

DAFTAR PUSTAKA

- Amin, T.G. (2015). Conceptual Metaphors and the Study of Conceptual Change: Research synthesis and future directions. *International Journal Of Science Education*, 37 (5-6): 966-991
- Amin, T.G., et.al. (2012) Arrow of Time: Metaphorical Construals of Entropy and the Second Law of Thermodynamics. *Science Education*, 96: 818-848.
- Anam, K. (2015). *Pembelajaran Berbasis Inkuiiri: Metode dan Aplikasi*. Yogyakarta: Penerbit Pustaka Pelajat.
- Arikunto, S. (2012). *Prosedur Penelitian Suatu Pendekatan Praktek*. Jakarta. Rineka Cipta.
- Arikunto, S. (2015). *Dasar-dasar Evaluasi Pendidikan*. Jakarta. Rineka Cipta.
- Baser, M. (2006). Effect of Conceptual Change Oriented Instruction on Student's Understanding of Heat and Temperature Concepts. *Journal of Maltese Education Research*, 4(1): 64-79
- Berg, V. D. (1990). *Konsep, Peta Konsep, Konsepsi, dan Miskonsepsi*. Makalah. Salatiga: Universitas Kristen Satya Wacana.
- BSNP. 2007. *Pedoman Penilaian Hasil Belajar di Sekolah Dasar*. Jakarta: DEPDIKNAS
- Calik, M & Ayas, A. (2005). A Comparison of Level of Understanding of Eighth-Grade Students and Science Student Teacher Related to Selected Chemistry Concept. *Journal of Research in Science Teaching*, 42(6): 638-667
- Chen, Y.T. dan Wang, J.H. (2016). Analyzing with Posner's Conceptual Change Model and Toulmin's Model of Argumentative Demonstration in Senior High School Student's Mathematic Learning. *International Journal of Information and Educational Technology*, 6(6): 457-464
- Chi, M.T.H. (2008). Three types of conceptual change: Belief revision, mental model transformation, and categorical shift. In S. Vosniadou (Ed.), *Handbook of research on conceptual change*, (61-82). Hellsdale, NJ: Lawrence Erlbaum.
- Close, H.G., & Scherr, R.E. (2015). Enacting Conceptual Metaphor through Blending: Learning activities embodying the substance metaphor for energy. *International Journal Of Science Education*, 37 (5-6): 839-866

- Dahar, R.W. (1996). *Teori-teori Belajar*. Jakarta: Erlangga.
- Dega, *et.al.* (2013). Students' Conceptual Change in Electricity and Magnetism Using Simulations: A Comparison of Cognitive Perturbation and Cognitive Conflict. *Journal Of Research In Science Teaching*, 50(6): 677-698.
- Depdiknas. (2007). *Kajian Kebijakan Mata Pelajaran IPA*. Jakarta: Depdiknas.
- Depdiknas. (2006). *Panduan Pengembangan Pembelajaran IPA Terpadu*. Jakarta: Puskur-Balitbang.
- Driver, R. & Bell, B. (1986). Students' thinking and the learning of science: a constructivist view. *School Science Review*, 67, 443-456.
- Dreyfus, B.W., *et.al.* (2015). Applying Conceptual Blending to Model Coordinated Use of Multiple Ontological Metaphors. *International Journal Of Science Education*, 37(5-6): 812-838
- Duit & Treagust. (1995). Diagnostic Assesment of students' science concepts. *Research reforming practice*. New Jersey: Lawrence Erlbaum Associates, 327–346
- Dykstra, J.R.D. *et.al.* (1992). Studying Conceptual Change in Learning. *Science Education*, 76(6): 615-652
- Ebenezer, *et. al.* (2010). The Effects of Common Knowledge Construction Model Sequence of Lessons on Science Achievement and Relational Conceptual Change. *Journal Of Research In Science Teaching*, 47(1): 25-46
- Egan, K. (2009). *Pengajaran yang Imajinatif*. Jakarta: PT. INDEKS
- Felzmann, D. (2014). Using Metaphorical Models for Describing Glaciers. *International Journal Of Science Education*, 36 (16): 2795-2824
- Finatri, D. (2007). "Analisis Konsepsi Guru pada Konsep Larutan ditinjau dari Representasi Level Mikroskopik". Tesis. FPMIPA. UPI. Bandung: Tidak diterbitkan.
- Fogarty, R. (1991) *How to Integrate the Curricula*. Palatine: IRI/Skylight Publishing, Inc.
- Fraenkel, J.R., Wallen, N.E. & Hyun, H.H. (2012) *How to Design and Evaluate Research in Education*. New York: McGraw-Hill
- Hadjiachilleos, Valanides dan Charoula. (2013). The impact of cognitive and affective aspects of cognitive conflict on learners' conceptual change about

