## DAFTAR PUSTAKA


A. Kardan, A., Aziz, M., Shahpasand, M.(2015). Adaptive systems: a content analysis on technical side for e-learning environments.*Journal Artificial Intelligence Review*. 44(3), 365–391

Ainsworth, Shaaron. (2006).*A Conceptual Framework For Considering Learning With Multiple Representations*. School of Psychology and Learning Sciences Research Institute.

Van Den Akker, J. (1999). *Design Approaches and Tools in Education and Training*. London: KluwerAcademic Publisher.

Ali, S. S., Ghafoor, A., Safeeullah, M. S. (2011). Pre-Generation of Student Module in Intelligent Tutoring System. *Journal of Information & Communication Technology***5**, (1).

Andrawis, M. (2011). Using Active Learning In Teaching Electromagnetics.*Journal American Society for Engineering Education.* tersedia pada: http://www.asee.org/public/conferences/1/papers/1176/view

Arikunto, Suharsimi. (2009). *Dasar-dasar Evaluasi Pendidikan*. Jakarta:Bumi Aksara

_____(2013) Prosedur Penelitian : Suatu Pendekatan Praktik. Jakarta: Rineka Cipta

Barnhart T , Elizabeth van Es.(2015) Studying teacher noticing: Examining the relationship among pre-service science teachers' ability to attend, analyze and respond to student thinking.*Joural Teaching and Teacher Education*. 45, 83-93

Bhaskaran and Swaminathan F. (2014). Intelligent Adaptive *E-learning* Model for Learning Management System. *Research Journal of Applied Sciences, Engineering and Technology* 7(16), 3298-3303

Borg, W. R. and Gall, M. D. (1983).*Educational Research An Introduction*. New York: Longman

Bruce, Catherine D & Flynn, T. (2013). Assessing the Effects of Collaborative Professional Learning: Efficacy Shifts in a Three-Year Mathematics Study. *Alberta Journal of Educational Research*. 58(4), 691-709

Brusilovsky, P, (2001), Adaptive Hypermedia, *Journal User Modeling and User-Adapted Interaction*. 11(1), 87–110

Bubonic, E. J. (2001). *Improving Student Learning and Attitude Throuhg Problem–Based Learning*. Master thesis. Ashland University.Ashland. OH.

Cabukovski, V., & Golubovski, R. (2016). An Adaptive Course Materials Selection into a Multiagent based e-Learning System. *International Journal of Computer*. Volume 144(8), pp. 4-8

Chandrawati, Sri Rahayu. 2010. Pemanfaatan E-learning dalam Pembelajaran. 8(2). Jurnal untan. http://jurnal.untan.ac.id/

Chval, K., Abell, S., Pareja, E., Musikul, K & Ritzka, G. (2008). Teachers' Experiences, Needs, and Expectations Regarding Professional Development.*Eurasia Journal of Mathematics, Science & Technology Education*. 4 (1), 31-43

Changeiywo, J. M., Wambugu, P. W., Wachanga, S. W. (2010). Investigations Of Students' Motivation Towards Learning Secondary School Physics Through Mastery Learning Approach. *International Journal of Science and Mathematics Education*. 9, 1333- 1350

Coe, R. (2002).*Evidence on the Role and Impact of Performance Feedback in Schools'*.Rotterdam: Swets and Zeitlinger

Cohen, J. (1992).*Quantitative Methods in Phychology: A Power Primer*, Psychological Bulletin

Cook,M. P. (2006). Visual Representations in Science Education: The Influence of Prior Knowledge and Cognitive Load Theory on Instructional Design Principles.*Journal Science Education*,90(6), 1073-1091

Corcoran, T. C. (1995). *Transforming Professional Development For Teachers: A Guide For State Policy-Makers*. Washington, DC: National Governors' Association.

Cunningham, W. G., Corderio, P.A. (2000). *Educational Administration: A Problem Based Aproach*. Boston, London, Toronto, Sydney, Tokyo, Singapor: Allyn & Bacon.

