

DAFTAR PUSTAKA

- Azer, S. A., Hasanato, R., Al-Nassar, S., Somily, A., dan AlSaad, M.,M.,(2013), *Introducing integrated laboratory classes in a PBL curriculum: impact on student's learning and satisfaction*. BMC Medical Education.; 13: 71-83.
- Arikunto, S., (2009), *Prosedur Penelitian Satuan Pendekatan Praktik (Edisi Revisi II)*, PT. Rineka Cipta, Jakarta
- Anderson, et al., (2001), *A Taxonomy for Learning, Teaching and Assesing: A Revision of Blooms Taxonomy of Educational Obejectives*. (Eds) Abridged Edition. New York: Longman
- Allinger, N.L., M.P., Cava, D.C., De Jough, C.R., Johnson, N.A., Lebel and C.L., Steven, (1976), *Organic Chemistry*, second edition, Worth Publishers Inc, New York.
- Bas Gokhan, (2011), *Investigating the effects of project-based learning on students' academic achievement and attitudes towards english lesson*, The Online Journal of New Horizon in Education, Vol 1, No 4, Hal: 1-15.
- Bas Gokhan, Omer Beyhan, (2012), *Effects Of Multiple Intelligences Supported Project- Based Learning On Student's Achievement Levels And Attitudes*

Towards English Lesson, International Electronic Journal of Elementary Education, Volume 2 issue 3, Diperoleh 25 November, 2013, <http://www.iejee.com>.

Baran, M., & Maskan, A., (2010). The Effect of Project-Based Learning On Pre-Service Physics Teachers' Electrostatic Achievements. *Cypriot Journal of Educational Sciences* vol 5 : 243-257

Bagheri, M., Ali., W. Z. W., Abdullah, M. C. B., & Daud, S. M., (2013). *Contemporary Educational Technology*, 4 (1), 15-29

Becker, K., & Park, K., (2011), Effects of integrative approaches among science, technology, engineering, and mathematics (STEM) subjects on students' learning: A preliminary meta-analysis. *Journal of STEM Education*, 12 (5 & 6), hlm. 23-37.

Bell, S., (2010), *Project Based Learning for the 21th Century: Skills for the Future*. *The Clearing House*, 83: 39-43

Brill, G., dan Yarden, A., (2003), *Learning Biology through Research Papers: A Stimulus for Question-Asking by High-School Students*. *Cell Biology Education*, 2: 266-274.

Borg & Gall. 1983. *Educational Research: An Introduction*. London: Longman, Inc.

Buck Institute for Education, (2012), *Project based learning*. <http://www.bie.org>.

Accessed Augst. 2012

Burden, P. R., & Byrd, D. M., (1999), *Method for effective teaching*, second edition. Boston: Allyn and Bacon.

Brotosiswoyo, B.S., (2001). *Hakikat Pembelajaran MIPA di Perguruan Tinggi*. Jakarta: Pusat Antar Universitas Untuk Peningkatan dan Pengembangan Aktivitas Instruksional Universitas Terbuka.

Badan Standar Nasional Pendidikan BSNP, (2006), *Panduan Penyusunan Kurikulum Tingkat Satuan Pendidikan Jenjang Pendidikan Dasar dan Menengah, Jakarta*

Chua, K.,J., Yang, W. M., Leo, H. L., (2013), *Enhanced and conventional project-based learning in an engineering design module*, Int J Technol Des Educ, 24:437–458, DOI 10.1007/s10798-013-9255-7, 19 December 2013,

Cynthia S., Johnson, Shannon Delawsky, (2012), *Project-Based Learning And Student Engagement*,Gonzaga University, USA, Dawson Creek Secondary School, British Columbia, CANADA, ISSN-L: 2223-9553, ISSN: 2223-9944, Vol. 4 No. 4 Juli 2013

Carlos Vega & Camilo Jiménez & Jorge Villalobos, (2012), *A scalable and incremental project-based learning approach for CSI/CS2 courses*, Educ Inf Technol (2013) 18:309–329, DOI 10.1007/s10639-012-9242-8, Springer Science+Business Media New York 2012.

