

**DAFTAR PUSTAKA**

- Abanikannda, M. O. (2016). Influence Of Problem - Based Learning In Chemistry On Academic Achievement OF HIGH School Students In Osun State,Nigeria. *International Journal Of Education Learning and Development*, 4(3), 55–63.
- Aidoo Benjamin., Kwadwo. S.B., Philip.,S.K. (2016). Effect of Problem-Based Learning on Students' Achievement in Chemistry. *Journal of Education and Practice*, 7(33), 103–108.
- Aryanti, R. (2020). Development of Interactive Multimedia Using Powerpoint Applications Combined With Ispring Suite Application. *Proceedings of the Sixth Padang International Conference On Economics Education, Economics Business and Management, Accounting and Entrepreneurship (PICEEBA 2020)*, 179(Piceeba 2020), 325–330.
- Awalin, N. A., & Ismono, I. (2021). The Implementation of Problem Based Learning Model With Stem (Science, Technology, Engineering, Mathematics) Approach To Train Students' Science Process Skills of Xi Graders on Chemical Equilibrium Topic. *INSECTA: Integrative Science Education and Teaching Activity Journal*, 2(1), 1–14.
- Ayu Inggrias., Purba. J. (2021). Pengembangan Bahan Ajar Berbasis Problem Based Learning(PBL) Pada Materi Ikatan Ion dan kovalen Untuk Kelas X. *Prosiding Seminar Nasional Kimia & Pendidikan Kimia#2*. Medan : Universitas Negeri Medan.
- Bashooir, K., & Supahar. (2016). Analisis Aspek Kinerja Literasi Sains Pada Materi Kalor Fisika. *Unnes Physics Education Journal*, 5(1), 89–95.
- Fajri, L., Martini, K. S., Nugroho, A., & Saputro, C. (2012). Upaya Peningkatan Proses dan Hasil Belajar Kimia Materi Koloid Melalui Pembelajaran Kooperatif Tipe TGT (Teams Games Tournament) Dilengkapi dengan Teka-Teki Silang Bagi Siswa Kelas XI IPA 4 SMA Negeri 2 *Jurnal Pendidikan Kimia (JPK)*, 1(1), 89–96.
- Gowrishankar Potturi, Singhchaudary Ranjeet, Agarwal Anjali, R. N. (2016). A

- Comparitive Study on the Efficacy of Pbl (Problem Based Learning) and Abl (Activity Based Learning) in Perceiving Anatomy Among Physiotherapy Students. *International Journal of Physiotherapy and Research*, 4(3), 1479–1483.
- Haerullah Ade, (2017). *Model & Pendekatan Pembelajaran Inovatif (Teori dan Aplikasi)*. Jakarta : Gresindo
- Helmiati. (2012). Model Pembelajaran. Surabaya: Aswaja Pressindo.
- Kristanto, A. (2016). *Media pembelajaran Video* . Jawa Timur : Ikapi
- Nurdyansyah, & Fariyatul, E. (2016). Inovasi Model Pembelajaran. Sidoarjo : *Nizmania Learning Center*.
- Panggabean, F. T. M., & Harahap, M. F. (2020). Analisis Problem Based Learning dan Discovery Learning menggunakan Macromedia Flash pada materi Termokimia. *Jurnal Inovasi Pembelajaran Kimia*, 2(2), 58.
- Rahmadani. (2019). Lantanida Journal, *Lantanida Journal*, 7(1), 75–86.
- Salfina, S., Nurmaliah, C., Pada, A. U. T., Hasanuddin, H., & Abdullah, A. (2021). Application Of Problem Based Learning Model In Integrates Media Animation to Improve Students Scince Process Skills. *Jurnal Penelitian Pendidikan IPA*, 7, 266–271.
- Sastrakusumah, E. N. (2018). *Pengaruh Media Pembelajaran Interaktif Berbantuan Aplikasi Ispring Presenter Terhadap Kemampuan*. Jurnal teknologi Pendidikan dan Pengajaran, 3, 462-485
- Setiawan, A., Zuhri, M., & Zhang, Y. (2022). Learning Management System Using Scorm and iSpring Free on Physics Learning. *Journal of Science Education and Practice*, 6(2), 95–106.
- Silaban, R., Panggabean, F. T., Hutapea, F. M., Hutahaean, E., & Alexander, I. J. (2020). Implementasi Problem Based-Learning (Pbl) Dan Pendekatan Ilmiah Menggunakan Media Kartu Untuk Meningkatkan Hasil Belajar Peserta Didik Tentang Mengajar Ikatan Kimia. *Jurnal Ilmu Pendidikan Indonesia*, 8(2), 69–76.
- Silaban, R., Panggabean, F. T., M., Hutahaean, E., Hutapea, F. M., Alexander, I. J., Worksheet, S., Outcomes, L., Skills, C. T., & Rate, R. (2021). *Efektivitas*

*Model Problem Based Learning bermediakan Lembar Kerja Peserta Didik terhadap Hasil Belajar Kimia dan Kemampuan Berpikir Kritis Peserta Didik SMA.* 9(1), 18–26.

Sri, Rejeki, Hartati, S. P.(2020). Penerapan Model Pembelajaran Problem Based Learning Untuk Meningkatkan Hasil Belajar Siswa Materi Pokokikatan Kimia Di Smkn 2 Batangtoru. *Jurnal Physedu Pendidikan Fisika IPTS*, 2(1), 129–135.

Sugiarto, B. (2004). *Ikatan Kimia*. Surabaya : Kemendikbud.

Silitonga, P (2014). *Statistik teori dan Aplikasi Dalam Penelitian*. Medan : Universitas Negeri Medan

Suswati, U. (2021). Penerapan Problem Based Learning (Pbl) Meningkatkan Hasil Belajar Kimia. *Jurnal Inovasi Keguruan Dan Ilmu Pendidikan*, 1(3), 127–136.

Syamsidah, S., & Hamidah, H. (2018). *Buku Model Problem Based Learning*. Yogyakarta : Deepublish.

Syaribuddin, Khaldun, I., & Musri. (2016). Penerapan Model Pembelajaran Problem Based Learning (PBL) dengan Media Audio Visual pada Materi Ikatan Kimia Terhadap Penguasaan Konsep dan Berpikir Kritis Peserta Didik SMA Negeri 1 Panga. *Jurnal Pendidikan Sains Indonesia*, 4(2), 96–105.

Wirda, Y. (2020). *Faktor-Faktor Determinan Hasil Belajar Siswa*. Jakarta : Erlangga.