

DAFTAR PUSTAKA

- Ad'hiya, E., & Laksono, E. W. (2018). Students' analytical thinking skills and chemical literacy concerning chemical equilibrium. 080005. <https://doi.org/10.1063/1.5062824>
- Affandy, H., Aminah, N. S., & Supriyanto, A. (2019). The correlation of character education with critical thinking skills as an important attribute to success in the 21st century. *Journal of Physics: Conference Series*, 1153, 012132. <https://doi.org/10.1088/1742-6596/1153/1/012132>
- Agustina, R., Rahma, S., Arni, A., Chrismania Sandria, A., & Sukemi, S. (2022). Karakteristik trayek pH indikator alami dan aplikasinya pada titrasi asam dan basa. *Bivalen: Chemical Studies Journal*, 5 (2), 51–56.
- Anderson, L., Krathwohl, D., Airasian, P., Cruikshank, K., Mayer, R., Pintrich, P., Raths, J., & Wittrock, M. (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. Longman.
- Arsanti, M., Zulaeha, I., & Subiyantoro, S. (2021). Tuntutan Kompetensi 4C Abad 21 dalam Pendidikan di Perguruan Tinggi untuk Menghadapi Era Society 5.0. *Prosiding Seminar Nasional Kimia Pascasarjana Universitas Negeri Semarang*. <http://pps.unnes.ac.id/prodi/prosiding-pascasarjana-unnes/>
- Ary, D, Jacobs, L. C., & Sorensen, C. (2010). *Introduction to Research in Education*. Wadsworth.
- Bathgate, M., Crowell, A., Schunn, C., Cannady, M., & Dorph, R. (2015). The Learning Benefits of Being Willing and Able to Engage in Scientific Argumentation. *International Journal of Science Education*, 37(10), 1590–1612. <https://doi.org/10.1080/09500693.2015.1045958>
- Cavagnetto, A. R. (2010). *Argument to Foster Scientific Literacy: A Review of Argument Interventions in K–12 Science Contexts*.

- Review of Educational Research, 80(3), 336–371.
<https://doi.org/10.3102/0034654310376953>
- Chen, Y. C., Benus, M. J., & Hernandez, J. (2019). Managing uncertainty in scientific argumentation. April, 1235–1276.
<https://doi.org/10.1002/sce.21527>
- Cigdemoglu, C., Arslan, H. O., & Cam, A. (2017). Argumentation to foster pre-service science teachers' knowledge, competency, and attitude on the domains of chemical literacy of acids and bases. *Chemistry Education Research and Practice*, 18(2), 288–303. <https://doi.org/10.1039/C6RP00167J>
- Delfina, R., setiawati, F., Marneli, D., & Irhash Putra, A. (2022). Relationship Between Scientific Argumentation Skills And Students' Scientific Literacy Skills. *Jurnal Pendidikan Biologi Universitas Negeri Medan*, 11, 52–58.
- Djaen, N., Rahayu, S., Yahmin, Y., & Muntholib, M. (2021). Chemical Literacy of First Year Students on Carbon Chemistry. *J-PEK (Jurnal Pembelajaran Kimia)*, 6(1), 41–62.
<https://doi.org/10.17977/um026v6i12021p041>
- Duschl, R. (2008). Science Education in Three-Part Harmony: Balancing Conceptual, Epistemic, and Social Learning Goals. *Review of Research in Education*, 32(1), 268–291.
<https://doi.org/10.3102/0091732X07309371>
- Erduran, S., & Jiménez-Aleixandre, M. P. (2008). Argumentation in science education: Perspectives from classroom-based research. Springer.
- Erduran, S., Simon, S., & Osborne, J. (2004). TAPping into argumentation: Developments in the application of Toulmin's Argument Pattern for studying science discourse. *Science Education*, 88(6), 915–933. <https://doi.org/10.1002/sce.20012>
- Evagorou, M., & Osborne, J. (2013). Exploring young students' collaborative argumentation within a socioscientific issue.