- floating and sinking. *Research in Science & Technological Education*, 31(2),133-152.
- Hake, R.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: 1-26
- Hanson, D.M. (2006). *Instructor's Guided to Process-Oriented Guided-Inquiry Learning*. Lisle, IL: Pacific Crest.
- Herron, J.D. (1975). Piaget for Chemist: Explaining What Good Student Cannot Understand. *Journal of Chemical Education*, 52(3): 146-150
- Hestenes, D. (2006). Notes on modeling theory. Proceedings of the 2006 GIREP conference: Modeling in Physics and Physics Education. Retrieved August 31, 2011, from http://modeling.asu.edu/R&E/Notes_on_Modeling_Theory.pdf
- Hewson, P. W. (1981). A conceptual change approach to learning science. *European Journal of Science Education*, 3(4): 383-96.
- Hewson, P. W. (1982). A case study of conceptual change in special relativity: The influence of prior knowledge in learning. *European Journal of Science Education*, 4(1): 61-78.
- Hosnan. (2014). *Pendekatan Saintifik dan Kontekstual dalam Pembelajaran Abad 21*. Bogor: Ghalia Indonesia.
- Irwan, Z.D. (2012). *Prinsip-prinsip Ekologi, Ekosistem, Lingkungan dan Pelestariannya*. Jakarta: Bumi Aksara.
- Jhamtani, H. Seyanto & Suherly, L. (1991). *Krisis Biologi: Hilangnya Keanekaragaman Biologi*. Jakarta: Yayasan Obor Indonesia.
- Jeppsson, F., Haglund, J & Amin, T.G. (2015). Varying Use of Conceptual Metaphors across Levels of Expertise in Thermodynamics. *International Journal Of Science Education*, 37 (5-6): 780-805
- Joyce, B., et al. (2009). *Models of Teaching*. Pearson Education.
- Juhanda, A. (2014). *Pengembangan asesmen portofolio elektronik (APE) untuk menilai sikap ilmiah dan penguasaan konsep siswa SMA pada laporan praktikum pencemaran lingkungan*. (Tesis). Sekolah Pascasarjana, Universitas Pendidikan Indonesia, Bandung.

- Kemendikbud. (2013). *Materi Pelatihan Guru Implementasi Kurikulum 2013*. Jakarta: Badan Pengembangan SDM Pendidikan dan Kebudayaan dan Penjaminan Mutu.
- Kemendikbud. (2014). *Ilmu Pengetahuan Alam Edisi Revisi*. Jakarta: Kemendikbud.
- Kurnaz, M.A. (2008). Using different conceptual change methods embedded within the 5E Model: A sample teaching for heat and temperature. *Journal Physic Teacher Education Online*, 5(1): 3-10
- Lakoff, G., & Johnson, M. (1980). Conceptual Metaphor in Everyday Language. *The Journal of Philosophy*, 77(8): 453-486
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh*. New York, NY: Basic Books. ISBN 0-465-05673-3
- Lancor, R. (2015). An Analysis of Metaphors Used by Students to Describe Energy in an Interdisciplinary General Science Course. *International Journal of Science Education*, 37: 1-27
- Liu, C.J., et.al. (2014). An Exploration of Secondary Students' Mental States When Learning About Acid and Bases. *Research in Science Education*, 44:133-154
- Luera, G.R, Otto, C., & Zitzewitz, P.W. (2005). A conceptual change approach to teaching energy and thermodynamics to pre service elementary teachers. *Journal Physic Teacher Education Online*, 2(4): 3-8
- Madu, B.C & Orji, E. (2015). Effect of Cognitive Conflict Instructional Strategy on Student's Conceptual Change in Temperature and Heat. *SAGE*, 1-9
- Majid, A. (2014). *Pembelajaran Tematik Terpadu*. Bandung: PT. Remaja Rosdakarya
- Makhrus, M., Nur, M., & Wahono W. (2014). Model Perubahan Konseptual dengan Pendekatan Konflik Kognitif (MPK-PKK). *Jurnal Pijar MIPA*, IX(1) Maret 22-25
- Mansyur, J. (2010). *Kajian Fenomenografi Aspek-Aspek Model Mental Subjek Lintas Level Akademik Dalam Problem Solving Konsep Dasar Mekanika*. Disertasi tidak dipublikasikan. Bandung: Universitas Pendidikan Indonesia
- Nakhleh, B. M. (1992). "Why Some Student Don't Learn Chemistry". *Journal Chemical of Education*. 69(3): 191-196.

