

DAFTAR PUSTAKA

- Affandy, H., Aminah, N.S., & Supriyanto. (2019). Analisis Keterampilan Berpikir Kritis Siswa Pada Materi Fluida Dinamis DI SMA Batik 2 Surakarta. *Jurnal Materi dan Pembelajaran*. 9(1). 25-33.
- Ardianti, S., Sulisworo, D., Pramudya, Y., & Raharjo, W. (2020). The Impact of the Use of STEM Education Approach on the Blended Learning to Improve Student's Critical Thinking Skills. *Journal of Educational Research* 8 (3B). 24-32. Doi: [10.13189/ujer.2020.081503](https://doi.org/10.13189/ujer.2020.081503)
- Arikunto, S. (2013). *Prosedur Penelitian : Suatu Pendekatan Praktik*. Jakarta : Rineka Cipta
- Azizah E.V., Nandiyanto, ABD., Kurniawan, T., & Bilaa, M.L.(2022). ASEAN The Effectiveness of Using a Virtual Laboratory in Distance Learning on the Measurement Materials of the Natural Sciences of Physics for Junior High School Students. *Journal of Science and Engineering Education*. 2(3). 207-214.
Doi: <http://dx.doi.org/10.17509/xxxx>.
- DF Al , DN Al Husaeni., Nandiyanto ABD, Rokhman, M, S Chalim, Chano, J.,Obaidi ASH., & Roestamy, M. (2024). How Technology Can Change Educational Research? Definition, Factors for Improving Quality of Education and Computational Bibliometric Analysis. *ASEAN Journal of Science and Engineering*.4(2) (2024) 127-166. <https://ejournal.upi.edu/index.php/AJSE/article/view/62045/23994>
- Chan,P., Gerven, T.M., Dubois, J.S., Bernaets, K.(2021). Virtual chemical laboratories: A systematic literature review of research, technologies and instructional design. *Computers and Education Open* 2 2021. 1-17.
Doi : <https://doi.org/10.1016/j.caeo.2021.100053>
- Fuad, N.M., Zubaidah,S., Mahanal,S., & Suarsini. (2017). Improving Junior High Schools' Critical Thinking Skills Based on Test Three Different Models of Learning. *International Journal of*

Instruction. 10(1). 101-116. Doi: http://www.e-iji.net/dosyalar/iji_2017_1_7.pdf

Gaol, H.L., Situmorang, & Nugraha, A.W. (2022) The Development and Implementation of Project-based Innovative Learning Resources With Multimedia To Improve Critical Thinking Skill in Teaching Cation Analysis. *AIP Conference Proceedings*. 2659, 070003 (2022) <https://doi.org/10.1063/5.0113543>

Hasanatin, M., & Rohaeti, E. (2022). Analysis Of Feasibility Of Integrated Assesment Instruments To Measure Critical Thinking Skills And Scientific A Attitudes Of High School Students On Acid-Base Titration Materials. *European Journal Education Studies*. 9(1). 378-388. Doi : <http://dx.doi.org/10.46827/ejes.vi1.4169>

Hardani., Andriani, H., Ustiawaty, J., Utami, E., Istiqomah, R., Fardani, R., Sukmana, D., & Auliya, N. (2020). *Metode Penelitian Kualitatif & Kuantitatif*. Yogyakarta: CV. Pustaka Ilmu Group Yogyakarta.

Hayudiyani, M., Mustiningsih., & Arifin, I. (2020). Reorientation of Curriculum in the Face of Industrial Revolution 4.0. Proceedings of the 1 st International Conference on Information Technologi and Education (ICITE 2020), Vol.508, 659-664. Doi : <https://doi.org/10.2991/assehr.k.201214.314>

Juliandini, G., Situmorang, M., & Muchtar, Z. (2020). An Innovative Chemistry Learning Material With Project and Multimedia to Developed Students Thinking Skill on the Teaching of Anion Analysis. *Advances in Social Science, Education and Humanities Research 2020*; 488: 90-103.

Doi: <https://doi.org/10.2991/assehr.k.201124.024>

Latumeten, V.D.V., Fitria, A., Permatasari, A., Juniati, S.R., & Wahyuniar, (2024). The Effect of Using Technology in Learning on Student Learning Motivation: Analysis of the Effectiveness of Inclusive Education Programs. *International Journal of Educational Research Excellence (IJERE)*. 03(01). 3646-351. Doi: 10.55299/ijere.vi31.878

Masril, M., Hidayati, H., Darvina, Y. (2018). The Development of Virtual Laboratory Using ICT for Physics in Senior High School. *IOP*

Conf. Series: Materials Science and Engineering 335 (2018) 012069. Doi: 10.1088/1757-899X/335/1/012069.

