DAFTAR PUSTAKA

- Achieve Inc. (2013). Next generation science standards. Diakses pada 12 Mei 2019 pukul 19.29. www.nextgenscience.org/next-generation-science-standards.
- Ambrose, B. S., Heron, P. R., Vokos, S., & Mcdermott, L. C. (1999). Student understanding of light as an electromagnetic wave: Relating the formalism to physical phenomena. *American Journal of Physics*, 67(10), 891-898.
- Bama, Akhmad A. (2015). Mengenal Fisika dari Paradigma, Metodologi hingga Implementasi. SIMETRI: Palembang.
- Bianchini, J. A. (1997). Where knowledge construction, equity, and context intersect: Student learning of science in small groups. *Journal of Research in Science Teaching*, 34(10), 1039–1066.
- Blumenfeld, P., Fishman, B. J., Krajcik, J., Marx, R. W., & Soloway, E. (2000). Creating usable innovations in systemic reform: Scaling up technologyembedded project-based science in urban schools. *Educational Psychologist*, 35(3), 149–164.
- Branch, R. M. (2009). *Instructional Design: The ADDIE Approach*. New York: Springer.
- Brown, B. A., & Ryoo, K. (2008). Teaching science as a language: A "contentfirst" approach to science teaching. *Journal of Research in Science Teaching*, 45(5), 529-553.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, *18*(1), 32–42.
- Bunch, G. C. (2013). Pedagogical language knowledge: Preparing mainstream teachers for English learners in the new standards era. *Review of Research in Education*, *37*(1), 298–341.
- Bybee, R. W. & Fuchs, B. (2006). Preparing the 21st century workforce: A new reform in science and technology education. *Journal of Research in Science Teaching*, 43(4), 349-352.
- Bybee, R. W. (2013). *Translating the NGSS for classroom instruction*. Amerika Serikat: NSTA Press.
- ChanLin, L. (2008). Technology integration applied to project-based learning in science. *Innovations in Education and Teaching International*, 45(1), 55–65.
- Chiu, C. Y. & Cheng, S. (2007). Toward a social psychology of culture and globalization: Some social cognitive consequences of activating two

cultures simultaneously. Social and Personality Psychology Compass, 1(1), 84 - 100.

- Choi, K., Lee, H., Shin, N., Kim, S. & Krajcik, J. (2011). Re-conceptualization of scientific literacy in South Korea for the 21st century. *Journal of Research in Science Teaching*, 48(6), 670-697.
- Cohen, L., Manion L., & Morrison K. 2007. *Research Methods in Education 6th Edition*. USA: Routledge.
- Collette, A. T. & Chiappetta, E. L. (1994). Science Instruction in Middle and Secondary Schools (Edisi Ketiga). New York: Merrill.
- Darling-Hammond, L. (2006). Constructing 21st-century teacher education. *Journal of Teacher Education*, 57(10), 1-15.
- Darmodjo, H. & Kaligis, J. R. E. (1992). Pendidikan IPA II. Jakarta: Depdikbud.
- Deboer, G. (2000). Scientific literacy: Another look at its historical and contemporary meanings and its relationship to science education reform, *Journal of Research in Science Teaching*, *37*(6), 582-601.
- Dede, C. (2005). Planning for neomillennial learning styles. *Educause Quarterly*, 28(1), 7-12.
- Departemen Pendidikan Nasional. (2008). *Panduan Pengembangan Bahan Pelajaran*. Jakarta: Depdiknas.
- Driver, R., Asoko, H., Leach, J., Mortimer, E., & Scott, P. (1994). Constructing scientific knowledge in the classroom. *Educational Researcher*, 23(7), 5–12.
- Fang, Z. (2005). Scientific literacy: A systemic functional linguistics perspective. Science Education, 89(2), 335–347.
- Fleiss, J. L. (1981). *Statistical Methods for rates and Proportions 2nd Editions*. United States: John Wiley & Sons.
- Gravemeijer, K. (2012). Aiming for 21st. century skills. *International Journal for Mathematics in Education*, 4(1), 30-42.
- Grotzer, T. & Basca, B. (2003). How does grasping the underlying causal structures of ecosystems impact students' understanding?. *Journal of Biological Education*, 38(1), 16-29.
- Hake, Richard R. (1998). Interactive Engagment vs. Traditional Methods: A Six Thousand Student Survey of Mechanics Test Data for Introductory Physics Courses. National Science Foundation, Arlington, VA.
- Hand, B. C., Wallace, C., & Yang, E. (2004). Using the science writing heuristic to enhance learning outcomes from laboratory activities in seventh-grade

science: Quantitative and qualitative aspects. *International Journal of Science Education*, 26(2), 131-149.

