DAFTAR PUSTAKA

Adriyawati, Utomo, E., Rahmawati, Y., & Mardiah, A. (2020). Steam-project-based learning integration to improve elementary school students' scientific literacy on alternative energy learning. *Universal Journal of Educational Research*, *8*(5), 1863–1873. https://doi.org/10.13189/ujer.2020.080523

Arikunto, S. (2010). *Prosedur Penelitian Suatu pendekatan Praktek*. Rineka Cipta.

Astawan, I. G., Sudana, D. N., Kusmariyatni, N., & Japa, I. G. N. (2019). The STEAM integrated panca pramana model in learning elementary school science in the industrial revolution era 4.0. *International Journal of Innovation, Creativity and Change*, *5*(5), 26–39.

Barnes, J., FakhrHosseini, M. S., Vasey, E., Duford, Z., & Jeon, M. (2017). Robot theater with children for STEAM education. *Proceedings of the Human Factors and Ergonomics Society*, *2017–Octob*(Figure 1), 875–879. https://doi.org/10.1177/1541931213601511

Barnes, J., Fakhrhosseini, S. M., Vasey, E., Park, C. H., & Jeon, M. (2020). Child-Robot Theater: Engaging Elementary Students in Informal STEAM Education Using Robots. *IEEE Pervasive Computing*, *19*(1), 22–31. https://doi.org/10.1109/MPRV.2019.2940181

Bush, S. B., & Cook, K. L. (2019). Structuring STEAM Inquiries: Lessons Learned from Practice. *STEAM Education*, 19–35. https://doi.org/10.1007/978-3-030-04003-1_2

Bush, S. B., Cook, K. L., Edelen, D., & Cox, R. (2020). Elementary Students' STEAM Perceptions. *The Elementary School Journal*, *120*(4), 692–714. https://doi.org/10.1086/708642

Choi, Y., & Hong, S.-H. (2015). *Steam 수업이 초등과학 영재에게 미치는 효과*. *209*, 194–209.

Collins, R. (2104). Skills for the 21st Century: teaching higher-order thinking. *Curriculum & Leadership Journal*, *12*(14). http://www.curriculum.edu.au/leader/teaching_higher_order_thinking,37431.html?issueI

Conklin, W. (2012). *Higher Order Thinking Skills to Develop 21st Century Learners*. Shell Education. https://books.google.co.id/books?hl=id&lr=&id=rfLYAAAAQBAJ&oi=fnd&pg=PA7&dq=higher+order+thinking+skills&ots=M9gZPb7Gpb&sig=WqN6pSeJC8G7kJTmBtAhMRB2LUw&redir_esc=y#v=onepage&q=higher order thinking skills&f=false

Conradty, C., & Bogner, F. X. (2019). From STEM to STEAM: Cracking the

Code? How Creativity & Motivation Interacts with Inquiry-based Learning. *Creativity Research Journal*, *31*(3), 284–295. https://doi.org/10.1080/10400419.2019.1641678

Cook, K. L., & Bush, S. B. (2018). Design thinking in integrated STEAM learning: Surveying the landscape and exploring exemplars in elementary grades. *School Science and Mathematics*, *118*(3–4), 93–103. https://doi.org/10.1111/ssm.12268

Das, M. (2020). Taking a bandsaw to 1st grade: Transforming elementary school through hands-on STEAM education (evaluation). *ASEE Annual Conference and Exposition, Conference Proceedings*, *2020–June*.

Djajadi, M., & Makassar, U. M. (2020). *Filsafat sains* (Issue April 2019).

Dono, J., Webb, J., & Richardson, B. (2010). The relationship between environmental activism, pro-environmental behaviour and social identity. *Journal of Environmental Psychology*, *30*(2), 178–186. https://doi.org/10.1016/j.jenvp.2009.11.006

Duban, N., Aydogdu, B., & Kolsuz, S. (2017). STEAM implementations for Elementary School Students in Turkey. *Peer-Assisted Learning*, *3*(2), 121.

Farwati, R., Permanasari, A., Firman, H., & Suhery, T. (2018). Integrasi Problem Based Learning dalam STEM education berorientasi pada aktualisasi literasi lingkungan dan kreativitas. *Seminar Nasional Pendidikan IPA*, *1*(1), 198–206.

Felix, J. (2012). *SEJARAH SENI RUPA*. *3*(9), 614–621.

Gross, K., & Gross, S. (2016). TRANSFORMATION: Constructivism, Design Thinking, and Elementary STEAM. *Art Education*, *69*(6), 36–43. https://doi.org/10.1080/00043125.2016.1224869

Haladyna, T. M. (1997). *Writing Test Items to Evaluate Higher Order Thinking*. Allyn & Bacon.

Hapizoh. (2019). Penerapan Discovery Learning Terintegrasi Stem Untuk Meningkatkan Hasil Belajar Peserta Didik SMP Negeri 26 Palembang. *Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang*, 293–304.

Hmelo, C. E., & Ferrari, M. (1997). The problem-based learning tutorial: Cultivating higher order thinking skills. *Journal for the Education of the Gifted*, *20*(4), 401–422. https://doi.org/10.1177/016235329702000405

Huitt, W., & Hummel, J. (2003). *Piagets Theory of Cognitive Development.pdf* (pp. 1–5).

Ikhsan, O., & Norlia, M. S. (2005). *Kurikulum dan pengajaran sekolah rendah, aspek-aspek yang berkaitan*. Quantum Books.

Jeon, M., Barnes, J., Fakhrhosseini, M., Vasey, E., Duford, Z., Zheng, Z., & Dare, E. (2017). Robot Opera: A modularized afterschool program for STEAM

education at local elementary school. *2017 14th International Conference on Ubiquitous Robots and Ambient Intelligence, URAI 2017*, 935–936. https://doi.org/10.1109/URAI.2017.7992869

Jho, H., Hong, O., & Song, J. (2016). An analysis of STEM/STEAM teacher education in Korea with a case study of two schools from a community of practice perspective. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(7), 1843–1862. https://doi.org/10.12973/eurasia.2016.1538a

Johnson, C. C. (2012). Implementation of STEM Education Policy: Challenges, Progress, and Lessons Learned. *School Science and Mathematics*, *112*(1), 45–55. https://doi.org/10.1111/j.1949-8594.2011.00110.x

Kang, N.-H. (2019). A review of the effect of integrated STEM or STEAM (science, technology, engineering, arts, and mathematics) education in South Korea. *Asia-Pacific Science Education*, *5*(1). https://doi.org/10.1186/s41029-019-0034-y

Karakuş, F. (2020). the Effect of Steam-Based Science Teaching on Steam Performance Design-Based Thi. In *International Journal of Education Technology and Scientific Researches* (Vol. 5, Issue 13). https://doi.org/10.35826/ijetsar.256

Kawuryan, S. P. (2010). *Karakteristik Siswa SD Kelas Rendah dan pembelajarannya*. *c*, 1–6.