Dascalua, M-I, Bodeab, C-N, Moldoveanu, A., Mohoraa,A., Lytrasd, M., Ordoñezde PP. (2015). A Recommender Agent Based On Learning Styles For Better Virtual Collaborative Learning Experiences. *Journal Computers in Human Behavior*. 45, 243-253 https://doi.org/10.1016/j.chb.2014.12.027

Demirci, N., (2005), A Study About Students' Misconceptions In Force And Motion Concepts By Incorporating A Web-Assisted Physics Program, *TOJET*. 4(3), 40-49

Duch, B. J. (1995). *What is Problem-Based Learning? Retrieved*from http://www.udel.edu/pbl/cte/jan95-what.html

Elstad, E and K-A, (2017). Christophersen,Perceptions of Digital Competency among Student Teachers: Contributing to the Development of Student Teachers' Instructional Self-Efficacy in Technology-Rich Classrooms, *Journal Educ. Sci*. 7(1), 27

Eltigani, YA M& Mohamed, S,M, (2011). An approach to Adaptive *E-learning* Hypermedia System based on Learning Styles (AEHS-LS):Implementation and evaluation.*International Journal of Library and Information Science* 3(1), 15-28

Erinosho, S.Y. (2013), How Do Students Perceive the Difficulty of Physics in Secondary School? An Exploratory Study in Nigeria.*International Journal for Cross-Disciplinary Subjects in Education (IJCDSE)*, 3 (3)

Escalada, T L. &A. Zollman, D., (1998), An Investigation On The Effects Of Using Interactive Digital Video In A Physics Classroom On Student Learning and Attitudes.*Journal of Research in Science Teaching*. 34 (5)

Essalmi, F., Jemni Ben Ayed, L. , Jemni, M., Graf, S., Kinshuk.(2015). Generalized metrics for the analysis of E-learning personalization strategies. *Journal Computers in Human Behavior*, 310–322

Florence Y. O. (2011), Integrating Computer Science Education in Kenyan Secondary Schools.*International Journal of Information and Communication Technology Research*. 1(5)

Gaible, E. & Burns, M. (2005).*Using Technology to Train Teachers: Appropriate Uses of ICT for Teacher Professional Development in Developing Countries*. Washington, DC: infoDev World Bank. Available at: http://www.infodev.org/en/Publication.13.html

Grubišić, A, Stankov, (2013). Stereotype Student Model for an Adaptive e-Learning System.*World Academy of Science, Engineering and Technology*.Issue 76, pp. 20-27.

Guzel, H. (2011), Factors Affecting The Computer Usage Of Physics Teachers Working At Private Training Centers.*TOJET*.10 (2), 122-132

Hake, R.R (1998). Interactive-enggagement versus traditional methods: A six thousand-student survey of mechanics test data for introductory physics course. *Am.J. Physics., 66(1), 64-74*

Hmelo-Silver, C. E., & Barrows, H. S. (2008). Facilitating collaborative knowledge building. *Journal Cognition and Instruction*, 26(1), 48–94. http://dx.doi. org/10.1080/07370000701798495

Hoyle, E. (2001). Teaching prestige, Status and Esteem. *Journal Education Management and Administration*. 29(2), 139-152

Hsiao, H., Chuang, C. Huang, T and Wu, C. (2010). Web-based collaborative learning in secondary education: teachers' reflection. *International Journal of Cyber Socisety and Education*. 3(1), pp 15-36

Huang, Y., Yang, B.W., Adams, R., Howell, B., Zhang, J.Z., & Burbank, K. (2008), Teaching Electromagnetic Fields with Computer Visualization.*Proceedings of The 2008 IAJC-IJME International Conference*

Hwang, G-J. (2003).A Conceptual Map Model For Developing Intelligent Tutoring Systems. *Computers & Education* 40: 217–235

Hwan,Chung-Li & Lee, Wei-Pin, (2015), A Computer Simulation In Mechanics Teaching And Learning: A Case Study In Circular Motions.*Journal Computer Applications in Engineering Education*Volume 23, Issue 6

Idris, N., Sau, L. C, Mohd. N., N., Zabidi, A. A. R & Saad, R. Md. (2006). The Professional Preparation of Malaysian Teachers in the Implementation of Teaching and Learning of Mathematics and Science in English. *Eurasia Journal of Mathematics, Science & Technology Education*. 3,(4), 297-304

Independent School Victoria (2012*). Australian Government Quality Teacher Program*. http://www.independentschools.vic.edu.au/schools/gov-programs/quality-teacher.htm, tanggal akses: 10 Desember 2012.