- Hargreaves, A. (2003). *Teaching in the knowledge society: Education in the age of insecurity*. NY: Teachers College Press.
- Harris, T. R. & Brophy, S. P. (2005). Challenge-based instruction in biomedical engineering: A scalalable method to increase the efficiency and effectiveness of teaching and learning in biomedical engineering. *Medical Engineering & Physics*, 27(7), 617-624.
- Helen, B. B. (2017). Smart social networking: 21st century teaching and learning skills. *Research in Pedagogy*, 7(1), 21-29.
- Hogan, K., & Maglienti, M. (2001). Comparing the epistemological underpinnings of students' and scientists' reasoning about conclusions. *Journal of Research in Science Teaching*, 38(6), 633–687.
- Hong, Y., & Cheon, B. K. (2017). How does culture matter in the face of globalization?. *Perspectives on Psychological Science*, 12(5), 810–823.
- Hsu, P.-S., Van Dyke, M., Chen, Y., & Smith, T. J. (2014). The effect of a graphoriented computer-assisted project-based learning environment on argumentation skills. *Journal of Computer Assisted Learning*, 31(1), 32–58.
- Ifeanyi, I. P., & Chukwuere, J. E. (2018). The impact of using smartphones on the academic performance of undergraduate students. *Knowledge Management & E-Learning*, 10(3), 290–308.
- Johnson, L. & Adams, S. (2011). *Challenge Based Learning: The Report from the Implementation Project*. Austin, Texas: The New Media Consortium.
- Johnson, L. F., Smith, R. S., Smythe, J. T. & Varon, R. K. (2009). Challenge-Based Learning: An Approach for Our Time. Austin, Texas: The New Media Consortium.
- Joyce, B., & Weil, M. (1986). *Models of Teaching (Third Edition)*. New Jersey: Prentice-Hall, Inc.
- Kelly, G. J., Crawford, T., & Green, J. (2001). Common task and uncommon knowledge: Dissenting voices in the discursive construction of physics across small laboratory groups. *Linguistics and Education*, 12(2), 135–174.
- Krajcik, J., Codere, S., Dahsah, C., Bayer, R. & Mun, K. (2014). Planning instruction to meet the intent of the next generation science standards. *Journal of Science Teacher Education*, 25(2), 157–175.
- Kudryashova, A., Gorbatova, T., Rybushkina, S., & Ivanova, E. (2016). Teacher's roles to facilitate active learning. *Mediterranean Journal of Social Sciences*, 7(1), 460-466.

- Lawshe, C. H. (1975). A Quantitative Approach To Content Validity. *Personnel Psychology*, 28(4), 563-575.
- Lead States. (2013). Next Generation Science Standards: For States, By States. Washington, DC: The National Academies Press.
- Lee, O., Quinn, H., & Valdés, G. (2013). Science and language for english language learners in relation to next generation science standards and with implications for common core state standards for english language arts and mathematics. *Educational Researcher*, 42(4), 223-233.
- Martiyono. (2012). Perencanaan Pembelajaran. Yogyakarta: Aswaja.
- Moore, T. J., Tank, K. M., Glancy, A. W., & Kersten, J. A. (2014). NGSS and the landscape of engineering in K-12 state science standards. *Journal of Research in Science Teaching*, 52(3), 296-318.
- Mundilarto. (2012). Penilaian Hasil Belajar Fisika. Yogyakarta: UNY Press.
- Munthe, Bermawi. (2009). Desain Pembelajaran. Yogyakarta: Insan Madani.
- National Research Council. (2012). A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas. Washington, DC: The National Academies Press.
- National Research Council. (2013). *Monitoring Progress Toward Successful K-12 STEM Education: A Nation Advancing?*. Washington, DC: The National Academies Press.
- National Research Council. (2014). *Developing Assessments for the Next Generation Science Standards*. Washington, DC: The National Academies Press.
- National Research Council. (2015). *Guide to Implementing the Next Generation Science Standards*. Washington, DC: The National Academies Press.
- Nichols, M., Cator, K., and Torres, M. (2016) *Challenge Based Learner User Guide*. *Redwood City*. CA: Digital Promise.
- Nuhoglu, H., & Yalcin, N. (2006). The effectiveness of the learning cycle model to increase students' achievement in the physics laboratory. *Journal of Turkish Science Education*, 3(2), 28-30.
- O'Mahony, T. K., et al. (2012). A comparison of lecture-based and challengebased learning in a workplace setting: Course designs, patterns of interactivity, and learning outcomes. *The Journal of The Learning Sciences*, 21(1), 182–206.
- Pannen, P. & Purwanto. (2001). Penulisan Bahan Ajar. Jakarta: PAU-PPAI, UT.