Chu, S. K., Chow, K., & Tse S., (2011), *Developing Hong Kong primary school students information literacy and IT skills through collaborative teaching and inquiry Project Based Learning. Library & Information Science Research*. Hongkong: University of Hongkong press.

Cakici, Yilmaz, Türkmen, Nihal, (2013), *An Investigation of The Effect of Project Based Learning Approach on Children's Achievement and Attitude in Science. The Online Journal of Science and Technology*, 3(2).

Capraro, et al., (2013), *STEM Project-Based Learning : An Integrated Science, Technology, Engineering, and Mathematics (STEM) Approach* (second ed). Rotterdam : Sense Publishers

Doğan, Yunus, Batdi, Veli, & Yildirim, Bilal, (2013), *Teachers' Views on the Practice of Project – Based Learning Approach in Primary School Science Education*, International Online Journal of Educational Sciences. 2013. 13

Dick, W., Carey, L., & Carey, J. O. (2009). *The Systematic Design of Instruction*. New Jersey: Pearson Educational .

Evertson, C. M., Weinstein, C., S., (2011), *Classroom Management as a Field Inquiry*.

Fitriani, H., Situmorang, M., dan Darmana, A., (2017), *Pengembangan Bahan Ajar Inovatif Dan Interaktif Melalui Pendekatan Sainstifik Pada Pengajaran Larutan Dan Koloid, Jurnal Edukasi Kimia, 2(1):48-53.*

Fitri, R. (2017). Perangkat Pembelajaran Berbasis Pendekatan Konstruktivisme Untuk Meningkatkan Kemampuan Pemahaman Konsep Pada Materi Persamaan Lingkaran. *Jurnal JNPM (Jurnal Nasional Pendidikan Matematika. Vol 1. No 2, 241-257.*

Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational research: an introduction (7 ed.)*. New York: Pearson Education Inc.

George Lucas Educational Foundation, (2005), *Instructional module project based learning. [Online]*. Diakses dari <http://www.edutopia.org/modules/pbl/project-based-learning>

George Lucas Educational Foundation., (2014), *Project Based Learning vs. Problem-Based Learning vs. X-BL [Online]*. Diakses dari [http://www.edutopia.org/Project-Based Learning vs. Problem-Based Learning vs. X-BL_edutopia.html](http://www.edutopia.org/Project-Based-Learning-vs.-Problem-Based-Learning-vs.-X-BL_edutopia.html)

Gunter, M. A., Estes, T. H., & Schwab, J. H., (1990), *Instruction: A models approach*, sBoston: Allyn and Bacon

Hadyana, A.P., (1995) , *Kimia Organik Jilid II*, edisi ketiga, diterjemahkan dari Organic Chemistry, third edition by Fessenden and Fessenden, Erlangga, Jakarta.

Hung, D.W., & Chen, D.T., (2000). "*Appropriating and Negotiating Knowledge*", *Educational Technology*, 40(3), 29—32.

Hung, D.W., & Wong, A.F.L., (2000), "Activity Theory as a Framework for Project Work in Learning Environments". *Educational Technology*, 40 (2), 33—37.

Irwan, *Inovasi Pendidikan.*, [http://www.scribd.com/doc/46943395/Inovasi-Kurikulum Full, Diakses](http://www.scribd.com/doc/46943395/Inovasi-Kurikulum-Full-Diakses) tanggal 16 oktober 2015

Imam Gozali, (2011), *Aplikasi Analisis Multivariate dengan Program IMB SPSS 19*, Semarang, Badan Penerbit UNDIP.

Jack, G. U., (2013), *The Influence of Identified Student and School Variabels on Student Science Process Skill Acquisition. Journal of Education and Practice*. 4(5): 16-22.

Jippes, E., van Engelen, J. M. L., Brand, P. L. P., dan Oudkerk, M., (2010), *Competency-based (CanMEDS) residency training programme in radiology:*

systematic design procedure, curriculum and success factors, Eur Radiol.

20(4): 967-977.

Joyce, B., & Weil, M., (1980), *Model of teaching*. New Jersey: Prentice-Hall, Inc.