Kim, B., & Bastani, R. (2017). Students as game designers: Transdisciplinary approach to STEAM education. *Alberta Science Education Journal (ASEJ)*, *45*(1), 45–53.

Kim, D.-H., Ko, D. G., Han, M.-J., & Hong, S.-H. (2014). The Effects of Science Lessons Applying STEAM Education Program on the Creativity and Interest Levels of Elementary Students. *Journal of The Korean Association For Research In Science Education*, *34*(1), 43–54. https://doi.org/10.14697/jkase.2014.34.1.1.00043

Kim, J. O., & Kim, J. (2018). Development and application of art based STEAM education program using educational robot. *International Journal of Mobile and Blended Learning*. https://doi.org/10.4018/IJMBL.2018070105

Kim, Y., & Park, N. (2012). *The Effect of STEAM Education on Elementary School Student ' s Creativity Improvement * Mechanical Mechanism of Rube Goldberg Machine Contest*. 115–121.

King, F., Goodson, L., & Rohani, F. (2003). Higher Order Thinking Skills • Definition • Teaching Strategies • Assessment A publication of the Educational Services Program, now known as the Center for Advancement of Learning and Assessment. *Voices from the Middle*, *88*(18), 495–496. http://llt.msu.edu/issues/june2016/lee.pdfhttp://llt.msu.edu/issues/june2016/lee.pdf%0Awww.cala.fsu.edu%0Awww.ascd.org/memberbooks%0Awww.21stcenturyskills.org%0Ahttp://www.

Krulik, S., & Rudnick, J. A. (1995). *The New Sourcebook for Teaching Reasoning and Problem Solving in Elementary School*.

Liao, C., & Liao, C. (2016). *From Interdisciplinary to Transdisciplinary: An Arts-Integrated Approach to STEAM Education*. *3125*(October). https://doi.org/10.1080/00043125.2016.1224873

Majid, A. (2014). *Pembelajaran Tematik Terpadu*. Remaja Rosda Karya.

McComas, W. F. (2003). *Science & Technology Education Library*.

Miarso, Y. (2007). *Teknologi yang Berwajah Humanis*. *09*.

Miles, Matthew B . Huberman, A. Michael. Saldana, J. (2014). *Qualitative Data Analysis*.

Mirzaqon, A., & Purwoko, B. (2018). Studi Kepustakaan Mengenai Landasan Teori Dan Praktik Konseling Expressive Writing Library. *Jurnal BK UNESA*, *1*, 1–8. https://media.neliti.com/media/publications/253525-studi-kepustakaan-mengenai-landasan-teor-c084d5fa.pdf %0A%0A

Montessori. (2016). *What is Upper Elementary?* https://www.vfkh.org/school_news/what-is-upper-elementary/#:~:text=The Upper Elementary is the,th%2C and 6th grades.

National research council. (1996). National Science Education Standards. In *National Science Education Standards*. https://doi.org/10.17226/4962

National research council. (2010). Exploring the Intersection of Science Education and 21st Century Skills. In *Exploring the Intersection of Science Education and 21st Century Skills*. https://doi.org/10.17226/12771

National Research Council. (2011). Framework for K-12 Science Education : Practices, Crosscutting Concepts, and Core Ideas A Framework for K-12 Science Education : Practices, Crosscutting Concepts, and Core Ideas. In *National Academies Press*.

National Science Board. (2014). Natural Science Board. *Engineering*.

Oh, J., Lee, J., & Kim, J. (2013). Development and application of STEAM based education program using scratch: Focus on 6th graders' science in elementary school. *Lecture Notes in Electrical Engineering*, *240 LNEE*, 493–501. https://doi.org/10.1007/978-94-007-6738-6_60

Oner, A., Nite, S., Capraro, R., & Capraro, M. (2016). From STEM to STEAM: Students' Beliefs About the Use of Their Creativity. *Steam*, *2*(2), 1–14. https://doi.org/10.5642/steam.20160202.06

Osborne, J., Simon, S., & Collins, S. (2003). Attitudes towards science: A review of the literature and its implications. *International Journal of Science Education*, *25*(9), 1049–1079. https://doi.org/10.1080/0950069032000032199

Overby, K. (2011). *Student-Centered Learning*. *9*.

Park, H. J., Byun, S. Y., Sim, J., Han, H., & Baek, Y. S. (2016). Teachers' perceptions and practices of STEAM education in South Korea. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(7), 1739–1753. https://doi.org/10.12973/eurasia.2016.1531a

Park, N., & Ko, Y. (2012). *Computer Education ' s Teaching-Learning Methods Using Educational Programming Language Based on STEAM Education **. 320–327.

Partnership for 21st Century. (2017). *21St Century Skills Early Learning 21St Century Skills Early*. 20. http://static.battelleforkids.org/documents/p21/P21_ELF_Framework_Final_20pgs.pdf

Partnership for 21st Century learning. (2015). *21st CENTURY STUDENT OUTCOMES*. 1–9. http://www.p21.org/our-work/p21-framework

Perignat, E., & Katz-Buonincontro, J. (2018). From STEM to STEAM: Using Brain-Compatible Strategies to Integrate the Arts , . *Arts Education Policy Review*, *119*(2), 107–110. https://doi.org/10.1080/10632913.2017.1300970

Permendiknas No. 22. (2006). *Permendiknas No. 22*. 1–48.

Platz, J. (2007). *How do you turn STEM into STEAM? ADD THE ARTS*. *October*, 1–7.

Quigley, C. F., Herro, D., & Jamil, F. M. (2014). *Developing a Conceptual Model of STEAM Teaching Practices*. 1–12.

Quigley, C. F., Herro, D., King, E., & Plank, H. (2020). STEAM Designed and Enacted: Understanding the Process of Design and Implementation of STEAM Curriculum in an Elementary School. *Journal of Science Education and Technology*, *29*(4), 499–518. https://doi.org/10.1007/s10956-020-09832-w

Ridwan, A., Rahmawati, Y., & Hadinugrahaningsih, T. (2017). STEAM INTEGRATION IN CHEMISTRY LEARNING FOR DEVELOPING 21ST CENTURY SKILLS. *MIER Journail of Educational Studies, Trends & Practices*, *7*(2), 184–194.

Rileys, S. (n.d.). *What is STEAM Education?* Retrieved February 17, 2021, from https://artsintegration.com/what-is-steam-education-in-k-12-schools/

Rozi, F., & Hanum, C. B. (2019). Pembelajaran Ipa Sd Berbasis Hots (Higher Order Thinking Skills) Menjawab Tuntutan Pembelajaran Di Abad 21. *Seminar Nasional Pendidikan Dasar Universitas Negeri Medan*, *1*(4), 246–311.

Ruseffendi, H. E. . (2006). *Perkembangan Pendidikaan Matematika*. 1–40.

Saddhono, K., Sueca, I. N., Sentana, G. D. D., Santosa, W. H., & Rachman, R. S. (2020). The application of STEAM (Science, Technology, Engineering, Arts, and Mathematics)-based Learning in Elementary School Surakarta District.