Iredale, A. (2018). Initial Teacher Education in the Lifelong Learning Sector: Developing Professional Knowledge and Practice . *Journal Teacher Education in Lifelong Learning*., 35-96

Iver, Karen S & Barron, Anna E. (2002). *Multimedia Projects in Education Designing, Producing, and Assessing*. USA, Teacher Ideas Press, A Devison of Greenwood Publishing Group, Inc.

Jackson, Bill (2010), *Compare Singapore vs U. b. Teacher Development*. Tersedia: http://www.thedailyriff.com/articles/producing-some-of-the-best-math-teachers-in-the-world-436.php, tanggal akses: 10 Desember 2012.

Janík, T., Najvar, Petr, Slavík, Petr, Trna, J. (2009). On The Dynamic Nature Of Physics Teachers' Pedagogical Content Knowledge. *Orbis Scholae. (3), 2, 47–62.*

Jong, T & Furguson-Hessler G.M. (1996). *Type and Qualities of Knowledge, Educational Psychologist*. Lawrence Erlbaun Associates, Inc

J. Coom, S & Smith, I. (1999). Integration of Ctitical and Creative Thingking skills into Singapore's IT Postgraduate teacher Training Program, Change: *Transformation Education* Vol 22

Karaarslanab, G and Teksöz, G, 2016, International Journal Of Environmental & Science Education Volume 11(15) pp. 8403-8424 Integrating Sustainable Development Concept into Science Education Program is not enough: We Need Competent Science Teachers for Education for Sustainable Development. *JournalTurkish Experience*

Kemendiknas. (2010). *Renstra Kemendiknas 2010-2014*,Jakarta: Kemendiknas.

Kemmendiknas. 2010. *Kerangka Kualifikasi Nasional Indonesia*. Jakarta: Kemmendiknas.

Khatoon S M, Nasim, U., Tabassum, F. (2015). Perceived Effectiveness of Professional Development Programs of Teachers at Higher Education Level.*Journal of Education and Practice*. Vol.6(13) pp. 17-35 www.iiste.org

Kulgemeyer, C. (2018). A Framework of Effective Science Explanation Videos Informed by Criteria for Instructional Explanations. *Journal Research in Science Education*. 1–22 https://doi.org/10.1007/s11165-018-9787-7

Kim, M., Yoon, H., Rae J.Y, Song, J. (2012).The Dynamics of Learning Science In Everyday Contexts: A Case Study of Everyday Science Class In Korea.*International Journal of Science and Mathematics Education*, Volume 10(1), pp 71–97

Koh, K. & Abbas J, (2015), Competencies for Information Professionals in Learning Labs and Makerspaces, J. of Education for Library and Information Science, Vol. 56( 2), doi:10.12783/issn.2328-2967/56/2/3

Kovatcheva, E. & Nikolov, R. (2008). An Adaptive Feedback Approach For E-Learning Systems. *IEEE Multidisciplinary Engineering Education Magazine*, 10, (10).

Lim, CP, & Chai, CS, (2008),Teachers' Pedagogical Beliefs And Their Planning And Conduct Of Computer Mediated Classroom Lessons, *BJET*, Volume 39 (5), pp 807-828

Lu, P., Cong, X., & Zhou, D. (2014). The Research on Web-Based Testing Environment Using Simulated Annealing Algorithm. *Scientific World Journal*.

