

Daftar Pustaka

- Anderson, L.W. and Krathwohl, D.R. (2001). *A taxonomy for learning, teaching, and assessing: a revision of Blooms's taxonomy of educational objectives*. New York: Addison Wesley Longman, Inc.
- Angawi, R. F., et al. (2009). “Dehydroconicasterol and Aurantoic Acid, a Chlorinated Polyene Derivative, from the Indonesian Sponge *Theonella swinhonis*”. *Journal of Natural Product*. **72**, (12), 2195-2198.
- Bailey, N. (2005). “The great skills debate: Defining and delivering the skills required for community regeneration in England”. *Planning Practice and Research*. **20**, (3), 341-352.
- Barke, H. D. (2008). “Chemistry misconception-diagnosis, prevention, and cure”. *Paper* Bandung: Second International Seminar on Science Education, IUE.
- Bayrak, B. K., and Bayram, H. (2011). “Effects of Problem-Based Learning in a Web Environment on Conceptual Understanding: The Subject of Acids and Bases”. *International Online Journal of Educational Sciences*. **3**, (3), 831-848.
- Blair, L. M. and Sperry, J. (2013). “Natural Products Containing a Nitrogen–Nitrogen Bond”. *Journal of Natural Product*. **76**, (4), 794–812.
- Bretz, S. L., et al. (2013). “What Faculty Interviews Reveal about Meaningful Learning in the Undergraduate Chemistry Laboratory”. *Journal of Chemical Education*. **90**, (3), 281–288.
- Brotosiswoyo, B.S. (2000). *Kiat Pembelajaran MIPA dan Kiat Pembelajaran Fisika di Perguruan Tinggi*, Jakarta: Departemen Pendidikan Nasional.
- Bruck, L. B. and Towns, M. (2010). “Faculty Perspectives of Undergraduate Chemistry Laboratory: Goals and Obstacles to Success”. *Journal of Chemical Education*. **87**, (12), 1416–1424.
- Cartrette, D. P. and Miller, M. L. (2013). “Purposeful Design of Formal Laboratory Instruction as a Springboard to Research Participation”. *Journal of Chemical Education*. **90**, (2), 171–177.

- Carroll, A. M. *et al.* (2012). "Nature's Chiral Catalyst and Anti-Malarial Agent: Isolation and Structure Elucidation of Cinchonine and Quinine from *Cinchona calisaya*". *Journal of Chemical Education*. **89**, (12), 1578–1581.
- Clemen, J. (1987). *Overcoming Student' Misconception In Physics : The Role Of Enhoring Intuition and Analogical Validity. The Prociding of The Third International on Misconception and Eductional Strategies in Science and Mathematics*. Ithaca, NY: Cornell University.
- Cohen, R. J., Swerdlik, M. E., and Sturman, E. D. (2013). *Psychological Testing and Assessment: An Introduction to Tests and Measurement, 8th edition*. Queensland: Humanities and Social Sciences.
- Costa, A.L. (ed). (1985). *Developing Minds: A Resource Book for Teaching Thinking*. Alexandria: ASCD.
- Cresswell, J. W. and Crack P. V. L. (2007). *Designing and Conducting. Mixed Method Research*. Sage Publication: London and New Delhi.
- Criswell, B. (2012). "Framing Inquiry in High School Chemistry: Helping Students See the Bigger Picture". *Journal of Chemical Education*. **89**, (2), 199–205.
- Dahar, R. W. (2006). *Teori-teori Belajar*. Erlangga: Jakarta.
- Dearing, R. (1997). *The Summary Report of The National Comitte of Inquiry Into Higher Education*. London: HMSO.
- Domin, D. S. (1999). "A review of laboratory instruction styles". *Journal of Chemical Education*. **76**, (4), 543-547.
- Donnell, C. Mc, O'Connor, C. dan Seery, M. K. (2007). "Developing Practical Chemistry Skills by Means of Student-Driven Problem Based Learning Mini-Projects". *Journal of Chemistry Education Research and Practice*. **8**, (2), 130-139.
- Ennis, R. H. (1985). A logical basis for measuring critical thinking skills. *Educational Leadership*, **43**, (1), 44–48.
- Ersam, T. (2004). "Keunggulan Biodiversitas Hutan Tropika Indonesia Dalam Merekayasa Model Molekul Alami". *Makalah*. Seminar Nasional Kimia VI ITS, Surabaya.