- Nakiboglu, C. (2003). Instructional Misconceptions Of Turkish Prospective Chemistry Teachers About Atomic Orbitals And Hybridization. *Chemistry Education: Research And Practice*, 4(2): 171-188
- Niebert, K. & Gropengieber, H. (2015). Understanding Starts in the Mesocosm: Conceptual metaphor as a framework for external representations in science teaching. *International Journal Of Science Education*, 37 (5-6): 903-933
- Niebert, K., Marsch, S., Treagust, D.F. (2012). Understanding Needs Embodiment: A Theory-Guided Reanalysis of the Role of Metaphors and Analogies in Understanding Science. *Science Education*, XX: 1-29
- Oliva, J.M. (2005). What professional knowledge should we as physics teachers have about the use of analogies?. *Journal Physic Teacher Education Online*, 3(1): 11-16
- Osborne, R. & Tasker, R. (1983). *Introducing children's ideas to teachers*, In R. Osborne & P. Freyberg (Edition). Learning in Science: The Implications of Children's Science. London: Heineman
- Piaget, J. (1986). The Equilibrium of Cognitive Structure: The Central Problem of Intellectual Development. *American Journal of Education*, 94(4): 574-577
- Posner, G.J., et.al. (1982). Accommodation of a scientific conception: Towards a theory of conceptual change. *Science Education*, 66(2), 211–227
- Potvin, P., Sauriol, E., & Riopel, M. (2015). Experimental Evidence of the Superiority of the Prevalence Model of Conceptual Change Over the Classical Models and Repetition. *Journal of Research in Science Teaching*, 52(8): 1082-1108
- Pramling, N. (2009). The Role of Metaphor in Darwin and the Implication for Teaching Evolution. *Science Studies and Science Education*, 95: 535-547
- Puskur. 2006. *Panduan Pengembangan Pembelajaran IPA Terpadu*. Jakarta: Balitbang Depdiknas.
- Raha, S. (2014). *Makalah Pemanasan Global*. (Online): Tersedia di http://www.academia.edu/6194383/Makalah_Pemanasan_Global (Diakses 10 Januari 2016)
- Resmini, N. (2004). *Model-model Pembelajaran IPA Terpadu*. Bandung: UPI.
- Rutten, N., et.al. (2012). The learning effects of computer simulations in science education. *Journal of Computers & Education*, 58(1),136–153.
- Sa'ud. et.al (2006). *Pembelajaran Terpadu*. Bandung: UPI Press.

- Sanjaya, W. (2011). *Strategi pembelajaran berorientasi Standar Proses Pendidikan*. Jakarta : Kencana Prenada Media Group.
- Seiler, G. (2013). New Metaphors About Culture: Implications for Research in Science Teacher Preparation. *Journal of Research in Science Teaching*, 50(1): 104-121
- She, H.C & Liao, Y.W. (2010). Bridging Scientific Reasoning and Conceptual Change Through Adaptive Web-Based Learning. *Journal Of Research In Science Teaching*, 47(1): 91-119
- Sherin, B. (2015). On Conceptual Metaphor and the Flora and Fauna of Mind: Commentary on Brookes and Etkina; and Jeppsson, Haglund, and Amin. *International Journal Of Science Education*, 37 (5-6): 806-811
- Skelly, K. M. & Hall, D. (1993). The development and validation of a categorization of sources of misconceptions in chemistry. *Paper presented at the Third International Seminar on Misconceptions and Educational Strategies in science and Mathematics (Ithaca, August)*.
- Sriyati, S. (2008). *Integrated Approach*. Bandung: Jurusan Pendidikan Biologi FPMIPA UPI
- Straumanis, A. (2010). *Process Oriented Guided Inquiry Learning*.
- Sugiyono. (2007). *Statistik untuk Penelitian*. Bandung: Alfabeta
- Sugiyono. (2011). *Metode Penelitian Pendidikan*. Bandung: Alfabeta
- Sugiyono. (2014). *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif dan R&D*. Bandung: Alfabeta
- Sugiyono. (2015). Cara Mudah Menyusun: Skripsi, Tesis, dan Disertasi. Bandung: Alfabeta
- Suparno, P. (2007). *Teori Perkembangan Kognitif Jean Piaget*. Yogyakarta: Kanisius
- Suyanti, D. (2010). *Strategi Pembelajaran Kimia*. Yogyakarta : Graha Imu.
- Tobin, K. (2015). *Handbook Pengajaran dan Pembelajaran SAINS*. Bandung: Nusa Media
- Treagust, D.F. & Reinders D. (2015). On the Significance of Conceptual Metaphors in Teaching and Learning Science: commentary on Lancor; Niebert and Gropengiesser; and Fuchs. *International Journal Of Science Education*, 37 (5-6): 958-965

- Trefill, J & Hazen, R. (2010). *The Sciences: an Integrated Approach*. New York” John Willey & Sons, Inc.
- Trianto. (2012). *Model Pembelajaran Terpadu*. Jakarta:Bumi Aksara.
- Wenning, C.J. (2005). Level of Inquiry: Hierarchies of Pedagogical Practices and Inquiry Processes. *Journal Physic Teacher Education Online*, 2(3): 3-12
- Wenning, C.J. (2011). Level of Inquiry Model of Science Teaching: Learning Sequence to Lesson Plans. *Journal Physic Teacher Education Online*, 6(2): 17-20
- White, R. & Gunstone, R. (1989). Metalearning and Conceptual Change. *International Journal of Science*, 11 (577-586).