Journal of Physics: Conference Series, *1573*(1), 0–7.
https://doi.org/10.1088/1742-6596/1573/1/012003

Sani, R. A. (2019). *Pembelajaran Berbasis HOTS*.
https://books.google.co.id/books?hl=en&lr=&id=GrfrDwAAQBAJ&oi=fnd
&pg=PR5&dq=kreativitas+higher+order+thinking+skills&ots=kHvQOT4xx
6&sig=2KSVdJJqH9rL5wIWwqXJuEzdc20&redir_esc=y#v=onepage&q=kr
eativitas higher order thinking skills&f=false

Sari, M. (2020). Penelitian Kepustakaan (Library Research) dalam Penelitian
Pendidikan IPA. *Natural Science: Jurnal Penelitian Bidang IPA Dan
Pendidikan IPA*, *6*(1), 41–53.
https://ejournal.uinib.ac.id/jurnal/index.php/naturalscience/article/view/1555/
1159

Starzinski, A. (2017). *Foundational Elements Of A Steam Learning Model For
Elementary School*. 146.

Sukardjono. (2000). Hakikat dan Sejarah Matematika. *Filsafat Dan Sejarah
Matematika*, 1–44.

Supardi. (2013). *Aplikasi Statistika dalam Penelitian : Konsep Statistika yang
Lebih Komprehensif*.

Suprapto, N., Sunarti, T., Suliyanah, Wulandari, D., Hidayaatullaah, H. N., Adam,
A. S., & Mubarok, H. (2020). A systematic review of photovoice as
participatory action research strategies. *International Journal of Evaluation
and Research in Education*, *9*(3), 675–683.
https://doi.org/10.11591/ijere.v9i3.20581

Yakman, G. (2008). *STEAM EDUCATION: AN OVERVIEW OF CREATING A
MODEL OF INTEGRATIVE EDUCATION*.

Yakman, G., & Lee, H. (2012). *Exploring the Exemplary STEAM Education in the
U.S. as a Practical Educational Framework for Korea*.

Yoon, M. B., & Baek, J. E. (2018). Development and application of the STEAM
education program based on the soccer robot for elementary students.
International Journal of Mobile and Blended Learning, *10*(3), 11–22.
https://doi.org/10.4018/IJMBL.2018070102

Young, V. M., House, A., Wang, H., Singleton, C., & Klopfenstein, K. (2011).
Inclusive STEM Schools : Early Promise in Texas and Unanswered
Questions. *The Committee on Highly Successful Schools or Programs for K-
12 STEM Education*, 1–34.
http://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/d
basse_072639.pdf

Zed, M. (2014). *Metode Penelitian Kepustakaan*.

Adriyawati, Utomo, E., Rahmawati, Y., & Mardiah, A. (2020). Steam-project-

based learning integration to improve elementary school students' scientific literacy on alternative energy learning. *Universal Journal of Educational Research*, *8*(5), 1863–1873. https://doi.org/10.13189/ujer.2020.080523

Arikunto, S. (2010). *Prosedur Penelitian Suatu pendekatan Praktek*. Rineka Cipta.

Astawan, I. G., Sudana, D. N., Kusmariyatni, N., & Japa, I. G. N. (2019). The STEAM integrated panca pramana model in learning elementary school science in the industrial revolution era 4.0. *International Journal of Innovation, Creativity and Change*, *5*(5), 26–39.

Barnes, J., FakhrHosseini, M. S., Vasey, E., Duford, Z., & Jeon, M. (2017). Robot theater with children for STEAM education. *Proceedings of the Human Factors and Ergonomics Society*, *2017–Octob*(Figure 1), 875–879. https://doi.org/10.1177/1541931213601511

Barnes, J., Fakhrhosseini, S. M., Vasey, E., Park, C. H., & Jeon, M. (2020). Child-Robot Theater: Engaging Elementary Students in Informal STEAM Education Using Robots. *IEEE Pervasive Computing*, *19*(1), 22–31. https://doi.org/10.1109/MPRV.2019.2940181

Bush, S. B., & Cook, K. L. (2019). Structuring STEAM Inquiries: Lessons Learned from Practice. *STEAM Education*, 19–35. https://doi.org/10.1007/978-3-030-04003-1_2

Bush, S. B., Cook, K. L., Edelen, D., & Cox, R. (2020). Elementary Students' STEAM Perceptions. *The Elementary School Journal*, *120*(4), 692–714. https://doi.org/10.1086/708642

Choi, Y., & Hong, S.-H. (2015). *Steam 수업이 초등과학 영재에게 미치는 효과*. *209*, 194–209.

Collins, R. (2104). Skills for the 21st Century: teaching higher-order thinking. *Curriculum & Leadership Journal*, *12*(14). http://www.curriculum.edu.au/leader/teaching_higher_order_thinking,37431.html?issueI

Conklin, W. (2012). *Higher Order Thinking Skills to Develop 21st Century Learners*. Shell Education. https://books.google.co.id/books?hl=id&lr=&id=rfLYAAAAQBAJ&oi=fnd&pg=PA7&dq=higher+order+thinking+skills&ots=M9gZPb7Gpb&sig=WqN6pSeJC8G7kJTmBtAhMRB2LUw&redir_esc=y#v=onepage&q=higher order thinking skills&f=false

Conradty, C., & Bogner, F. X. (2019). From STEM to STEAM: Cracking the Code? How Creativity & Motivation Interacts with Inquiry-based Learning. *Creativity Research Journal*, *31*(3), 284–295. https://doi.org/10.1080/10400419.2019.1641678

Cook, K. L., & Bush, S. B. (2018). Design thinking in integrated STEAM

learning: Surveying the landscape and exploring exemplars in elementary grades. *School Science and Mathematics*, *118*(3–4), 93–103. https://doi.org/10.1111/ssm.12268

Das, M. (2020). Taking a bandsaw to 1st grade: Transforming elementary school through hands-on STEAM education (evaluation). *ASEE Annual Conference and Exposition, Conference Proceedings*, *2020–June*.

Djajadi, M., & Makassar, U. M. (2020). *Filsafat sains* (Issue April 2019).

Dono, J., Webb, J., & Richardson, B. (2010). The relationship between environmental activism, pro-environmental behaviour and social identity. *Journal of Environmental Psychology*, *30*(2), 178–186. https://doi.org/10.1016/j.jenvp.2009.11.006

Duban, N., Aydogdu, B., & Kolsuz, S. (2017). STEAM implementations for Elementary School Students in Turkey. *Peer-Assisted Learning*, *3*(2), 121.

Farwati, R., Permanasari, A., Firman, H., & Suhery, T. (2018). Integrasi Problem Based Learning dalam STEM education berorientasi pada aktualisasi literasi lingkungan dan kreativitas. *Seminar Nasional Pendidikan IPA*, *1*(1), 198–206.

Felix, J. (2012). *SEJARAH SENI RUPA*. *3*(9), 614–621.

