view/3430%0Ahttps://jurnal.fkip.untad.ac.id/index.php/psnb/article/download/3430/1847>
- Peura, P., Aro, T., Raikkonen, E., Viholainen, H., Koponen, T., Usher, E. L., & Aro, M. (2021). Trajectories of Change in Reading Self-efficacy : A Longitudinal Analysis of Self-efficacy and Its Sources. *Contemporary Educational Psychology*, 64, 1–15. <https://doi.org/10.1016/j.cedpsych.2021.101947>
- Phage, R. J., Molato, B. J., & Matsipane, M. J. (2023). Challenges Regarding Transition from Case-Based Learning to Problem-Based Learning : A Qualitative Study with Student Nurses. *Nursing Report*, 13, 389–403. <https://doi.org/10.3390/nursrep13010036>
- Polya. (1957). *How To Solve It* (Second). Princeton University Press.
- Pratiwi, R. E., Zubaidah, S., & Novianti, V. (2024a). Does the PBL-RQA Model Improve Students' Information Literacy and Self-Confidence? *Prisma Sains : Jurnal Pengkajian Ilmu Dan Pembelajaran Matematika Dan IPA IKIP Mataram*, 12(1), 86. <https://doi.org/10.33394/j-ps.v12i1.10069>
- Pratiwi, R. E., Zubaidah, S., & Novianti, V. (2024b). Enhancing Problem-Solving

Skills in Biology Using Problem-Based Learning integrated with Reading Questioning Answering Model. *EASE*, 3(2), 442–462.

Purwanto, A. (2018). Pengaruh Model Reading, Questioning and Answering (RQA) Terhadap Keterampilan Berpikir Kritis Siswa Kelas XI IPA SMA PGRI 6 Banjarmasin Pada Konsep Sistem Koordinasi Manusia. *Jurnal Pendidikan Hayati*, 4(1), 44–52. <https://doi.org/10.33654/jph.v4i1.448>

Putri, A. A., & Juandy, D. (2022). Kemampuan Pemecahan Masalah Matematis Ditinjau dari Self Efficacy: Systematic Literature Review (SLR) di Indonesia. 7(2), 135–147. <https://doi.org/10.23969/symmetry.v7i2.6493>

Putri, E. I., Fitri, R., & Darussyamsu, R. (2022). Analisis Model Pembelajaran Reading, Questioning, and Answering (RQA) terhadap Kemampuan Berpikir Kritis Siswa. *Ruang-Ruang Kelas: Jurnal Pendidikan Biologi*, 2(3), 1–7. <https://doi.org/10.24036/rrkjurnal.v2i3.116>

Rahayu, O., Siburian, M. F., & Suryana, A. (2021). Analisis Kemampuan Pemecahan Masalah IPA Siswa Kelas VII Pada Konsep Pencemaran Lingkungan di MTs. Asnawiyah Kab. Bogor. *EduBiologia: Biological Science and Education Journal*, 1(1), 15–23. <https://doi.org/10.30998/edubiologia.v1i1.8080>

Raman, Y., Surif, J., & Ibrahim, N. H. (2024). The Effect of Problem Based Learning Approach in Enhancing Problem Solving Skills in Chemistry Education: A Systematic Review. *International Journal of Interactive Mobile Technology*, 18(5), 91–111. <https://doi.org/10.3991/ijim.v18i05.47929>

Rapi, N. K., Yasmini, L. P. B., Widiarini, P., & Risha, N. (2022). Pengaruh Perangkat Pembelajaran Berbasis Inkuiri terhadap Self-efficacy dan Hasil Belajar Fisika. *Wahana Matematika Dan Sains: Jurnal Matematika, Sains, Dan Pembelajarannya*, 16(3), 1–10. <https://doi.org/10.23887/wms.v16i3.53737>

Rehman, N., Huang, X., Mahmood, A., & Algerafi, M. A. M. (2024). Heliyon Project-Based Learning as a Catalyst for 21st-Century Skills and Student Engagement in the Math Classroom. *Heliyon*, 10, 1–17. <https://doi.org/10.1016/j.heliyon.2024.e39988>

Rifai, A. (2020). Problem Based Learning dalam Pembelajaran IPA. *Workshop Nasional Penguatan Kompetensi Guru Sekolah Dasar SHES: Conference Series*, 3(3), 2139–2144. <https://doi.org/DOI:https://doi.org/10.20961/shes.v3i3.57081>