- Pee, B., Woodman, T., Fry, H., & Davenport, E. S. (2002). Appraising and assessing reflection in students writing on a structured worksheet. *Medical Education*, 36(6), 575-585.
- Pritchard, A & John, W. (2010). *Psychology for the Classroom: Constructivism and Social Learning*. New York: Taylor & Francis e-Library.
- Podolefsky, N. S. & Finkelstein, N. D. (2006). Use of analogy in learning physics: The role of representations. *Physical Review Special Topics–Physic Education Research*, 2(2), 1-10.
- Prastowo, Andi. (2011). *Panduan Kreatif Membuat Bahan Ajar Inovatif.* Yogyakarta: Diva Press.
- Rivet, A. E. & Krajcik, J. S. (2004). Achieving Standards in Urban Systemic Reform: An Example of a Sixth Grade Project-Based Science Curriculum. *Journal of Research in Science Teaching*, 41(7), 669-692.
- Roselli, R. J. & Brophy S. P. (2003). Redesigning a biomechanics course using challenge-based instruction. *IEEE Engineering in Medicine and Biology Magazine*, 22(4), 66-70.
- Roselli, R. J., & Brophy, S. P. (2006). Effectiveness of challenge-based instruction in biomechanics. *Journal of Engineering Education*, 95(4), 311– 324.
- Saavedra, A. R., & Opfer, V. D. (2012). Learning 21st-century skills requires 21st-century teaching. *Phi Delta Kappan*, 94(2), 8–13.
- Sahlberg, P. (2006). Education reform for raising economic competitiveness. *Journal of Educational Change*, 7(4), 259-287.
- Samimi P., & Jenatabadi, H.S. (2014). Globalization and economic growth: Empirical evidence on the role of complementarities. *PLoS ONE*, *9*(4), 1-7.
- Sampson, V., & Blanchard, M. R. (2012). Science teachers and scientific argumentation: Trends in views and practice. *Journal of Research in Science Teaching*, 49(9), 1122–1148.
- Sandoval, W., & Millwood, K. (2005). The quality of students' use of evidence in written scientific explanations. *Cognition and Instruction*, 23(1), 23–55.
- Schleppegrell, M. J. (2001). Linguistic features of the language of schooling. *Linguistics and Education*, 12(4), 431–459.
- Solikhah, I. (2015). KKNI dalam Kurikulum berbasis Learning Outcome. *Lingua*, 12(1), 1-22.
- Starkey, L. (2011). Evaluating learning in the 21st century: A digital age learning matrix. *Technology, Pedagogy and Education*, 20(1), 19-39.

- Swanson, L. H., Bianchini, J A. & Lee, J. S. (2013). Engaging in argument and communicating information: A case study of english language learners and their scienceteacher in an urban high school. *Journal of Research in Science Teaching*, 51(1), 31–64.
- Trianto (2009). *Mendesain Model Pembelajaran Inovatif Progresif*. Surabaya: Kencana.
- Varelas, M., Pappas, C. C., Kane, J. M., Arsenault, A., Hankes, J., & Cowan, B. M. (2008). Urban primary-grade children think and talk science: Curricular and instructional practices that nurture participation and argumentation. *Science Education*, 92(1), 65–95.
- Warren, B., Ballenger, C., Ogonowski, M., Rosebery, A. S., & Hudicourt-Barnes, J. (2001). Rethinking diversity in learning science: The logic of everyday sense-making. *Journal of Research in Science Teaching*, 38(5), 529–552.
- Wong, H. K. & Rosemary T. W. (2001). How To Be An Effective Teacher The First Days of School. Mountain View, CA: Harry T. Wong Publications, Inc.
- Yamin, M. 2013. *Paradigma Baru Pembelajaran*. Jakarta: Referensi Ciputat Mega Mall.
- Yore, L. D., Florence, M. K., Pearson, T. W., & Weaver, A. J. (2006). Written discourse in scientific communities: Aconversation with two scientists about their views of science, use of language, role of writing in doing science, and compatibility between their epistemic views and language. International Journal of Science Education, 28(2), 109–141.
- Zohar, A., & Nemet, F. (2002). Fostering students' knowledge and argumentation skills through dilemmas in human genetics. *Journal of Research in Science Teaching*, *39*(1), 35–62.