Khamdi, W. 2007. *Pembelajaran Berbasis Proyek* (online).

<http://www.lubisgrafura.com>.

Keleş, Özgül, (2013), *Mind Maps and Scoring Scale for Environmental Gains in Science Education*, *International Online Journal of Educational Sciences*, 2013.

Kemendikbud, (2013), *Pendekatan Scientific (Ilmiah) dalam Pembelajaran*, Pusbangprodik : Jakarta

Kemendikbud, (2013), *Lampiran IV Pedoman Umum Pembelajaran*, Peraturan

Menteri Pendidikan Dan Kebudayaan Republik Indonesia Nomor 81A

Tahun 2013 Tentang Implementasi Kurikulum, Jakarta

Kemeristekdikti, (2015), *Kerangka Kualifikasi Nasional Indonesia (KKNI)*,

Dirjendikti : Jakarta.

Kemdikbud, (2014), *Materi pelatihan guru implementasi kurikulum 2013 tahun ajaran 2014/2015: Mata pelajaran IPA SMP/MTs*. Jakarta: Kementerian Pendidikan dan Kebudayaan.

Kemeristekdikti, (2016), *Buku Panduan Penyusunan Kurikulum Pendidikan Tinggi*, Edisi Kedua, Dirjendikti : Jakarta

Kopertis, (2013), *Alternatif-Penyusunan-Kurikulum-Merujuk KJNI*.
www.kopertis12.or.id/.../Alternatif-Penyusunan-Kurikulum-Merujuk-KJNI-LS-2013(diakses tgl 8 November 2016).

Karimi, R., (2011), Interface between problem-based learning and a learner-centered paradigm, *Advances in Medical Education and Practice*. 2011;2: 117-125.

Kurikulum Tingkat Satuan Pendidikan, (2010)), Jakarta : Kencana, , hal. 317-318

Laboy-Rush, D., (2010), *Integrated STEM education through project-based learning*. www.learning.com/stem/whitepaper/integrated-STEM-through-Project-based-Learning.

Lynch, P. P., dan Waters, M., (1980), Expectation of New Chemistry Students Concerning Chemistry Courses, *Chemistry in Australia* 47: 238-242.

- Lestari, E. S., (2017), *Penggunaan Media Laboratorium Virtual Untuk Meningkatkan Pengetahuan Prosedural Mahasiswa Pada Pokok Bahasan Sistem Ekskresi*, Biologi, FKIP, UNPAS.
- Merrill, (1983), *Component Display Theory*, Dalam Reigeluth, C.,M., (Ed), *Insructional-Desigen Theories and Models: An Overreview of their Current Status*. New Jersey: Lawrence Erlbaum Associates Publisher.
- Montelongo, J. A., dan Herter, R. J., (2010), *Using Technology to Support Expository Reading and Writing in Science Classes*, *Science Activities*, **47**: 89–102.
- Mc.Murry,J., 1992, *Organic Chemistry*, thierd edition, Brooks/Cole Publishing Company, California.
- Marchlewicz, S. C., & Wink, D. J., (2011), *Using the activity model of inquiry to enhance general chemistry students' understanding of nature of science*, *Journal of Chemical Education*, 88(8), 1041-1047.
- Mustafa, dan Murset, (2013), *International Journal New Trends in Education and Their Implication*, 4 (4), 152-165
- Moerwani, P. C., Radiman,S., Akhmad,E., Ratnaningsih, (2001), *Hakikat Pembelajaran MIPA di Perguruan Tinggi*, Jakarta: Pusat Antar Universitas

Untuk Peningkatan dan Pengembangan aktivitas Instruksional Universitas
Terbuka

NYC Departement of Education, (2009), *Project Based Learning:
Inspiring Middle School Student to Engage in Deep and Active Learning.*

New York : Division of Teaching and Learning Office

Omar, Romarzila, Puteh, Sharifah Nor, Ikhsan, Zanaton, (2014), *Implementation
of Science Skills Process in Project Based Learning Through
Collaborative Action Research.* ICER 2014.