- Safitri, R. D., Afifi, E. H. N., & Shaharani, A. (2024). The Effect of Reading , Questioning , and Answering (RQA) Learning Model on Students ' Critical Thinking Ability in Science Material at SD Negeri 15 Sorong City. *Jorunal of Asian Primary Education*, 1(2), 138–145. <https://doi.org/10.59966/joape.v1i2.1467>
- Santrock, J. W. . (2019). *Children* (Fourteenth). McGraw-Hill Education.
- Saputri, D. A., & Febriani, S. (2017). Pengaruh Model Problem Based Learning (PBL) Terhadap Kemampuan Pemecahan Masalah Peserta Didik pada Mata Pelajaran Biologi Materi Pencemaran Lingkungan Kelas X Mia SMA N 6 Bandar Lampung. *Biosfer: Jurnal Tadris Biologi*, 8(1), 40–52. <https://doi.org/10.24042/biosf.v8i1.1262>
- Sari, I. N., Mahanal, S., & Prabaningtyas, S. (2024). The Complexity science Problem-Based Learning: Correlation of Science Literacy and Concept Mastery to Problem-Solving Skills. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, 10(3), 920–927. <https://doi.org/10.22219/jpbi.v10i3.35793>
- Schunk, D. H. (2012). Learning Theories An Educational Perspective. In *Psychology in the Schools* (Vol. 1, Issue 3). Allyn and Bacon. [https://doi.org/10.1002/1520-6807\(196407\)1:3<334::aid-pits2310010324>3.0.co;2-9](https://doi.org/10.1002/1520-6807(196407)1:3<334::aid-pits2310010324>3.0.co;2-9)
- Semilarski, H., Soobard, R., Holbrook, J., & Rannikmäe, M. (2022). Expanding disciplinary and interdisciplinary core idea maps by students to promote perceived self - efficacy in learning science. *International Journal of STEM Education*, 9(57), 1–20. <https://doi.org/10.1186/s40594-022-00374-8>
- Semilarski, H., Soobard, R., & Rannikmäe, M. (2021). Promoting Students' Perceived Self-Efficacy Towards 21st Century Skills through Everyday Life-Related Scenarios. *Education Science*, 11(570), 1–18. <https://doi.org/10.3390/educsci11100570>
- Sheu, H., Lent, R. W., Miller, M. J., Penn, L. T., Cusick, M. E., & Truong, N. N. (2018). Sources of Self-efficacy and Outcome Expectations in Science, Technology, Engineering, and Mathematics Domains: A Meta-Analysis. *Journal of Vocational Behavior*, 1–71. <https://doi.org/10.1016/j.jvb.2018.10.003>
- Sholikah, L., & Pertiwi, F. N. (2021). Analysis of Science Literacy Ability of Junior High School Students Based on Programme for International Student Assessement (PISA). *Insecta*, 2(1), 95–104.

- Skulmowski, A., & Xu, K. M. (2022). Understanding Cognitive Load in Digital and Online Learning: a New Perspective on Extraneous Cognitive Load. *Education Psychology Review*, 34, 171–196. <https://doi.org/10.1007/s10648-021-09624-7>
- Suastra, I. W., Suarni, N. K., & Dharma, K. . (2019). The effect of Problem Based Learning (PBL) model on elementary school students ' science higher order thinking skill and learning autonomy. *Journal of Physics: Conference Series*, 1318, 1–8. <https://doi.org/10.1088/1742-6596/1318/1/012084>
- Sumampouw, H., Rengkuan, M., Siswati, B. H., & Corebima, A. D. (2016). Metacognition skill development in genetic lecture at the State University of Malang Indonesia. *International Journal of Educational Policy Research and Review*, 3(3), 36–42. <http://dx.doi.org/10.15739/IJEPRR.16.006>
- Sumiantari, N. L. E., Suardana, I. N., & Selamat, K. (2019). Pengaruh Model Problem Based Learning Terhadap Kemampuan Pemecahan Masalah IPA Siswa Kelas VIII SMP. *Jurnal Pendidikan Dan Pembelajaran Sains Indonesia (JPPSI)*, 2(1), 12. <https://doi.org/10.23887/jppsi.v2i1.17219>
- Sunaryo, Y. (2017). Pengukuran Self-Efficacy Siswa dalam Pembelajaran Matematika di Mts N 2 Ciamis. *TEOREMA : Teori Dan Riset Matematika*, 1(2), 39. <https://doi.org/10.25157/teorema.v1i2.548>
- Suparman, Yohannes, & Arifin, N. (2021). Enhancing Mathematical Problem-Solving Skills of Indonesian Junior High School Students through Problem-Based Learning: a Systematic Review and Meta-Analysis. *Al-Jabar : Jurnal Pendidikan Matematika*, 12(1), 1–16. <https://doi.org/10.24042/ajpm.v12i1.8036>
- Tabachnick, B. G., & Fidell, L. S. (2019). Using Multivariate Statistics. In *Structural equation modeling* (Seventh). Pearson Education. https://books.google.com/books/about/Using_Multivariate_Statistics.html?id=ucj1ygAACAAJ
- Tang, X., Liu, Y., & Milner-bolotin, M. (2023). Investigating student collaborative problem- solving competency and science achievement with multilevel modeling: Findings from PISA. *Plos One*, 1–17. <https://doi.org/10.1371/journal.pone.0295611>
- Taylor, T. A. H., Kemp, K., Mi, M., & Lerchenfeldt, S. (2023). Self-Directed Learning Assessment Practices In Undergraduate Health Professions Education : A Systematic Review Professions Education : A Systematic Review. *Medical Education Online*, 28, 1–27.