Gross, K., & Gross, S. (2016). TRANSFORMATION: Constructivism, Design Thinking, and Elementary STEAM. *Art Education*, *69*(6), 36–43. https://doi.org/10.1080/00043125.2016.1224869

Haladyna, T. M. (1997). *Writing Test Items to Evaluate Higher Order Thinking*. Allyn & Bacon.

Hapizoh. (2019). Penerapan Discovery Learning Terintegrasi Stem Untuk Meningkatkan Hasil Belajar Peserta Didik SMP Negeri 26 Palembang. *Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang*, 293–304.

Hmelo, C. E., & Ferrari, M. (1997). The problem-based learning tutorial: Cultivating higher order thinking skills. *Journal for the Education of the Gifted*, *20*(4), 401–422. https://doi.org/10.1177/016235329702000405

Huitt, W., & Hummel, J. (2003). *Piagets Theory of Cognitive Development.pdf* (pp. 1–5).

Ikhsan, O., & Norlia, M. S. (2005). *Kurikulum dan pengajaran sekolah rendah, aspek-aspek yang berkaitan*. Quantum Books.

Jeon, M., Barnes, J., Fakhrhosseini, M., Vasey, E., Duford, Z., Zheng, Z., & Dare, E. (2017). Robot Opera: A modularized afterschool program for STEAM education at local elementary school. *2017 14th International Conference on Ubiquitous Robots and Ambient Intelligence, URAI 2017*, 935–936. https://doi.org/10.1109/URAI.2017.7992869

Jho, H., Hong, O., & Song, J. (2016). An analysis of STEM/STEAM teacher

education in Korea with a case study of two schools from a community of practice perspective. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(7), 1843–1862. https://doi.org/10.12973/eurasia.2016.1538a

Johnson, C. C. (2012). Implementation of STEM Education Policy: Challenges, Progress, and Lessons Learned. *School Science and Mathematics*, *112*(1), 45–55. https://doi.org/10.1111/j.1949-8594.2011.00110.x

Kang, N.-H. (2019). A review of the effect of integrated STEM or STEAM (science, technology, engineering, arts, and mathematics) education in South Korea. *Asia-Pacific Science Education*, *5*(1). https://doi.org/10.1186/s41029-019-0034-y

Karakuş, F. (2020). the Effect of Steam-Based Science Teaching on Steam Performance Design-Based Thi. In *International Journal of Education Technology and Scientific Researches* (Vol. 5, Issue 13). https://doi.org/10.35826/ijetsar.256

Kawuryan, S. P. (2010). *Karakteristik Siswa SD Kelas Rendah dan pembelajarannya*. *c*, 1–6.

Kim, B., & Bastani, R. (2017). Students as game designers: Transdisciplinary approach to STEAM education. *Alberta Science Education Journal (ASEJ)*, *45*(1), 45–53.

Kim, D.-H., Ko, D. G., Han, M.-J., & Hong, S.-H. (2014). The Effects of Science Lessons Applying STEAM Education Program on the Creativity and Interest Levels of Elementary Students. *Journal of The Korean Association For Research In Science Education*, *34*(1), 43–54. https://doi.org/10.14697/jkase.2014.34.1.1.00043

Kim, J. O., & Kim, J. (2018). Development and application of art based STEAM education program using educational robot. *International Journal of Mobile and Blended Learning*. https://doi.org/10.4018/IJMBL.2018070105

Kim, Y., & Park, N. (2012). *The Effect of STEAM Education on Elementary School Student ' s Creativity Improvement * Mechanical Mechanism of Rube Goldberg Machine Contest*. 115–121.

King, F., Goodson, L., & Rohani, F. (2003). Higher Order Thinking Skills • Definition • Teaching Strategies • Assessment A publication of the Educational Services Program, now known as the Center for Advancement of Learning and Assessment. *Voices from the Middle*, *88*(18), 495–496. http://llt.msu.edu/issues/june2016/lee.pdfhttp://llt.msu.edu/issues/june2016/lee.pdf%0Awww.cala.fsu.edu%0Awww.ascd.org/memberbooks%0Awww.21stcenturyskills.org%0Ahttp://www.

Krulik, S., & Rudnick, J. A. (1995). *The New Sourcebook for Teaching Reasoning and Problem Solving in Elementary School*.

Liao, C., & Liao, C. (2016). *From Interdisciplinary to Transdisciplinary: An Arts-*

Integrated Approach to STEAM Education. *3125*(October). https://doi.org/10.1080/00043125.2016.1224873

Majid, A. (2014). *Pembelajaran Tematik Terpadu*. Remaja Rosda Karya.

McComas, W. F. (2003). *Science & Technology Education Library*.

Miarso, Y. (2007). *Teknologi yang Berwajah Humanis*. *09*.

Miles, Matthew B . Huberman, A. Michael. Saldana, J. (2014). *Qualitative Data Analysis*.

Mirzaqon, A., & Purwoko, B. (2018). Studi Kepustakaan Mengenai Landasan Teori Dan Praktik Konseling Expressive Writing Library. *Jurnal BK UNESA*, *1*, 1–8. https://media.neliti.com/media/publications/253525-studi-kepustakaan-mengenai-landasan-teor-c084d5fa.pdf %0A%0A

Montessori. (2016). *What is Upper Elementary?* https://www.vfkh.org/school_news/what-is-upper-elementary/#:~:text=The Upper Elementary is the,th%2C and 6th grades.

National research council. (1996). National Science Education Standards. In *National Science Education Standards*. https://doi.org/10.17226/4962

National research council. (2010). Exploring the Intersection of Science Education and 21st Century Skills. In *Exploring the Intersection of Science Education and 21st Century Skills*. https://doi.org/10.17226/12771

National Research Council. (2011). Framework for K-12 Science Education : Practices, Crosscutting Concepts, and Core Ideas A Framework for K-12 Science Education : Practices, Crosscutting Concepts, and Core Ideas. In *National Academies Press*.

National Science Board. (2014). Natural Science Board. *Engineering*.

Oh, J., Lee, J., & Kim, J. (2013). Development and application of STEAM based education program using scratch: Focus on 6th graders' science in elementary school. *Lecture Notes in Electrical Engineering*, *240 LNEE*, 493–501. https://doi.org/10.1007/978-94-007-6738-6_60

Oner, A., Nite, S., Capraro, R., & Capraro, M. (2016). From STEM to STEAM: Students' Beliefs About the Use of Their Creativity. *Steam*, *2*(2), 1–14. https://doi.org/10.5642/steam.20160202.06

Osborne, J., Simon, S., & Collins, S. (2003). Attitudes towards science: A review of the literature and its implications. *International Journal of Science Education*, *25*(9), 1049–1079. https://doi.org/10.1080/0950069032000032199

Overby, K. (2011). *Student-Centered Learning*. *9*.

