

DAFTAR PUSTAKA

- Anjelina, R. (2023). Kegunaan Pembelajaran Robotik untuk Menghadapi Revolusi 4.0 dan Society 5.0.
- Arís, N., & Orcos, L. (2019). Educational robotics in the stage of secondary education: Empirical study on motivation and STEM skills. *Education Sciences*, 9(2). <https://doi.org/10.3390/educsci9020073>
- Atmatzidou, S., & Demetriadis, S. (2016). Advancing students' computational thinking skills through educational robotics: A study on age and gender relevant differences. *Robotics and Autonomous Systems*, 75, 661–670. <https://doi.org/10.1016/j.robot.2015.10.008>
- Babalola, E. O., & Omolafe, E. V. (2022). Detail experimental procedure for the construction process of robotic devices to teach aspect of auto mechanic. *ASEAN Journal of Science and Engineering Education*, 2(2), 169–176.
- Barakina, E. Y., Popova, A. V, Gorokhova, S. S., & Voskovskaya, A. S. (2021). Digital Technologies and Artificial Intelligence Technologies in Education. *European Journal of Contemporary Education*, 10(2), 285–296.
- Blikstein, P. (2013). Digital fabrication and 'making' in education: The democratization of invention. *FabLabs: Of Machines, Makers and Inventors*, 4(1), 1–21.
- Board, N. A. G. (2013). *Technology and engineering literacy framework for the 2014 National Assessment of Educational Progress*. ERIC Clearinghouse.
- Branch, R. M. (2009). *Instructional design: The ADDIE approach* (Vol. 722). Springer.
- Breque, M., De Nul, L., & Petridis, A. (2021). *Industry 5.0 Towards a sustainable, human-centric and resilient European industry*. <https://doi.org/10.2777/308407>
- Burleson, W. S., Harlow, D. B., Nilsen, K. J., Perlin, K., Freed, N., Jensen, C. N., Lahey, B., Lu, P., & Muldner, K. (2017). Active learning environments with robotic tangibles: Children's physical and virtual spatial programming experiences. *IEEE Transactions on Learning Technologies*, 11(1), 96–106.
- Catlin, D., & Woollard, J. (2014). Educational robots and computational thinking. *Proceedings of 4th International Workshop Teaching Robotics, Teaching with Robotics & 5th International Conference Robotics in Education*, 144–151.
- Chalmers, C. (2018b). Robotics and computational thinking in primary school. *International Journal of Child-Computer Interaction*, 17, 93–100.

- Chevalier, M., Giang, C., Piatti, A., & Mondada, F. (2020). Fostering computational thinking through educational robotics: A model for creative computational problem solving. *International Journal of STEM Education*, 7(1), 1–18.
- Ching, Y. H., Hsu, Y. C., & Baldwin, S. (2018). Developing Computational Thinking with Educational Technologies for Young Learners. *TechTrends*, 62(6), 563–573.
- Cross, J., Hamner, E., Zito, L., & Nourbakhsh, I. (2016). Engineering and computational thinking talent in middle school students: a framework for defining and recognizing student affinities. *2016 IEEE Frontiers in Education Conference (FIE)*, 1–9.
- Eguchi, A. (2017). Bringing robotics in classrooms. *Robotics in STEM Education: Redesigning the Learning Experience*, 3–31.
- Farcas, L. C., & Caltun, O. F. (2021). Experimental set-ups using microcontrollers and sensors realized by students to be used in Physics lessons. *Journal of Physics: Conference Series*, 1929(1), 012075.
- Feng Chun, M. (2006). Training Modules on Integrating ICT For Pedagogical Innovation. *Makalah Disampaikan Dalam National Training on Integrating ICT and Teaching and Learning Yang Diselenggarakan Oleh UNESCO Bangkok Bekerja Sama Dengan SEAMOLEC Di Jakarta*, 6–10.
- Fitriana, D., Yusuf, M., & Susanti, E. (2016). Pengembangan Lembar Kerja Peserta didik Menggunakan Pendekatan Saintifik untuk Melihat Berpikir Kritis Peserta didik Materi Perbandingan.
- García-Carrillo, C., Greca, I. M., & Fernández-Hawrylak, M. (2021). Teacher perspectives on teaching the STEM approach to educational coding and robotics in primary education. *Education Sciences*, 11(2), 64.
- Gokhale, A. A. (1995). Collaborative learning enhances critical thinking. *Volume 7 Issue 1 (Fall 1995)*.
- Ibrahim, H., Ali, M. B., Phang, F. A., & Abdullah, N. A. S. (2014). Robotik dalam Pendidikan di Malaysia. *1st International Education Postgraduate Seminar (IEPS 2014)*, 1–11.
- Ismayu, E., Astra, I. M., & Susila, A. B. (2019). Pengaruh Pembelajaran Kolaboratif dengan Berbantuan Worksheet terhadap Hasil Belajar Fisika Peserta Didik SMA Kelas X. *Seminar Nasional Fisika Dan Pembelajarannya*, 29–34.
- Januszewski, A., & Molenda, M. (2008). *Technology: A definition with commentary*. New York: Lawrence Erlbaum Associates.
- Kopcha, T. J., McGregor, J., Shin, S., Qian, Y., Choi, J., Hill, R., Mativo, J., & Choi, I. (2017). Developing an Integrative STEM Curriculum for Robotics