<https://doi.org/10.1080/10872981.2023.2189553>

- Tefera, A. S., Melaku, E. E. M., Urgie, B. M., Hassen, E. M., Tamene, T. D., & Gebeyaw, E. D. (2024). Barriers to Implementing Problem-Based Learning at The School of Medicine of Debre Berhan University, Ethiopia. *BMC Medical Education*, 24, 1–7. <https://doi.org/10.1186/s12909-024-05252-1>
- Tokuhamaspinosa, T., Simmers, K., Batchelor, D., Nelson, A. D., & Borja, C. (2023). A Theory of Mental Frameworks. *Frontiers in Psychology*, 14, 1–20. <https://doi.org/10.3389/fpsyg.2023.1220664>
- Trullàs, J. C., Blay, C., Sarri, E., & Pujol, R. (2022). Effectiveness of Problem-Based Learning Methodology in Undergraduate Medical Education : A Scoping Review. *BMC Medical Education*, 22(104), 1–12. <https://doi.org/10.1186/s12909-022-03154-8>
- Umaymah, F., & Wiratomo, Y. (2019). Pengaruh Metode Problem Solving terhadap Kemampuan Pemecahan Masalah Matematika. *Prosiding Diskusi Panel Nasional Pendidikan Matematika*, 5(1), 261–268.
- Ummah, K., Ami, M. S., & Meishanti, O. P. Y. (2021). Pengembangan Modul Pembelajaran Biologi Berbasis Reading, Questioning, And Answering (RQA) Materi Virus Kelas X. *Jurnal Biologi Dan Pembelajarannya (JB&P)*, 5(2), 19–25. <https://doi.org/10.29407/jbp.v8i1.15264>
- Wahyuni, A. S., & Miterianifa. (2019). Desain Lembar Kerja Peserta Didik Berbasis Problem Based Learning Untuk Meningkatkan Self-Efficacy Peserta Didik. *JTK (Jurnal Tadris Kimiya)*, 4(1), 78–90. <https://doi.org/10.15575/jtk.v4i1.4240>
- Wardani, D. A. W. (2023). Problem Based Learning: Membuka Peluang Kolaborasi dan Pengembangan Skill Siswa. *Jawa Dwipa*, 4(I), 1–17.
- Wicaksono, A. G. C., & Korom, E. (2022). Review of Problem-Solving Measurement : An Assessment Developed in The Indonesian Context. *Participatory Educational Research*, 9(1), 116–136. <https://doi.org/10.17275/per.22.7.9.1>
- Yan, X., Zhu, Y., Fang, L., Ding, P., Fang, S., Zhou, J., & Wang, J. (2023). Enhancing Medical Education in Respiratory Diseases : Efficacy of a 3D Printing , Problem- Based , and Case-Based Learning Approach. *BMC Medical Education*, 23, 1–9. <https://doi.org/10.1186/s12909-023-04508-6>
- Yolantia, C., Artika, W., Nurmaliah, C., Rahmatan, H., & Muhibbuddin. (2021).

Penerapan Modul Problem Based Learning terhadap Self Efficacy dan Hasil Belajar Peserta Didik. *Jurnal Pendidikan Sains Indonesia*, 9(4), 631–641. <https://doi.org/10.24815/jpsi.v9i4.21250>

Zebua, L., Harefa, A. R., Telaumbanua, D., & Waruwu, T. (2025). Pengaruh Modul Ajar IPA Berbasis Problem Based Learning Terhadap Kemampuan Pemecahan Masalah Siswa Kelas IX SMP Negeri 4 Mandrehe Utara. *Jurnal Pendidikan, Sains Dan Teknologi*, 12(2), 592–611. <https://doi.org/10.47668/edusaintek.v12i2.1720>