- Journal of Research in Science Teaching, 50(2), 209–237.
<https://doi.org/10.1002/tea.21076>
- Facione, P. A. (2015). *Critical Thinking: What It Is and Why It Counts* (7 ed.). Measured Reasons LLC.
- Fadlika, R., Hernawati, D., & Meylani, V. (2022). Kemampuan Argumentasi Dan Kemampuan Literasi Sains Peserta Didik Kelas XI MIPA Pada Materi Sel. *LENZA (Lentera Sains): Jurnal Pendidikan IPA*, 12(1), 9–18.
<https://doi.org/10.24929/lensa.v12i1.156>
- Fakhriyah, F., & Masfuah, S. (2021). The analysis of scientific argumentation skill and computational thinking skill of the primary educational teacher department students. 030005.
<https://doi.org/10.1063/5.0041655>
- Ferretti, R. P., & Graham, S. (2019). Argumentative writing: Theory, assessment, and instruction. *Reading and Writing*, 32(6), 1345–1357. <https://doi.org/10.1007/s11145-019-09950-x>
- Firdausiyah, G. (2023). Analisis Hubungan Kemampuan Literasi Kimia dengan Keterampilan Argumentasi Ilmiah Siswa SMA di Kota dan Kabupaten Malang Pada Materi Termokimia. Universitas Negeri Malang.
- Hasani, A. (2016). Enhancing argumentative writing skill through contextual teaching and learning. *Educational Research and Reviews*.
- Iordanou, K., & Constantinou, C. P. (2015). Supporting Use of Evidence in Argumentation Through Practice in Argumentation and Reflection in the Context of SOCRATES Learning Environment. *Science Education*, 99(2), 282–311.
<https://doi.org/10.1002/sce.21152>
- Jiménez-Aleixandre, M. P., & Erduran, S. (2007). Argumentation in Science Education: An Overview. Dalam S. Erduran & M. P. Jiménez-Aleixandre (Ed.), *Argumentation in Science*

- Education (Vol. 35, hlm. 3–27). Springer Netherlands. https://doi.org/10.1007/978-1-4020-6670-2_1
- Kimberlin, C. L., & Winterstein, A. G. (2008). Validity and reliability of measurement instruments used in research. *American Journal of Health-System Pharmacy*, 65(23), 2276–2284. <https://doi.org/10.2146/ajhp070364>
- Larrain, A., Singer, V., Strasser, K., Howe, C., López, P., Pinochet, J., Moran, C., Sánchez, Á., Silva, M., & Villavicencio, C. (2021). Argumentation skills mediate the effect of peer argumentation on content knowledge in middle-school students. *Journal of Educational Psychology*, 113(4), 736–753. <https://doi.org/10.1037/edu0000619>
- Maknun, D. (2014). Penerapan Pembelajaran Kontekstual Untuk Meningkatkan Literasi Sains Dan Kualitas Argumentasi Siswa Pondok Pesantren Daarul Uluum Pui Majalengka Pada Diskusi Sosiosaintifik Ipa. 21(1), 119–148.
- McNeill, K., Krajcik, J., & Hershberger. (2011). Supporting Grade 5–8 Students in Constructing Explanations in Science: The Claim, Evidence, and Reasoning Framework for Talk and Writing (1 st). Pearson Education Inc.
- McNeill, K. L. (2011). Elementary students’ views of explanation, argumentation, and evidence, and their abilities to construct arguments over the school year. *Journal of Research in Science Teaching*, 48(7), 793–823. <https://doi.org/10.1002/tea.20430>
- OECD. (2023a). PISA 2022 Assessment and Analytical Framework. OECD. <https://doi.org/10.1787/dfc0bf9c-en>
- OECD. (2023b). PISA 2022 Assessment and Analytical Framework. OECD. <https://doi.org/10.1787/dfc0bf9c-en>
- OECD. (2023c). PISA 2022 Results (Volume I): The State of Learning and Equity in Education. OECD. <https://doi.org/10.1787/53f23881-en>

- Pallant, A., & Lee, H.-S. (2015). Constructing Scientific Arguments Using Evidence from Dynamic Computational Climate Models. *Journal of Science Education and Technology*, 24(2–3), 378–395. <https://doi.org/10.1007/s10956-014-9499-3>
- Parlan, P., Latifah, U., & Muntholib, M. (2020). Development and Implementation of Students' Scientific Argumentation Skills Test in Acid-Base Chemistry. *Tadris: Jurnal Keguruan dan Ilmu Tarbiyah*, 5(2), 179–190. <https://doi.org/10.24042/tadris.v5i2.6388>
- Perkasa, M., & Aznam, N. (2016). Pengembangan SSP kimia berbasis pendidikan berkelanjutan untuk meningkatkan literasi kimia dan kesadaran terhadap lingkungan. *Jurnal Inovasi Pendidikan IPA*, 2(1), 46. <https://doi.org/10.21831/jipi.v2i1.10269>
- Priliyanti, A., Muderawan, I. W., & Maryam, S. (2021). Analisis Kesulitan Belajar Siswa dalam Mempelajari Kimia Kelas Xi. *Jurnal Pendidikan Kimia Undiksha*, 5(1), 11. <https://doi.org/10.23887/jjpk.v5i1.32402>
- Priyono. (2016). *Metode Penelitian Kuantitatif*. Zifatama.
- Putriana. (2021). Hubungan antara kemampuan literasi sains dengan keterampilan argumentasi peserta didik SMA pada materi virus. Universitas Islam Negeri Syarif Hidayatullah Tulungagung.
- R, C., & KA, G. (2016). *Chemistry 12th edition*. Mc Graw- Hill Education.
- Rahayu, S. (2017). *Mengoptimalkan Aspek Literasi Sains dalam Pembelajaran Kimia Abad 21*.
- Rudolph, J., & Horibe, S. (2016). What do we mean by science education for civic engagement. *Journal of Research in Science Teaching*, 2, 205–2020.
- Sengul, K. A. (2019). *Critical Discourse Analysis in Political Communication Research: A Case Study of Right-Wing*