M. El-Bishouty, M., Aldraiweesh, A., Alturki, U., Tortorella, R., Yang, J., Chang, T-W., Graf, S., & Kinshuk (2018). Use of Felder and Silverman learning style model for online course design. *Journal Educational Technology Research and Development*, pp 1–17

M. El-Bakry, H., A. Saleh, A., T. Asfour, T & Mastorakis, N., (2010), A New Adaptive E-Learning Model Based on Learner's Styles. *JournalMathematical Methods And Techniques In Engineering And Environment Science*

Mahnane, L., Tayeb, M., L. & Trigano, P. (2013). A Model of Adaptive e-learning Hypermedia System Based on Thinking and Learning Styles. *International Journal of Multimedia and Ubiquitous Engineering*. 8, (3)

Makri, E. B & Sarantos. (2008). Enhancing Motivation, School Competence and Self-perception of Physics in the Environment of the Cognitive Tutor CTAT during Physics Instruction.*Springer Verlag Berlin Heidelberg*

Manurung, S and Demonta PD. (2017). Analysis of Learning Tools in the Study of Developmental of Interactive Multimedia Based Physic Learning Charged in Problem Solving. *IOP Conf. Series: Journal of Physics: Conf. Series* 846 012029. doi :10.1088/1742-6596/846/1/012029

Mansour, N., EL-Deghaidy, H., Alshamrani, S., & Aldahmash, A., (2014) Rethinking the Theory and Practice of Continuing Professional Development: Science Teachers' Perspectives, *Research in Science Education*, Volume 44(6), pp 949–973

Martin, Scribner-MacLean, Christy, S,. Rudnicki, Londhe, Manning, Goodman. (2011). Reflections On Icode: Using Web Technology And Hands-On Projects To Engage Urban Youth In Computer Science And Engineering. Journal Auton Robot 30, 265–280

Martín-Blas, T., & Serrano-Fernández, A. (2009). The role of new technologies in the learning process: Moodle as a teaching tool in Physics. *Elsevier*

Ministry of Education Singapore. (2012). *New Model for Teachers' Professional Development Launched*, Tersedia: http://www.moe.gov. bg/media/press/2012/05/new-model-for-teachers-profess.php, tanggal akses: 10 Desember 2012.

Modritscher, F., Garcia-Barrios, V. M., & Gütl, C. (2004). The Past, the Present, and the Future of adaptive E-Learning. *In Proceedings of the international conference on interactive computer aided learning*

Monahan, T., McArdle Gavin., Bertolotto M. (2008), Virtual reality for collaborative e-learning. *Journal Computers & Education* 50: 1339–1353 Available online at www. bciencedirect.com

Moore, M. G., (1996). Three types of interaction. *The American Journal of Distance Education.* Voume 10(3).

Moore, J L., Dickson-Deane, C., Galyen, K, (2010), *e-learning*, online learning, and distance learning environments: Are they the same? *Elsevier*

Morgendoller, J. (1996). *Moving From Technological Possibility To Richer Student Learning: Revitalized Infrastructure And Reconstructed Pedagogy*. Edu. Res , 25 (8) 42-46.

NRC (1996).*National Science Education Standards*.National Academy Press Washington, DC

Nousiainen, M & Koponen, I. (2010), Concept Maps Representing Knowledge Of Physics: Connecting Structure And Content In The Context Of Electricity And Magnetism, *Nordina* 6 (2): 155 - 172

OECD (2010). An analysis of teachers' professional development based on the OECD's Teaching and Learning International Survey (TALIS), OECD, Belgia.

Oktalia, Y., Sakti, I. dan Hamdani, D. (2017). Pengaruh Minat Dan Motivasi Pada Penerapan Model Diskoveri Berbantuan Media Animasi Terhadap Hasil Belajar Fisika Di Sma Negeri 4 Kota Bengkulu. Jurnal Pembelajaran Fisika. 1(1), 87-95

Ornek, F., William R. R, and Mark P. H (2008). What makes physics difficult? *IJESE*. 3(1), 30 – 34

Özden, M. (2008). Improving Science and Technology Education Achievement Using Mastery Learning Model. *World Applied Sciences Journal* 5: 1818-4952

Panjaburee, P., Hwang, G, Triampo, W., Shih, Bo-Ying. (2010). A multi-expert approach for developing testing and diagnostic systems based on the concept-effect model. Elsevier