- Everest, M. A. and Vargason, J. M. (2013). "How Does Atomic Structure Affect Electron Clouds? A Guided-Inquiry NMR Laboratory for General Chemistry". *Journal of Chemical Education*. **90**, (7), 926–929.
- Facione, P. A. (2013). *Critical Thinking: What It Is and Why It Counts*. Measured Reasons and The California Academic Press, Millbrae, CA
- Flynn, A. B. and Biggs, R. (2012). "The Development and Implementation of a Problem-Based Learning Format in a Fourth-Year Undergraduate Synthetic Organic and Medicinal Chemistry Laboratory Course". *Journal of Chemical Education*. **89**, (1), 52–57.
- Hake, R. (1998). "Interactive-engagement vs traditional methods: a six-thousand-student survey of mechanics test data for introductory physics courses". *American Journal of Physics*. **66** (1), 64-74.
- Hakim, A. (2008). "Kudraflavon C dari kulit batang *Artocarpus scorzehinii* King". Makalah pada Seminar Nasional PMIPA FKIP Universitas Mataram. Mataram.
- _____. (2009). "A Prenylated Flavone from The Heartwood of *Artocarpus Scorzechinii* King (Moraceae)". *Indonesian Journal of Chemistry* **9** (1), 146-150.
- Hakim, A., Liliyasi, and Kadarohman, A. (2012). "Student understanding of Natural Product Concept of Primary and Secondary Metabolites Using CRI Modified". *International Online Journal of Educational Sciences*. **4**, (3), 544-553.
- Hakim, A. dan Jufri, W. (2011). "Aktivitas Antimalaria dan Analisis Metabolit Sekunder Kayu dan Kulit Batang *Artocarpus odoratissimus* Blanco. (Moraceae)". *Jurnal Bahan Alam Indonesia*. **7**, (6), 302-305.
- Hakim, A., et al. (2010). "Antimalarial Activity and Chemical Analysis of A Secondary Metabolite from Heartwood and Root Bark of *Artocarpus camansi* Blanco. (Moraceae)". *Jurnal Ilmu Farmasi Indonesia*. **8**, (2), 135-137.
- Hakim, E. H., et al. 1999, "Artoindonesianins A and B, Two New Prenylated Flavones from the Root of *Artocarpus champeden*". *Journal of Natural Product*. **62**, (4), 613–615.

- Haladyna, T.M. (1997). *Writing Test Item to Evaluate Higher Order Thinking*. Boston: Allyn and Bacon.
- Hammond, C. N., Mohrig, J. R., and Colby, D. A., (2007). “On the Successful Use of Inquiry-Driven Experiments in the Organic Chemistry Laboratory”. *Journal of Chemical Education*. **84**, (6), 992-995.
- Hasan, S., Bagayoko, D., and Kelley E. L. (1999). “Misconceptions and the Certainty of ResponseIndex (CRI)”. *Physics Education*. **34**, (5), 294-296.
- Henderson, D. E. (2010). “A Chemical Instrumentation Game for Teaching Critical Thinking and Information Literacy in Instrumental Analysis Courses”. *Journal of Chemical Education*. **87**, (4), 412–415.
- Herfis. (2009). *Clark L. Hull*. (Online). Tersedia: <http://herfis.blogspot.com>. [16 Agustus 2013].
- Herron, J. D., et al. (1977). Problems Associated With Concept Analysis. *Journal of Science Education*. **61**, (2), 185 – 199.
- Hickman, S. E., et al. (1996). “P2Z Adenosine Triphosphate Receptor Activity in Cultured Human Monocyte Derived Macrophage”. *Blood*. **84**, (8), 2452-2456.
- Hipkins, R. (2006). *The Nature of the Key Competencies*. Wellington: Ó NZCER.
- Jaret, F.M. (1960), Studies in *Artocarpus* and allied genera, IV. A revision of *Artocarpus* subgenus *Pseudojaca*, *Journal of Arnold Arboretum*. **XLI**, (1), 118-124.
- Jayasinghe, U. L. B., et al. (2004). “Geranyl chalcone derivatives with antifungal and radical scavenging properties from the leaves of *Artocarpus nobilis*”. *Phytochemistry*. **65**, (9), 1287–1290.
- _____. (2008). “Four new prenylated flavonoids and xanthones from the root bark of *Artocarpus nobilis*”. *Fitoterapia*. **79**, (3), 37-41.
- Johnson, E. B. (2002). *Contextual Teaching and Learning, What It is and Why It's Here to Stay*. California: Corwin Press Inc.
- José, A. D., Adelantado, V. G., and Reig, F. B. (2009). “Misconceptions and metaconceptions in instrumental analysis”. *Acta Scientiae*. **11**, (1), 73-87.