Ranjan, A. (2017). Effect Of Virtual Laboratory On Development Of Concepts And Skills In Physics. *International Journal Of Technical Research & Science*. 2(1), 15-21.

Senisum, M. (2023). Critical Thinking Skills and Their Correlations with Science Process Skills for High School Students in Manggarai. *Jurnal Pendidikan Dan Kebudayaan Missio*, 15(1), 31-43. <https://doi.org/10.36928/jpkm.v1i1.1555>

Saputra, M. D., Joyoatmojo, S., Wardani, D. K., & Sangka, K. B. (2019). Developing Critical-Thinking Skills through the Collaboration of Jigsaw Model with Problem-Based Learning Model. *International Journal of Instruction*, 12(1), 1077-1094. <https://eric.ed.gov/?id=EJ1201249>

Susetyarini, E., & Fauzi, A. (2020). Trend of Critical Thinking Skill Researches in Biology Education Journals across Indonesia: from Research Design to Data Analysis. *International Journal of Instruction*, 13(1), 535-550. Doi: <https://doi.org/10.29333/iji.202012135a>

Sinaga, M., Situmorang, M., & Hutabarat, W. (2019). Implementation of Innovative Learning Material to Improve Students Competence on Chemistry. *Indian J Education and Research Pharmacy*, 53(1), 28-41. Doi : <http://dx.doi.org/10.5530/ijper.53.1.5>

Silitonga, P.M. (2014). *Statistik : Teori dan Aplikasi dalam Penelitian*. Medan: FMIPA Universitas Negeri Medan.

Situmorang, M., Gultom, S., Mansyur, A., Gultom, S., Restu., & Ritonga, W. (2022). Implementation of learning innovations to improve teacher competence in professional certificate programs for in-service teachers. *International Journal of Instruction*, 15(2), 675-696. <https://doi.org/10.29333/iji.2022.15237a>

Situmorang, M., Sinaga, M., Sitorus, M., & Sudrajat, A. (2022). Implementation of Project-Based Learning Innovation to Develop Students ' Critical Thinking Skills as a Strategy to Achieve Analytical Chemistry Competencies. *Indian Journal of*

Pharmaceutical Education an Research (IJPER). 56(1):41–51.
Doi: 10.5530/ijper.56.1s.39

Situmorang, M., Sinaga, M., Purba, J., Daulay, SI, Simorangkir, M., Sitorus, M., & Sudrajat, A. (2018). Implementation of Innovative Chemistry Learning Materials with Guided Assignments for Increasing Student Competence. *Journal Of Batic Science Education*, 17(4), 535-550.

Doi: <http://dx.doi.org/10.33225/jbse/18.17.535>

Sutiani, A., Situmorang, M., & Silalahi, A. (2021). Implementation of an Inquiry Learning Model with Science Literacy to Improve Student Critical Thinking Skills. *International Journal of Instruction*, 14(2), 117-138. <https://doi.org/10.29333/iji.2021.1428a>

Susanti, W., Saleh, L.F., Nurhabibah., Gultom, A.G., Saloom, G., Ndrong, T.A., Sukwika, T., Nurllely, L., Suroyo, R., Mulya, R., & Lisnasari, S.F., (2020). *Pemikir Kritis Dan Kreatif*. CV.Media Sains Indonesia.

Sudarmo, U. (2019). *Kimia Untuk SMA/MA Kelas XII Kurikulum 2013: Kelompok Peminatan dan Ilmu Alam*. Jakarta : Erlangga

Wicaksono, D., & Iswan, I. (2019). Upaya Meningkatkan Hasil Belajar Peserta Didik Melalui Penerapan Model Pembelajaran Berbasis Masalah Di Kelas IB Sekolah Dasar Muhammadiyah 12 Pamulang, Banten. *Holistika Jurnal Ilmiah PGSD*. 3(2): 111-126

Yilmaz, A. (2021). The Effect of Technology Integration in Education on Prospective Teachers' Critical and Creative Thinking, Multidimensional 21st Century Skills and Academic Achievements. *Participatory Educational Research (PER)*. 8(2). 163-199. Doi: <http://dx.doi.org/10.17275/per.21.35.8.2>