Papadiamantopoulou, M., Papadiamantopoulou, C., Armakolas, S., Gomatos, L. (2016), Pre-Service And In-Service Teacher Training: The Use Of Technology In The Greek Educational System, Olympiáda techniky Plzeņ 2016, 17. 5. 2016 www.olympiadatechniky.zcu.cz

Paredes J. S, (1999), Professional Development: Untangling the Influence of Work Context on Teacher Learning. Educational Administration Quarterly, Vol. 35( 2) pp 238-266

Prusty, G.B, Russell, C., Ford, R., Ben-Naim, D., Ho, S., Vrcelj, Z., (2011). Adaptive Tutorials to target Threshold Concepts in Mechanics – a Community of Practice Approach. Copyright © Prusty *et al*., 2011

Ranade, M. D. (2006).Development of CAI Presentations for Science Teaching and Overview of Research Findings in International

Journal of Science and Mathematics Education, *Journal of Science and Mathematics Education*Volume 4 (4), pp 763–789

Rankin, E.F. and Culhane, J.W. (1992) Comparable Cloze and Multiple-Choice Comprehension Test Scores, *Journal of Reading*, 13, 193-198

Ravhuhali, F., Mashau, T. b., Kutame, A.P., &Mutshaeni, H.N., (2015), Teachers' Professional Development Model for Effective Teaching and Learning in Schools: What Works Best for Teachers?*Journal International Journal of Educational Sciences,*Volume 11 (1) pp 57-68

Rantavuori, J., Engeström, Y., Lipponen, L., (2016),Learning Actions, Objects and Types of Interaction: A Methodological Analysis of Expansive Learning Among Pre-Service Teachers *Frontline Learning Research* Vol.4 (3) pp 1 - 27

Reid-Griffin, A. & Carter, G., (2008), Uncovering the Potential: The Role of Technologies on Science Learning of Middle School Students, *International Journal of Science and Mathematics Education*, Volume 6(2), pp 329–350

Retalis, R., & Papasalouros, A. (2005). Designing and Generating Educational Adaptive Hypermedia Applications. *Journal Educational Technology & Society*, 8 (3), 26-35.

Rosnita. (2011). Standar Pendidikan untuk Calon Guru Sains: Pedagogi Materi Subjek sebagai Sarana Pengembangan Konten 31 Pedagogi Calon Guru. Jurnal Cakrawala Kependidikan, Vol 9(2).

Rowan, B. (1994). Comparing Teacher work's with work in Order occupation: Note on the Professional Status of Teaching. *Journal Education Research, 23, (6)*.

Rusman (2012). Belajar dan Pembelajaran Berbasis Komputer Mengembangkan Profesionalisme Guru Abad 21. Bandung: Alpa Beta.

Saltan, F. and Arslan, K. (2017). A comparison of in-service and pre-service teachers' technological pedagogical content knowledge self-confidence.*Journal Information & Communications Technology In Education*

Sanjaya, Wina. (2008). Perencanaan dan desain sistem pembelajaran. Jakarta: Kencana Prenada Media Group

Sinaga, P., Suhandi, A. (2014) Improving The Ability of Writing Teaching Materials And Self-Regulation of Pre-Service Physics Teachers Through Representational Approach. *International Journal Of Sciences: Basic And Applied Research*. 15(1), 80-94

Sinaga, P., Kaniawati, I., & Setiawan, A. (2017). Improving Secondary School Students' Scientific Literacy Ability Through The Design Of Better Science Textbooks.*Journal of Turkish Science Education (TUSED). tused.org*. 14(4), 92-107

Stolp, S & M. Zabrucky, K. (2009). Contributions of metacognitive and self-regulated learning theories to investigations of calibration of comprehension. *International Electronic Journal of Elementary Education.* 2(1), 7 -31

Sugiyono. (2011). *Metode Penelitian Kuantitatif, Kualitatif dan R&D*. Bandung: Afabeta

Sutopo & Bruce Waldrip, (2014),Impact of A Representational Approach on Students' Reasoning and Conceptual Understanding in Learning Mechanics, *International Journal of Science and Mathematics Education*. 12(4), 741– 765