- Kazembe, T. (2010). "Combining Lectures with Cooperative Learning Strategies to Enhance Learning of Natural Products Chemistry". *Chemistry*. **19**, (2), 1-15.
- Kaplan and Saccuzzo. (2005). *Psychological Testing*. USA: Thomson Wadsworth.
- Khan, M. R., Omoloso, A. D., and Kihara, M. (2003). "Antibacterial activity of *Artocarpus heterophyllus*". *Fitoterapia*. **74**, (5), 501-505.
- Kirchhoff, M. M. (2013). "Review of Green Organic Chemistry in Lecture and Laboratory". *Journal of Chemical Education*. **90**, (6), 683–684.
- Kogut, L.S. (1996). "Critical Thinking in General Chemistry". *Journal of Chemical Education*. **73**, (3), 218-221.
- Kohler, I. (2002). "In Vitro Antiplasmodial Investigation of Medicinal Plants from El Salvador. Z.". *Naturforsch*. **57**, (3). 277-81
- Komatsu, M., et al. (2013). "Engineered *Streptomyces avermitilis* Host for Heterologous Expression of Biosynthetic Gene Cluster for Secondary Metabolites". *ACS Synthetic Biology*. **2** (7), 384–396.
- Kovacs, D.G. (2013). "ConfChem Conference on Educating the Next Generation: Green and Sustainable Chemistry—Teaching Green Chemistry: The Driving Force behind the Numbers!". *Journal of Chemical Education*. **90**, (4), 517–518.
- Kurbanoglu, N. İ., and Akin, A. (2010). "The Relationships between University Students' Chemistry Laboratory Anxiety, Attitudes, and Self-Efficacy Beliefs". *Australian Journal of Teacher Education*. **35**, (8), 48-59.
- Laredo, T. (2013). "Changing the First-Year Chemistry Laboratory Manual To Implement a Problem-Based Approach That Improves Student Engagement". *Journal of Chemical Education*. **90**, (9), 1151–1154.
- Lewis, J. (2003). *The Effectiveness of Mini-Projects as a Preparation for open-ended Investigations*. Kluwer Academic Publishers. London.
- Likhitwitayawuid, K., et al. (2005). "Phenolics with anti-HSV and anti-HIV activities from *Artocarpus gomezianus*, *Mallotus pallidus* and *Triphasia trifolia*". *Pharmaceutical Biology*. **43**, (8), 651-657.

- Liliyasi. (2000). "Pengembangan Keterampilan Berpikir Kritis Untuk Mempersiapkan Guru IPA Memasuki Era Globalisasi". *Makalah* disajikan dalam Seminar Permasalahan dan Alternatif Pemecahan Masalah Pendidikan MIPA. Malang.
- _____. (2006). "Peningkatan Kualitas Guru Sains melalui Pengembangan Keterampilan Berpikir Tingkat Tinggi". [Online]. Tersedia: file.upi.edu/Direktori/SPS/PRODI/makalah_UPSI_2006_Liliyasi.pdf [19 Oktober 2012].
- _____. (2008). "Peningkatan Kualitas Pendidikan Kimia dari Pemahaman Konsep Kimia Menjadi Berpikir Kimia". *Makalah* Seminar UNY, Yogyakarta.
- _____. (2009). *Berpikir Kritis Dalam Pembelajaran Sains Kimia Menuju Profesionalitas Guru*. [Online]. Tersedia: http://fileupi.edu./Direktori/SPS/BERPIKIR_KRITIS_DALAM_PEMBELAJARAN_09.pdf [19 Oktober 2012]
- _____. (2010). *Pengembangan Keterampilan Berpikir Melalui Pembelajaran Sains Menuju Masa Depan, Pembelajaran MIPA dalam Konteks Indonesia*. FPMIPA UPI. Bandung.
- _____. (2011). "Pengembangan Keterampilan Generik Sains untuk Meningkatkan Kemampuan Berpikir Kritis Peserta Didik". *Makalah* Seminar Joint UiTM.
- Ling, C. D. and Bridgeman, A. J. (2011). "Quantitative Analysis in the General Chemistry Laboratory: Training Students To Analyze Individual Results in the Context of Collective Data". *Journal of Chemical Education*. **88**, (7), 979–982.
- Makmur, L., et al. (2000). "Artoindonesianin C, a New Xanthone Derivative from *Artocarpus teysmanii*". *Journal of Natural Product*. **63**, (2) 243–244.
- Mann, R. S. and Kaufman, P. E. (2012). "Natural Product Pesticides: Their Development, Delivery and Use Against Insect Vector". *Mini Reviews in Organic Chemistry*, **9** (18), 185-202.
- Mariana, I. M. A. dan Praginda W. (2009). *Hakekat IPA dan Pendidikan IPA*. BERMUTU. P4TKIPA.