Park, H. J., Byun, S. Y., Sim, J., Han, H., & Baek, Y. S. (2016). Teachers' perceptions and practices of STEAM education in South Korea. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(7), 1739–1753. https://doi.org/10.12973/eurasia.2016.1531a

Park, N., & Ko, Y. (2012). *Computer Education ' s Teaching-Learning Methods Using Educational Programming Language Based on STEAM Education **. 320–327.

Partnership for 21st Century. (2017). *21St Century Skills Early Learning 21St Century Skills Early*. 20. http://static.battelleforkids.org/documents/p21/P21_ELF_Framework_Final_20pgs.pdf

Partnership for 21st Century learning. (2015). *21st CENTURY STUDENT OUTCOMES*. 1–9. http://www.p21.org/our-work/p21-framework

Perignat, E., & Katz-Buonincontro, J. (2018). From STEM to STEAM: Using Brain-Compatible Strategies to Integrate the Arts , . *Arts Education Policy Review*, *119*(2), 107–110. https://doi.org/10.1080/10632913.2017.1300970

Permendiknas No. 22. (2006). *Permendiknas No. 22*. 1–48.

Platz, J. (2007). *How do you turn STEM into STEAM? ADD THE ARTS*. *October*, 1–7.

Quigley, C. F., Herro, D., & Jamil, F. M. (2014). *Developing a Conceptual Model of STEAM Teaching Practices*. 1–12.

Quigley, C. F., Herro, D., King, E., & Plank, H. (2020). STEAM Designed and Enacted: Understanding the Process of Design and Implementation of STEAM Curriculum in an Elementary School. *Journal of Science Education and Technology*, *29*(4), 499–518. https://doi.org/10.1007/s10956-020-09832-w

Ridwan, A., Rahmawati, Y., & Hadinugrahaningsih, T. (2017). STEAM INTEGRATION IN CHEMISTRY LEARNING FOR DEVELOPING 21ST CENTURY SKILLS. *MIER Journail of Educational Studies, Trends & Practices*, *7*(2), 184–194.

Rileys, S. (n.d.). *What is STEAM Education?* Retrieved February 17, 2021, from https://artsintegration.com/what-is-steam-education-in-k-12-schools/

Rozi, F., & Hanum, C. B. (2019). Pembelajaran Ipa Sd Berbasis Hots (Higher Order Thinking Skills) Menjawab Tuntutan Pembelajaran Di Abad 21. *Seminar Nasional Pendidikan Dasar Universitas Negeri Medan*, *1*(4), 246–311.

Ruseffendi, H. E. . (2006). *Perkembangan Pendidikaan Matematika*. 1–40.

Saddhono, K., Sueca, I. N., Sentana, G. D. D., Santosa, W. H., & Rachman, R. S. (2020). The application of STEAM (Science, Technology, Engineering, Arts, and Mathematics)-based Learning in Elementary School Surakarta District. *Journal of Physics: Conference Series*, *1573*(1), 0–7. https://doi.org/10.1088/1742-6596/1573/1/012003

Sani, R. A. (2019). *Pembelajaran Berbasis HOTS*. https://books.google.co.id/books?hl=en&lr=&id=GrfrDwAAQBAJ&oi=fnd

&pg=PR5&dq=kreativitas+higher+order+thinking+skills&ots=kHvQOT4xx6&sig=2KSVdJJqH9rL5wIWwqXJuEzdc20&redir_esc=y#v=onepage&q=kreativitas higher order thinking skills&f=false

Sari, M. (2020). Penelitian Kepustakaan (Library Research) dalam Penelitian Pendidikan IPA. *Natural Science: Jurnal Penelitian Bidang IPA Dan Pendidikan IPA*, *6*(1), 41–53. https://ejournal.uinib.ac.id/jurnal/index.php/naturalscience/article/view/1555/1159

Starzinski, A. (2017). *Foundational Elements Of A Steam Learning Model For Elementary School*. 146.

Sukardjono. (2000). Hakikat dan Sejarah Matematika. *Filsafat Dan Sejarah Matematika*, 1–44.

Supardi. (2013). *Aplikasi Statistika dalam Penelitian : Konsep Statistika yang Lebih Komprehensif*.

Suprapto, N., Sunarti, T., Suliyanah, Wulandari, D., Hidayaatullaah, H. N., Adam, A. S., & Mubarok, H. (2020). A systematic review of photovoice as participatory action research strategies. *International Journal of Evaluation and Research in Education*, *9*(3), 675–683. https://doi.org/10.11591/ijere.v9i3.20581

Yakman, G. (2008). *STEAM EDUCATION: AN OVERVIEW OF CREATING A MODEL OF INTEGRATIVE EDUCATION*.

Yakman, G., & Lee, H. (2012). *Exploring the Exemplary STEAM Education in the U.S. as a Practical Educational Framework for Korea*.

Yoon, M. B., & Baek, J. E. (2018). Development and application of the STEAM education program based on the soccer robot for elementary students. *International Journal of Mobile and Blended Learning*, *10*(3), 11–22. https://doi.org/10.4018/IJMBL.2018070102

Young, V. M., House, A., Wang, H., Singleton, C., & Klopfenstein, K. (2011). Inclusive STEM Schools : Early Promise in Texas and Unanswered Questions. *The Committee on Highly Successful Schools or Programs for K-12 STEM Education*, 1–34. http://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse_072639.pdf

Zed, M. (2014). *Metode Penelitian Kepustakaan*.

Adriyawati, Utomo, E., Rahmawati, Y., & Mardiah, A. (2020). Steam-project-based learning integration to improve elementary school students' scientific literacy on alternative energy learning. *Universal Journal of Educational Research*, *8*(5), 1863–1873. https://doi.org/10.13189/ujer.2020.080523

Arikunto, S. (2010). *Prosedur Penelitian Suatu pendekatan Praktek*. Rineka

Cipta.

Astawan, I. G., Sudana, D. N., Kusmariyatni, N., & Japa, I. G. N. (2019). The STEAM integrated panca pramana model in learning elementary school science in the industrial revolution era 4.0. *International Journal of Innovation, Creativity and Change*, *5*(5), 26–39.

Barnes, J., FakhrHosseini, M. S., Vasey, E., Duford, Z., & Jeon, M. (2017). Robot theater with children for STEAM education. *Proceedings of the Human Factors and Ergonomics Society*, *2017–Octob*(Figure 1), 875–879. https://doi.org/10.1177/1541931213601511

Barnes, J., Fakhrhosseini, S. M., Vasey, E., Park, C. H., & Jeon, M. (2020). Child-Robot Theater: Engaging Elementary Students in Informal STEAM Education Using Robots. *IEEE Pervasive Computing*, *19*(1), 22–31. https://doi.org/10.1109/MPRV.2019.2940181

Bush, S. B., & Cook, K. L. (2019). Structuring STEAM Inquiries: Lessons Learned from Practice. *STEAM Education*, 19–35. https://doi.org/10.1007/978-3-030-04003-1_2

Bush, S. B., Cook, K. L., Edelen, D., & Cox, R. (2020). Elementary Students' STEAM Perceptions. *The Elementary School Journal*, *120*(4), 692–714. https://doi.org/10.1086/708642

Choi, Y., & Hong, S.-H. (2015). *Steam 수업이 초등과학 영재에게 미치는 효과*. *209*, 194–209.