Teo B. Soo-Phing, and Neo, Tse-Kian, N (2007), Interactive Multimedia Learning: Students' Attitudes And Learning Impact In An Animation Course, *TOJET.* 6 (4), 28-37

Tibebu, D. T. Cock, M.D, & Elen, J. (2007) Designing Learning Environments for Critical Thinking: Examining Effective Instructional Approaches, *Int J of Sci and Math Educ*. 8, 1-25

Tseng, J C. R Chu H-C Huwang G-J, T C-Ch (2008). Development of an adaptive learning system with two sources of personalization information. *Journal Computers & Education* 51(2):776-786 DOI: 10.1016/j.compedu.2007.08.002

Türkay, S.(2016). The effects of whiteboard animations on retention and subjective experiences when learning advanced physics topics.*Journal Computers & Education.*98, 102-114

UNESCO, (2011).*ICT Competency Framework For Teachers.* United Nations Educational. Scientific and Cultural Organization. Paris

Uslu, O. (2012). Effects of The Professional Development Program on Turkish Teachers: Technology Integration Along with Attitude Towards ICT in Education.*Journal TOJET*

UU. No. 14 Tentang Guru Dan Dosen Tahun 2005

Vanfretti, L & Milano, F. (2012). Facilitating Constructive Alignment in Power Systems Engineering Education Using Free and Open-Source Software, Education *IEEE Transactions*. 55(3), 309-318.

Visschers-Pleijers, A., Dolmans, D., de Grave, W. S., Wolfhagen, I., Jacobs, J. A., & van der Vleuten, C. P. M. (2006). Student perceptions about the characteristics of an effective discussion during the reporting phase in problembased learning. *Journal Medical Education*, 40(9), 924–931. http:// dx.doi.org/10.1111/j.1365-2929.2006.02548.

Wenning, C.J. (2005). Teacher Training or Education; Which is it?" *Journal of Physics Teacher Education Online*, 2(3), 1-2.

Widisila, K., Suharsono, N., & Kirna, M. (2014). Pengembangan Bahan Ajar Multimedia Memperbaiki Poros Penggerak Roda untuk SMA Kelas XI. Teknik Otomotif SMK Negeri 1 Nusa Penida Ganesha Program Studi Teknologi Pembelajaran Volume 4 Tahun 2014

White B. & Geer R. (2013). Preservice Teachers Experience with Online Modules about TPACK.*Journal Educational Computing* 27( 3)

Woodward-Kron, R., & Remedios, L. (2007). Classroom discourse in problem-based learning classrooms in the health sciences. *Australian Review of Applied Linguistics, 30(1), 09.01–09.18*. http://dx.doi.org/10.2104/aral0709

Yacob A, Ali N, Yusoff, M.H., Saman M, & Hamzah, W. M. A. (2014). Personalized Learning: An Analysis Using Item Response Theory.*International Journal of Social, Human Science and Engineering* 8(4)

Yarandi, M., Jahankhani, H., Tawil, A-R. (2013). A Personalized Adaptive *E-learning* Approach Based On Semantic Web Technology.*Journal Webology*. 10(2), 1-14

Yeh, Y-C. (2007). Integrating *e-Learning*Into The Direct-instruction Model to Enhance The Effectiveness of Critical-Thinking Instruction. *Journal Springer Science + Business Media B.V*. 37,185–203

Yucel, A. S., (2006).E-learning Approach In Teacher Training. *Turkish Online Journal of Distance Education-TOJDE*. 7(4)

Zakiya, H., Sinaga, P., & Rohyani, E. (2015). Review Bahan Ajar Fisika SMA Berdasarkan Cakupan Literasi Sains dan Penggunaan Multirepresentasi, *Proseding Simposium Nasional Fisika (SINAFI)* UPI 2015

Zhang, D., Zhou, L., Briggs, Robert & Nunamaker, F., Jay Jr. (2006). Instructional video in *e-learning*: Assessing the impact of interactive video on learning effectiveness. *Journal Information & Management*. 43, 15–27