- Mujahidin, D. (2008). *Penuntun Praktikum Kimia Organik*. [Online]. Tersedia: diaharrazy.files.wordpress.com/2010/12/praktikumkoki2051_fa_2.pdf (5 Januari 2011).
- Neoh, B. K., et al. (2013). "Profiling of Metabolites in Oil Palm Mesocarp at Different Stages of Oil Biosynthesis". *Journal of Agricultural and Food Chemistry*. **61** (8), 1920–1927.
- Nguyen, N. T., et al. (2013). "Tyrosinase Inhibitors from the Wood of *Artocarpus heterophyllus*". *Journal of Natural Product*. **75**, (11), 1951–1955.
- Niemann, H., et al. (2013). "Trimeric Hemibastadin Congener from the Marine Sponge *Ianthella basta*". *Journal of Natural Product*. **76**, (1), 121-125.
- Nomura, T., Hano, Y., and Aida, M. (1998). "Isoprenoid substituted flavanoids from *Artocarpus* plants (Moraceae)". *Heterocycles*. **47** (2), 1179 - 1205.
- Nosich, G. M. (2012). *Learning to Think Things Through, A Guide to Critical Thinking Across The Curriculum*. Fourth Edition, Pearson: Boston.
- Oeklay, J. (2000). Project-Based and Problem-Based: The same or different? [Online]. Tersedia: http://edutechwiki.unige.ch/en/Project-Based_and_Problem-Based:_The_same_or_different%_3F [3 November 2012]
- Önen, A. S. and Koçak, C. (2010). "Determining the Critical Thinking Levels of Student Teachers and Evaluating Through Some Variables". *International Online Journal of Educational Sciences*. **2**, (3), 865-867.
- Pham, C., et al. (2013). "Aaptamine Derivatives from the Indonesian Sponge *Aaptos suberitoides*". *Jornal of Natural Product*. **76**, (1), 103–106.
- Piaget, J. (2001). *The Psychology of Intelligence*. New York: Routledge.
- Pierce, C. E., Gassman, S.L., and Huffman, J.T. (2013). Environments for fostering effective critical thinking in geotechnical engineering education (Geo-EFFECTs). *European Journal of Engineering Education*, **38**, (3), 281-299.
- Popham, W. J. (2013). *Classroom Assessment: What Teachers Need to Know - 7th edition*. Boston: Allyn and Bacon, Inc.

- Resosudarmo, *et al.* (1993). *Pengantar Ekologi*. Penerbit: PT. Remaja Rosdakarya-Bandung.
- Roth, K. J. (1992). "Science Education: It's Not Enough to Do or Relate". *Relevant Research*. **13**, (4), 16-22.
- Russell, C. B. and Weaver, G. C. (2008). "Student Perceptions of the Purpose and Function of the Laboratory in Science: A Grounded Theory Study". *International Journal for the Scholarship of Teaching and Learning*. **2**, (2), 1-14.
- Sirhan, G. (2007). Learning Difficulties in Chemistry: An Overview. *Journal of Turkish Science Education*. **4**, (2), 2-20.
- Sudarmin,(2007). Pembekalan Keterampilan Generik Kimia Organik Bagi Calon Guru, *Disertasi*, Bandung: SPs UPI.
- Sudibyo, R. S. (2002). *Metabolit Sekunder: Manfaat dan Perkembangannya dalam Dunia Farmasi*. Pidato Pengukuhan Guru Besar UGM.
- Suparno, P. (2008). "Metode Eksperimen Bebas untuk Meningkatkan Pengertian dan Menghilangkan MiskONSEPSI Peserta Didik tentang Konsep Termofisika". *Widya Dharma*. **19**, (1), 5-9.
- Syah, Y. M. (2010). *Perkembangan Kimia Bahan Alam dalam Perspektif Kajian Struktur Molekul*. Pidato Ilmiah Guru Besar KBA ITB.
- Syah, Y. M., *et al.* (2002). "Artoindonesianins Q-T, four new isoprenylated flavones from *Artocarpus champeden* Spreng. (Moraceae)". *Phytochemistry*. **61**, (8), 949-53.
- _____. (2004), "Two new cytotoxic isoprenylated flavones Artoindonesianin U and V, from the heartwood of *Artocarpus chumpeden* Spreng (Moraceae)". *Fitoterapia*. **75** (2), 134-40.
- _____. (2006). "Cytotoxic prenylated flavones from *Artocarpus champeden*". *Journal Natural Medicine*. **60**, (4), 308-312.