- Populist Discourse in Australia Critical discourse analysis in political communication research: A case study of right-wing populist discourse in Australia. *Communication Research and Practice*, 00(00), 1–17. <https://doi.org/10.1080/22041451.2019.1695082>
- Shwartz, Y., Ben-Zvi, R., & Hofstein, A. (2006a). The use of scientific literacy taxonomy for assessing the development of chemical literacy among high-school students. *Chem. Educ. Res. Pract.*, 7(4), 203–225. <https://doi.org/10.1039/B6RP90011A>
- Shwartz, Y., Ben-Zvi, R., & Hofstein, A. (2006b). The use of scientific literacy taxonomy for assessing the development of chemical literacy among high-school students. *Chem. Educ. Res. Pract.*, 7(4), 203–225. <https://doi.org/10.1039/B6RP90011A>
- Sigler, E. A., & Julie, S. (2007). Constructivist or expository instructional approaches: Does instruction have an effect on the accuracy of Judgment of Learning (JOL)? *Journal of the Scholarship of Teaching and Learning*, Vol. 7, No. 2, 22–31.
- Simon, S., Erduran, S., & Osborne, J. (2006). Learning to Teach Argumentation: Research and development in the science classroom. *International Journal of Science Education*, 28(2–3), 235–260. <https://doi.org/10.1080/09500690500336957>
- Siswanto, S. (2014). Penggunaan Tes Essay Dalam Evaluasi Pembelajaran. *Jurnal Pendidikan Akuntansi Indonesia*, 5(1). <https://doi.org/10.21831/jpai.v5i1.864>
- Sugiono. (2007). *Statistika untuk Pendidikan*. Alfabeta.
- Sugiono. (2014). *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, kualitatif, dan R&D.*, Alfabeta.
- Sugiono. (2019). *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif dan R&D (Revisi 2019)*. Alfabeta.
- Taber, K. S. (2013). Revisiting the chemistry triplet: Drawing upon the nature of chemical knowledge and the psychology of

- learning to inform chemistry education. *Chem. Educ. Res. Pract.*, 14(2), 156–168. <https://doi.org/10.1039/C3RP00012E>
- Taber, K. S. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, 48(6), 1273–1296. <https://doi.org/10.1007/s11165-016-9602-2>
- Thummathong, R., & Thathong, K. (2018). Chemical literacy levels of engineering students in Northeastern Thailand. *Kasetsart Journal of Social Sciences*, 39(3), 478–487. <https://doi.org/10.1016/j.kjss.2018.06.009>
- Viyanti, V., Cari, C., Sunarno, W., & Kun Prasetyo, Z. (2016). Pemberdayaan Keterampilan Argumentasi Mendorong Pemahaman Konsep Siswa. *Jurnal Penelitian Pembelajaran Fisika*, 7(1). <https://doi.org/10.26877/jp2f.v7i1.1152>
- Wahdan Wilsa, Asrizal, Sri Mulyani Endang Susilowati, & Enni Suwarsi Rahayu. (2017). Problem Based Learning Berbasis Socio-Scientific Issue untuk Mengembangkan Kemampuan Berpikir Kritis dan Komunikasi Siswa. *Journal of Innovative Science Education*, 6(1).
- Walker, J. P., & Sampson, V. (2013). Learning to Argue and Arguing to Learn: Argument-Driven Inquiry as a Way to Help Undergraduate Chemistry Students Learn How to Construct Arguments and Engage in Argumentation During a Laboratory Course. *Journal of Research in Science Teaching*, 50(5), 561–596. <https://doi.org/10.1002/tea.21082>
- Washburn, E., & Cavagnetto, A. (2013). Using Argument As a Tool For Integrating Science And Literacy. 67(2), 127–136. <https://doi.org/10.1002/TRTR.1181>
- Wattanawasiwich, P., Preeda, T., Manjula, D. S., & D Johnston, L. (2013). Development and Implementation of a Conceptual Survey in Thermodynamics. *International Journal of*

Innovation in Science and Mathematics Education, 21(1), 29–53.

Zulaiha, F., & Kusuma, D. (2021). Analisis Kemampuan Literasi Sains Peserta didik SMP di Kota Cirebon. *Jurnal Pendidikan Fisika dan Teknologi*, 7(2), 190–201. <https://doi.org/10.29303/jpft.v7i2.3049>