Collins, R. (2104). Skills for the 21st Century: teaching higher-order thinking. *Curriculum & Leadership Journal*, *12*(14). http://www.curriculum.edu.au/leader/teaching_higher_order_thinking,37431.html?issueI

Conklin, W. (2012). *Higher Order Thinking Skills to Develop 21st Century Learners*. Shell Education. https://books.google.co.id/books?hl=id&lr=&id=rfLYAAAAQBAJ&oi=fnd&pg=PA7&dq=higher+order+thinking+skills&ots=M9gZPb7Gpb&sig=WqN6pSeJC8G7kJTmBtAhMRB2LUw&redir_esc=y#v=onepage&q=higher order thinking skills&f=false

Conradty, C., & Bogner, F. X. (2019). From STEM to STEAM: Cracking the Code? How Creativity & Motivation Interacts with Inquiry-based Learning. *Creativity Research Journal*, *31*(3), 284–295. https://doi.org/10.1080/10400419.2019.1641678

Cook, K. L., & Bush, S. B. (2018). Design thinking in integrated STEAM learning: Surveying the landscape and exploring exemplars in elementary grades. *School Science and Mathematics*, *118*(3–4), 93–103. https://doi.org/10.1111/ssm.12268

Das, M. (2020). Taking a bandsaw to 1st grade: Transforming elementary school

through hands-on STEAM education (evaluation). *ASEE Annual Conference and Exposition, Conference Proceedings*, *2020–June*.

Djajadi, M., & Makassar, U. M. (2020). *Filsafat sains* (Issue April 2019).

Dono, J., Webb, J., & Richardson, B. (2010). The relationship between environmental activism, pro-environmental behaviour and social identity. *Journal of Environmental Psychology*, *30*(2), 178–186. https://doi.org/10.1016/j.jenvp.2009.11.006

Duban, N., Aydogdu, B., & Kolsuz, S. (2017). STEAM implementations for Elementary School Students in Turkey. *Peer-Assisted Learning*, *3*(2), 121.

Farwati, R., Permanasari, A., Firman, H., & Suhery, T. (2018). Integrasi Problem Based Learning dalam STEM education berorientasi pada aktualisasi literasi lingkungan dan kreativitas. *Seminar Nasional Pendidikan IPA*, *1*(1), 198–206.

Felix, J. (2012). *SEJARAH SENI RUPA*. *3*(9), 614–621.

Gross, K., & Gross, S. (2016). TRANSFORMATION: Constructivism, Design Thinking, and Elementary STEAM. *Art Education*, *69*(6), 36–43. https://doi.org/10.1080/00043125.2016.1224869

Haladyna, T. M. (1997). *Writing Test Items to Evaluate Higher Order Thinking*. Allyn & Bacon.

Hapizoh. (2019). Penerapan Discovery Learning Terintegrasi Stem Untuk Meningkatkan Hasil Belajar Peserta Didik SMP Negeri 26 Palembang. *Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang*, 293–304.

Hmelo, C. E., & Ferrari, M. (1997). The problem-based learning tutorial: Cultivating higher order thinking skills. *Journal for the Education of the Gifted*, *20*(4), 401–422. https://doi.org/10.1177/016235329702000405

Huitt, W., & Hummel, J. (2003). *Piagets Theory of Cognitive Development.pdf* (pp. 1–5).

Ikhsan, O., & Norlia, M. S. (2005). *Kurikulum dan pengajaran sekolah rendah, aspek-aspek yang berkaitan*. Quantum Books.

Jeon, M., Barnes, J., Fakhrhosseini, M., Vasey, E., Duford, Z., Zheng, Z., & Dare, E. (2017). Robot Opera: A modularized afterschool program for STEAM education at local elementary school. *2017 14th International Conference on Ubiquitous Robots and Ambient Intelligence, URAI 2017*, 935–936. https://doi.org/10.1109/URAI.2017.7992869

Jho, H., Hong, O., & Song, J. (2016). An analysis of STEM/STEAM teacher education in Korea with a case study of two schools from a community of practice perspective. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(7), 1843–1862. https://doi.org/10.12973/eurasia.2016.1538a

Johnson, C. C. (2012). Implementation of STEM Education Policy: Challenges, Progress, and Lessons Learned. *School Science and Mathematics*, *112*(1), 45–55. https://doi.org/10.1111/j.1949-8594.2011.00110.x

Kang, N.-H. (2019). A review of the effect of integrated STEM or STEAM (science, technology, engineering, arts, and mathematics) education in South Korea. *Asia-Pacific Science Education*, *5*(1). https://doi.org/10.1186/s41029-019-0034-y

Karakuş, F. (2020). the Effect of Steam-Based Science Teaching on Steam Performance Design-Based Thi. In *International Journal of Education Technology and Scientific Researches* (Vol. 5, Issue 13). https://doi.org/10.35826/ijetsar.256

Kawuryan, S. P. (2010). *Karakteristik Siswa SD Kelas Rendah dan pembelajarannya*. *c*, 1–6.

Kim, B., & Bastani, R. (2017). Students as game designers: Transdisciplinary approach to STEAM education. *Alberta Science Education Journal (ASEJ)*, *45*(1), 45–53.

Kim, D.-H., Ko, D. G., Han, M.-J., & Hong, S.-H. (2014). The Effects of Science Lessons Applying STEAM Education Program on the Creativity and Interest Levels of Elementary Students. *Journal of The Korean Association For Research In Science Education*, *34*(1), 43–54. https://doi.org/10.14697/jkase.2014.34.1.1.00043

Kim, J. O., & Kim, J. (2018). Development and application of art based STEAM education program using educational robot. *International Journal of Mobile and Blended Learning*. https://doi.org/10.4018/IJMBL.2018070105

Kim, Y., & Park, N. (2012). *The Effect of STEAM Education on Elementary School Student's Creativity Improvement * Mechanical Mechanism of Rube Goldberg Machine Contest*. 115–121.

King, F., Goodson, L., & Rohani, F. (2003). Higher Order Thinking Skills • Definition • Teaching Strategies • Assessment A publication of the Educational Services Program, now known as the Center for Advancement of Learning and Assessment. *Voices from the Middle*, *88*(18), 495–496. http://llt.msu.edu/issues/june2016/lee.pdfhttp://llt.msu.edu/issues/june2016/lee.pdf%0Awww.cala.fsu.edu%0Awww.ascd.org/memberbooks%0Awww.21stcenturyskills.org%0Ahttp://www.

Krulik, S., & Rudnick, J. A. (1995). *The New Sourcebook for Teaching Reasoning and Problem Solving in Elementary School*.