- Education Through Educational Design Research. *Journal of Formative Design in Learning*, 1(1), 31–44.
- Lee, T. Y., Mauriello, M. L., Ahn, J., & Bederson, B. B. (2014). CTArcade: Computational thinking with games in school age children. *International Journal of Child-Computer Interaction*, 2(1), 26–33.
- Mubin, O., Stevens, C. J., Shahid, S., Al Mahmud, A., & Dong, J.-J. (2013). A review of the applicability of robots in education. *Journal of Technology in Education and Learning*, 1(209–0015), 13.
- Mulyasa, H. E. (2023). *Implementasi Kurikulum Merdeka*. Bumi Aksara.
- Prastowo, A. (2013). *Panduan Kreatif Membuat Bahan Ajar Inovatif*. Diva Press.
- Purwoko, P. (2013). Pengembangan Bahan Ajar Berbasis Lembar Kerja Peserta didik. <http://pridapurwoko.blogspot.com>. *Diakses Pada*, 5(04), 2015.
- Qu, J. R., & Fok, P. K. (2021). Cultivating students' computational thinking through student–robot interactions in robotics education. *International Journal of Technology and Design Education*, 1–20.
- Rahmadayanti, D., & Hartoyo, A. (2022). Potret Kurikulum Merdeka, Wujud Merdeka Belajar di Sekolah Dasar. *Jurnal Basicedu*, 6(4), 7174–7187. <https://doi.org/10.31004/basicedu.v6i4.3431>
- Rativa, S. A. (2019). How can we Teach Educational Robotics to Foster 21st Learning Skills through PBL, Arduino and S4A? *Advances in Intelligent Systems and Computing*, 829, 149–161. https://doi.org/10.1007/978-3-319-97085-1_15
- Reid, L. (1986). *Collaborative Learning: Bridging the Gap between Speaking and Writing*.
- Riyadi, B., Ertikanto, C., & Suyatna, A. (2018). THE ANALYSIS AND DESIGN OF GUIDED INQUIRY E-WORKSHEET BASED TO DEVELOP HIGH ORDER THINKING SKILLS. *International Journal of Research - GRANTHAALAYAH*, 6(7), 223–233. <https://doi.org/10.29121/granthaalayah.v6.i7.2018.1302>
- Rogowsky, B. A., Terwilliger, C. C., Young, C. A., & Kribbs, E. E. (2018). Playful learning with technology: the effect of computer-assisted instruction on literacy and numeracy skills of preschoolers. *International Journal of Play*, 7(1), 60–80.
- Saputra, O., Setiawan, A., Rusdiana, D., & Muslim, M. (2019). Miskonsepsi peserta didik SMA pada topik fluida. *Prosiding Seminar Nasional Lontar Physics Forum*, 65–72.
- Saxena, A., Lo, C. K., Hew, K. F., & Wong, G. K. W. (2020). Designing unplugged and plugged activities to cultivate computational thinking: An exploratory

- study in early childhood education. *The Asia-Pacific Education Researcher*, 29(1), 55–66.
- Setiono, B. (2011). Pengembangan Alat Perekam Getaran Sebagai Media Pembelajaran Konsep Getaran. Bandar Lampung: Universitas Lampung.
- Skobelev, P. O., & Borovik, S. Y. (2017). *ON THE WAY FROM INDUSTRY 4.0 TO INDUSTRY 5.0: FROM DIGITAL MANUFACTURING TO DIGITAL SOCIETY*.
- So, H. J., Jong, M. S. Y., & Liu, C. C. (2020). Computational Thinking Education in the Asian Pacific Region. In *Asia-Pacific Education Researcher* (Vol. 29, Issue 1). Springer. <https://doi.org/10.1007/s40299-019-00494-w>
- Sugiyono. (2015). *Penelitian Kuantitatif, Kualitatif, dan R&D*. ALFABETA.
- Sugiyono. (2017). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. ALFABETA.
- Sutrisno, A. D. (2019). Survey pemahaman konsep dan identifikasi miskonsepsi peserta didik SMA pada materi kinematika gerak. *WaPFI (Wahana Pendidikan Fisika)*, 4(1), 106–112.
- Teague, D., & Roe, P. (2008). Collaborative learning-towards a solution for novice programmers. *Proceedings of the Tenth Australasian Computing Education Conference in Conferences in Research and Practice in Information Technology-CRPIT Volume 78*, 147–153.
- Trianto. (2010). *Model Pembelajaran Inovatif-Progresif Konsep, Landasan, dan Implementasi Pada Kurikulum Tingkat Satuan Pendidikan (KTSP)*. Kencana.
- Van Laar, E., Van Deursen, A. J. A. M., Van Dijk, J. A. G. M., & De Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in Human Behavior*, 72, 577–588.
- Wawan Budiyanto, C., Amri, S., Yuana, R. A., Widiastuti, I., Harjunowibowo, D., Informatika, P. T., Komputer, D., Pendidikan, M., & Vokasi, G. (2023). *DEDIKASI: Community Service Reports Integrasi Computational Thinking Menggunakan Lego Robotika pada Pembelajaran Pemrograman Article History*.
- Wiersema, N. (2000). How does collaborative learning actually work in a classroom and how do students react to it. *A Brief Reflection*, 1–10.
- Wing, J. M. (2008). Computational thinking and thinking about computing. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 366(1881), 3717–3725. <https://doi.org/10.1098/rsta.2008.0118>

- Yolanda, Y. (2017). Remediasi miskonsepsi kinematika gerak lurus dengan pendekatan STAD. *SPEJ (Science and Physic Education Journal)*, 1(1), 39–48.
- Yusniawati, I. (2011). *Peningkatan Hasil Belajar IPA Materi Tata Surya dengan Menggunakan Media Interaktif Animasi 3 Dimensi pada Peserta didik Kelas VI SD Negeri 2 Karanganyar*. Universitas Muhammadiyah Surakarta.
- Zidan, M. R., & Qamariah, Z. (2023). A Literature Study On The Implementation Of Merdeka Curriculum. *Jurnal Riset Rumpun Ilmu Bahasa (JURRIBAH)*, 2(2). <https://doi.org/10.55606/jurribah.v2i2.1576>