- Tarhan, L., and Sesen, B. A. (2010). "Investigation The Effectiveness of Laboratory Works Related To "Acids And Bases" on Learning Achievements And Attitudes Toward Laboratory". *Procedia Social and Behavioral Sciences*. **2**, (2), 2631–2636.
- Thomas, J. W. (2000). A Review of Research on Project-Based Learning [Online]. Tersedia: <http://www.autodesk.com/foundation> [3November 2012]
- Tsaparlis, G. and Gorezi, M. (2007). "Addition of a Project-Based Component to a Conventional Expository Physical Chemistry Laboratory". *Journal of Chemical Education*. **84**, (4), 668-670.
- Weng, J. R., et al. (2006). "Antiplatelet prenylflavonoids from *Artocarpus communis*". *Phytochemistry*. **67**, (8), 824–829.
- White, R. T. (1996). "The Link between The Laboratory and Learning". *International Journal Science Education*. **18**, (7), 761-774.
- Whitfield, M. and Vitz, E. (2006). "Demonstrating Void Space in Solids: A Simple Demonstration To Challenge a Powerful Misconception". *Journal of Chemical Education*. **83**, (5), 749-751.
- Widyawaruyanti, A., et al. (2007). "New prenylated flavones from *Artocarpus champeden*, and their antimalarial activity in vitro". *Journal Natural Medicine*. **61**, (4), 410-413.
- Wink, M. (2010). "Introduction: Biochemistry, Physiology and Ecological Functions of Secondary Metabolites". *Annual Plant Reviews*. **40**, (2), 63-67.
- Van den Berg, E. (1991). *MiskONSEPSI Fisika dan Remediasi*. UKSW, Salatiga.
- Varsavsky, C. (2001). *Developing Generic Skill of First-Year Science Students*. [Online]. Tersedia: <http://science.uniserve.edu.au/workshop/fye2/varsav.pdf> [20 Maret 2012]
- Visht, S. and Chaturvedi, S. (2012). "Isolation of Natural Products. *Current Pharma Research*". **2**, (3), 584-599.

- Xu, H. and Talanquer, V. (2013). "Effect of the Level of Inquiry of Lab Experiments on General Chemistry Students' Written Reflections". *Journal of Chemical Education*. **90**, (1), 21–28.
- Yelon, S. L. (1977). *A Teacher's world: psychology in the classroom*. Auckland: McGraw-Hill International Book Company.
- Yüksel, G. and Alci, B. (2012). "Self-Efficacy and Critical Thinking Dispositions as Predictors of Success in School Practicum". *International Online Journal of Educational Sciences*. **4**, (1), 81-90.
- Zainuddin, E. N., et al. (2007). "Cyclic Depsipeptides, Ichthyopeptins A and B, from *Microcystis ichthyoblabe*". *J. Nat. Prod.* **70**, (7), 1084–1088.
- Zheng, Z. P., Chen, S., and Wang, S. (2009). "Chemical Components and Tyrosinase Inhibitors from the Twigs of *Artocarpus heterophyllus*". *Journal of Agricultural and Food Chemistry*. **57**, (2), 6649–6655.
- Zoller, U. and Pushkin, D. (2007). "Matching Higher-Order Cognitive Skills (HoCs) Promotion Goals with Problem-Based Laboratory Practice in A Freshman Organic Chemistry Course". *Chemistry Education Research and Practice*. **8**, (2), 153-171.