Liao, C., & Liao, C. (2016). *From Interdisciplinary to Transdisciplinary: An Arts-Integrated Approach to STEAM Education*. *3125*(October). https://doi.org/10.1080/00043125.2016.1224873

Majid, A. (2014). *Pembelajaran Tematik Terpadu*. Remaja Rosda Karya.

McComas, W. F. (2003). *Science & Technology Education Library*.

Miarso, Y. (2007). *Teknologi yang Berwajah Humanis*. *09*.

Miles, Matthew B . Huberman, A. Michael. Saldana, J. (2014). *Qualitative Data Analysis*.

Mirzaqon, A., & Purwoko, B. (2018). Studi Kepustakaan Mengenai Landasan Teori Dan Praktik Konseling Expressive Writing Library. *Jurnal BK UNESA*, *1*, 1–8. https://media.neliti.com/media/publications/253525-studi-kepustakaan-mengenai-landasan-teor-c084d5fa.pdf %0A%0A

Montessori. (2016). *What is Upper Elementary?* https://www.vfkh.org/school_news/what-is-upper-elementary/#:~:text=The Upper Elementary is the,th%2C and 6th grades.

National research council. (1996). National Science Education Standards. In *National Science Education Standards*. https://doi.org/10.17226/4962

National research council. (2010). Exploring the Intersection of Science Education and 21st Century Skills. In *Exploring the Intersection of Science Education and 21st Century Skills*. https://doi.org/10.17226/12771

National Research Council. (2011). Framework for K-12 Science Education : Practices, Crosscutting Concepts, and Core Ideas A Framework for K-12 Science Education : Practices, Crosscutting Concepts, and Core Ideas. In *National Academies Press*.

National Science Board. (2014). Natural Science Board. *Engineering*.

Oh, J., Lee, J., & Kim, J. (2013). Development and application of STEAM based education program using scratch: Focus on 6th graders' science in elementary school. *Lecture Notes in Electrical Engineering*, *240 LNEE*, 493–501. https://doi.org/10.1007/978-94-007-6738-6_60

Oner, A., Nite, S., Capraro, R., & Capraro, M. (2016). From STEM to STEAM: Students' Beliefs About the Use of Their Creativity. *Steam*, *2*(2), 1–14. https://doi.org/10.5642/steam.20160202.06

Osborne, J., Simon, S., & Collins, S. (2003). Attitudes towards science: A review of the literature and its implications. *International Journal of Science Education*, *25*(9), 1049–1079. https://doi.org/10.1080/0950069032000032199

Overby, K. (2011). *Student-Centered Learning*. *9*.

Park, H. J., Byun, S. Y., Sim, J., Han, H., & Baek, Y. S. (2016). Teachers' perceptions and practices of STEAM education in South Korea. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(7), 1739–1753. https://doi.org/10.12973/eurasia.2016.1531a

Park, N., & Ko, Y. (2012). *Computer Education ' s Teaching-Learning Methods Using Educational Programming Language Based on STEAM Education **. 320–327.

Partnership for 21st Century. (2017). *21St Century Skills Early Learning 21St*

Century Skills Early. 20.
http://static.battelleforkids.org/documents/p21/P21_ELF_Framework_Final_20pgs.pdf

Partnership for 21st Century learning. (2015). *21st CENTURY STUDENT OUTCOMES*. 1–9. http://www.p21.org/our-work/p21-framework

Perignat, E., & Katz-Buonincontro, J. (2018). From STEM to STEAM: Using Brain-Compatible Strategies to Integrate the Arts , . *Arts Education Policy Review*, *119*(2), 107–110. https://doi.org/10.1080/10632913.2017.1300970

Permendiknas No. 22. (2006). *Permendiknas No. 22*. 1–48.

Platz, J. (2007). *How do you turn STEM into STEAM? ADD THE ARTS*. *October*, 1–7.

Quigley, C. F., Herro, D., & Jamil, F. M. (2014). *Developing a Conceptual Model of STEAM Teaching Practices*. 1–12.

Quigley, C. F., Herro, D., King, E., & Plank, H. (2020). STEAM Designed and Enacted: Understanding the Process of Design and Implementation of STEAM Curriculum in an Elementary School. *Journal of Science Education and Technology*, *29*(4), 499–518. https://doi.org/10.1007/s10956-020-09832-w

Ridwan, A., Rahmawati, Y., & Hadinugrahaningsih, T. (2017). STEAM INTEGRATION IN CHEMISTRY LEARNING FOR DEVELOPING 21ST CENTURY SKILLS. *MIER Journail of Educational Studies, Trends & Practices*, *7*(2), 184–194.

Rileys, S. (n.d.). *What is STEAM Education?* Retrieved February 17, 2021, from https://artsintegration.com/what-is-steam-education-in-k-12-schools/

Rozi, F., & Hanum, C. B. (2019). Pembelajaran Ipa Sd Berbasis Hots (Higher Order Thinking Skills) Menjawab Tuntutan Pembelajaran Di Abad 21. *Seminar Nasional Pendidikan Dasar Universitas Negeri Medan*, *1*(4), 246–311.

Ruseffendi, H. E. . (2006). *Perkembangan Pendidikaan Matematika*. 1–40.

Saddhono, K., Sueca, I. N., Sentana, G. D. D., Santosa, W. H., & Rachman, R. S. (2020). The application of STEAM (Science, Technology, Engineering, Arts, and Mathematics)-based Learning in Elementary School Surakarta District. *Journal of Physics: Conference Series*, *1573*(1), 0–7. https://doi.org/10.1088/1742-6596/1573/1/012003

Sani, R. A. (2019). *Pembelajaran Berbasis HOTS*. https://books.google.co.id/books?hl=en&lr=&id=GrfrDwAAQBAJ&oi=fnd&pg=PR5&dq=kreativitas+higher+order+thinking+skills&ots=kHvQOT4xx6&sig=2KSVdJJqH9rL5wIWwqXJuEzdc20&redir_esc=y#v=onepage&q=kreativitas higher order thinking skills&f=false

Sari, M. (2020). Penelitian Kepustakaan (Library Research) dalam Penelitian

Pendidikan IPA. *Natural Science: Jurnal Penelitian Bidang IPA Dan Pendidikan IPA*, *6*(1), 41–53. https://ejournal.uinib.ac.id/jurnal/index.php/naturalscience/article/view/1555/1159

Starzinski, A. (2017). *Foundational Elements Of A Steam Learning Model For Elementary School*. 146.

Sukardjono. (2000). Hakikat dan Sejarah Matematika. *Filsafat Dan Sejarah Matematika*, 1–44.

Supardi. (2013). *Aplikasi Statistika dalam Penelitian : Konsep Statistika yang Lebih Komprehensif*.

Suprapto, N., Sunarti, T., Suliyanah, Wulandari, D., Hidayaatullaah, H. N., Adam, A. S., & Mubarok, H. (2020). A systematic review of photovoice as participatory action research strategies. *International Journal of Evaluation and Research in Education*, *9*(3), 675–683. https://doi.org/10.11591/ijere.v9i3.20581

Yakman, G. (2008). *STEAM EDUCATION: AN OVERVIEW OF CREATING A MODEL OF INTEGRATIVE EDUCATION*.