Ofstad, W., dan Brunner, L. J., (2013), *Team-Based Learning in Pharmacy
Education American, Journal of Pharmaceutical Education*, 2013;77(4):1-11
(Article 70).

OECD, (2005), *PISA (2003), Technical Report, OECD Publishing, PISA*

_____, (2009), *PISA (2006), Science Competenciies for Tomorrow 's World,
OECD Publishing, PISA*

_____, (2010), *PISA (2009) Results : Executive Summary, OECD Publishing,
PISA*

_____, (2014), *PISA (2012) Results in Focus : What 15-year-olds know and what
they can do with wath they know, OECD Publishing, PISA*

_____. (2016), *Programme for International Student Assessment (PISA) Result from PISA (2015)*, OECD Publishing, PISA

_____. (2019), *Programme for International Student Assessment (PISA) Result from PISA (2018)*, OECD Publishing, PISA

Purba, J., dan Situmorang, M., (2015), *Inovasi Pembelajaran Berbasis Proyek Untuk Meningkatkan Kompetensi Mahasiswa Pada Pengajaran Gugus Fungsi*, Prosiding SEMIRATA Tahun 2015 di Pontianak

Parulian, Hendra Gunawan; dan Situmorang, M., (2013), *Inovasi Pembelajaran Di Dalam Buku Ajar Kimia SMA Untuk Meningkatkan Hasil Belajar Mahasiswa*, Jurnal Penelitian Bidang Pendidikan **19(2)**: 67.

Purnawan, Y. 2007. *Pengenalan PBL (Pembelajaran Berbasis Proyek)* (online). <http://www.purnawan.com>.

Ravitz, J., (2010), *Beyond changing culture in small high schools: Reform models and changing instruction with project-based learning*. Peabody Journal of Education, **85(3)**, 290-312.
doi:10.1080/0161956X.2010.491432

Retha Aliefyan Rose, Agung Tri Prasetya, (2014), *Keefektifan Strategi Project Based Learning Berbantuan Modul Pada Hasil Belajar Kimia Mahasiswa*, Jurnal Inovasi Pendidikan Kimia, Vol 8, No. 2, 2014, hlm 1360-1369,

- Robinson, J. K., (2013), *Project-based learning: improving student engagement and performance in the laboratory*, Anal Bioanal Chem. 2013;405: 7–13.
- Roehyati,J., Susanti W.P., (1988), *Kimia Organik*, edisi keempat, diterjemahkan dari *Organic Chemistry*, fourth edition by S.H., Pine, J.B., Hendrickson, D.j.Cram, G. S., Hammond, ITB, Bandung
- Regie Stites, (2009), *Evaluation of Project Based Learning*, Mathematic and Science Academy, illnois.
- Santoso, M., (2013), *Kerangka Kualifikasi Nasional Indonesia*, <http://www.kopertis12.or.id/wp-content/uploads/2013/08/KKNI-nakertrans-31-Juli-2013.pdf> (diakses 20 Desember 2016).
- See, Y. G., & Rashid, A. M., (2015), *The Effect of Project Based Learning on Level of Content Knowledge of Pre-Vocational Subject*. Mediterranean Journal of Social Sciences, 6(6 S4), 369
- Situmorang, M., (2013), *Pengembangan Buku Ajar Kimia SMA Melalui Inovasi Pembelajaran Dan Integrasi Pendidikan Karakter Untuk Meningkatkan Hasil Belajar Mahasiswa*, Prosiding Seminar dan Rapat Tahunan BKS PTN-B Bidang MIPA di Bandar Lampung, Tgl 10-12 Mei 2013, p. 237-246.

- Situmorang, M., Sinaga, M., Tobing, A.M.L., Sitorus, C.J., and Tarigan, D. A., (2010), *Teaching Innovation in the Laboratory to Increase Student's Achievement in chemistry*, *Jurnal Penelitian Bidang Pendidikan*, 17(1): 7-14
- Silaban, R., Siregar, S., H., Jahro, I., S., & Situmorang, M., 2015, *Pengaruh Model Problem Based Learning Terintegrasi Inkuiri Terbimbing Bermediakan Komputer Terhadap Hasil Belajar Dan Karakter Mahasiswa SMA*, *Jurnal Pendidikan Kimia*, Unimed, 7(2):199-205.
- Situmorang, M., Sinaga, M., Tarigan, D.A., Sitorus, C. J., and Tobing, A.M.L., (2011), *The Affectivity of Innovated Chemistry Learning Methods to Increase Student's Achievement in Teaching of Solubility and Solubility Product*, *Jurnal Penelitian Bidang Pendidikan* 17(1):29-37.
- Sugiyono, (2011), *Metode Penelitian Kualitatif Kuantitatif dan R&D*, Alfabeta : Bandung
- Sujarweni, V. Wiratna., (2014), *Metodologi Penelitian: Lengkap, Praktis, Dan Mudah Difahami*, Yogyakarta ISBN 9789792686234: Pustaka Baru Press, 16.
- Sutirman. (2013). *Media dan Model-Model Pembelajaran Inovatif*, Yogyakarta: Graha Ilmu.

Solomon, T. W. G., Fryhle, C. B., (2011), *Organic chemistry*, 10th ed, John Wiley & Sons, Inc

Situmorang, M., Sitorus, M., Hutabarat, W., dan Situmorang, Z., (2015), *The Development of Innovative Chemistry*. Textbook To Improve Students Achievement Of Bilingual Senior High School Students, International Educational Studies (In Press); 2015

Streidwaser, A., C.H., Heathcock, 1976, *Introduction to Organic Chemistry*, Mc. Millan Publishing Co. Inc, USA

Supranto, J., (2009), *Statistik (Teori dan Aplikasi)*, Penerbit Erlangga, Jakarta.

Todd Pagano, Mark Goik, David C., Templeton, Annemarie D., Ross, Susan B., Smith (2016), *Exploring Nutmeg's Intriguing Place in History Using Narrative and Project-Based Approaches in the Science Laboratory*, *Journal of Laboratory Chemical Education*, 2016, 4(1): 9-18 DOI: 10.5923/j.jlce.2016040

Teresa M., Morales, EunJin Bang, Thomas Andre, (2013), *Understanding the Rich Potential of Project-based Learning in a Virtual Reality Class for High School Students*, DOI.10.1007/s10956-012-9431-07, Published online: 19 December 2012 , Springer Science+Business Media New York 2012

Thompson, K.V., Nelson, K.C., Marbach-Ad, G., Keller, M., dan Fagan, W.,F., (2010), *Online Teaching Modules Enhance Quantitative Proficiency of Introductory Biology Students CBE-Life Sciences Education*, 2010;9,277–283.

Thomas, J., (2000), *A Review of the Research on Project-Based Learning*, The Autodesk Foundation Autodesk Foundation 111 McInnis Parkway San Rafael, California, 94903

Uskoković, V., (2010), *Major Challenges for the Modern Chemistry in Particular and Science in General Found Sci.*2010;15(1): 303–344.

Wardiman Djojonegoro, (1998), *Pengembangan sumberdaya manusia: melalui sekolah menengah kejuruan (smk)*. Jakarta: Sekretariat Negara.

Wena Made, (2011), *Strategi Pembelajaran Inovatif Kontemporer*. Jakarta: PT Bumi Aksara

Wina Sanjaya,(2010), *Kurikulum dan Pembelajaran : Teori dan Praktik Pengembangan*.

Wiratna Sujarweni, (2014), *SPSS untuk Penelitian*, Yogyakarta, Pustaka Baru Press.

Wena,Made.,(2013),*Strategi Pembelajaran Inovatif Kontemporer*.Jakarta: PT Bumi Aksara.

Washburn, N.R.,(2013), *Teaching Technological Innovation and Entrepreneurship in Polymeric Biomaterials*.J Biomed Mater Res A.2011;96(1): 58–65

Yueyu Xu.,dan Wenqi Liu.,(2010), *A project-based learning approach: a case study in China*, Asia Pacific Educ. Rev. (2010) 11:363–370, DOI.10.1007/s1254-010-9093-1