Yakman, G., & Lee, H. (2012). *Exploring the Exemplary STEAM Education in the U.S. as a Practical Educational Framework for Korea*.

Yoon, M. B., & Baek, J. E. (2018). Development and application of the STEAM education program based on the soccer robot for elementary students. *International Journal of Mobile and Blended Learning*, *10*(3), 11–22. https://doi.org/10.4018/IJMBL.2018070102

Young, V. M., House, A., Wang, H., Singleton, C., & Klopfenstein, K. (2011). Inclusive STEM Schools : Early Promise in Texas and Unanswered Questions. *The Committee on Highly Successful Schools or Programs for K-12 STEM Education*, 1–34. http://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse_072639.pdf

Zed, M. (2014). *Metode Penelitian Kepustakaan*.

Adriyawati, Utomo, E., Rahmawati, Y., & Mardiah, A. (2020). Steam-project-based learning integration to improve elementary school students' scientific literacy on alternative energy learning. *Universal Journal of Educational Research*, *8*(5), 1863–1873. https://doi.org/10.13189/ujer.2020.080523

Arikunto, S. (2010). *Prosedur Penelitian Suatu pendekatan Praktek*. Rineka Cipta.

Astawan, I. G., Sudana, D. N., Kusmariyatni, N., & Japa, I. G. N. (2019). The STEAM integrated panca pramana model in learning elementary school science in the industrial revolution era 4.0. *International Journal of*

Innovation, Creativity and Change, 5(5), 26–39.

Barnes, J., FakhrHosseini, M. S., Vasey, E., Duford, Z., & Jeon, M. (2017). Robot theater with children for STEAM education. *Proceedings of the Human Factors and Ergonomics Society*, *2017–Octob*(Figure 1), 875–879. https://doi.org/10.1177/1541931213601511

Barnes, J., Fakhrhosseini, S. M., Vasey, E., Park, C. H., & Jeon, M. (2020). Child-Robot Theater: Engaging Elementary Students in Informal STEAM Education Using Robots. *IEEE Pervasive Computing*, *19*(1), 22–31. https://doi.org/10.1109/MPRV.2019.2940181

Bush, S. B., & Cook, K. L. (2019). Structuring STEAM Inquiries: Lessons Learned from Practice. *STEAM Education*, 19–35. https://doi.org/10.1007/978-3-030-04003-1_2

Bush, S. B., Cook, K. L., Edelen, D., & Cox, R. (2020). Elementary Students' STEAM Perceptions. *The Elementary School Journal*, *120*(4), 692–714. https://doi.org/10.1086/708642

Choi, Y., & Hong, S.-H. (2015). *Steam 수업이 초등과학 영재에게 미치는 효과*. *209*, 194–209.

Collins, R. (2104). Skills for the 21st Century: teaching higher-order thinking. *Curriculum & Leadership Journal*, *12*(14). http://www.curriculum.edu.au/leader/teaching_higher_order_thinking,37431.html?issueI

Conklin, W. (2012). *Higher Order Thinking Skills to Develop 21st Century Learners*. Shell Education. https://books.google.co.id/books?hl=id&lr=&id=rfLYAAAAQBAJ&oi=fnd&pg=PA7&dq=higher+order+thinking+skills&ots=M9gZPb7Gpb&sig=WqN6pSeJC8G7kJTmBtAhMRB2LUw&redir_esc=y#v=onepage&q=higher order thinking skills&f=false

Conradty, C., & Bogner, F. X. (2019). From STEM to STEAM: Cracking the Code? How Creativity & Motivation Interacts with Inquiry-based Learning. *Creativity Research Journal*, *31*(3), 284–295. https://doi.org/10.1080/10400419.2019.1641678

Cook, K. L., & Bush, S. B. (2018). Design thinking in integrated STEAM learning: Surveying the landscape and exploring exemplars in elementary grades. *School Science and Mathematics*, *118*(3–4), 93–103. https://doi.org/10.1111/ssm.12268

Das, M. (2020). Taking a bandsaw to 1st grade: Transforming elementary school through hands-on STEAM education (evaluation). *ASEE Annual Conference and Exposition, Conference Proceedings*, *2020–June*.

Djajadi, M., & Makassar, U. M. (2020). *Filsafat sains* (Issue April 2019).

Dono, J., Webb, J., & Richardson, B. (2010). The relationship between

environmental activism, pro-environmental behaviour and social identity. *Journal of Environmental Psychology*, *30*(2), 178–186. https://doi.org/10.1016/j.jenvp.2009.11.006

Duban, N., Aydogdu, B., & Kolsuz, S. (2017). STEAM implementations for Elementary School Students in Turkey. *Peer-Assisted Learning*, *3*(2), 121.

Farwati, R., Permanasari, A., Firman, H., & Suhery, T. (2018). Integrasi Problem Based Learning dalam STEM education berorientasi pada aktualisasi literasi lingkungan dan kreativitas. *Seminar Nasional Pendidikan IPA*, *1*(1), 198–206.

Felix, J. (2012). *SEJARAH SENI RUPA*. *3*(9), 614–621.

Gross, K., & Gross, S. (2016). TRANSFORMATION: Constructivism, Design Thinking, and Elementary STEAM. *Art Education*, *69*(6), 36–43. https://doi.org/10.1080/00043125.2016.1224869

Haladyna, T. M. (1997). *Writing Test Items to Evaluate Higher Order Thinking*. Allyn & Bacon.

Hapizoh. (2019). Penerapan Discovery Learning Terintegrasi Stem Untuk Meningkatkan Hasil Belajar Peserta Didik SMP Negeri 26 Palembang. *Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang*, 293–304.

Hmelo, C. E., & Ferrari, M. (1997). The problem-based learning tutorial: Cultivating higher order thinking skills. *Journal for the Education of the Gifted*, *20*(4), 401–422. https://doi.org/10.1177/016235329702000405

Huitt, W., & Hummel, J. (2003). *Piagets Theory of Cognitive Development.pdf* (pp. 1–5).

Ikhsan, O., & Norlia, M. S. (2005). *Kurikulum dan pengajaran sekolah rendah, aspek-aspek yang berkaitan*. Quantum Books.

Jeon, M., Barnes, J., Fakhrhosseini, M., Vasey, E., Duford, Z., Zheng, Z., & Dare, E. (2017). Robot Opera: A modularized afterschool program for STEAM education at local elementary school. *2017 14th International Conference on Ubiquitous Robots and Ambient Intelligence, URAI 2017*, 935–936. https://doi.org/10.1109/URAI.2017.7992869

Jho, H., Hong, O., & Song, J. (2016). An analysis of STEM/STEAM teacher education in Korea with a case study of two schools from a community of practice perspective. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(7), 1843–1862. https://doi.org/10.12973/eurasia.2016.1538a

Johnson, C. C. (2012). Implementation of STEM Education Policy: Challenges, Progress, and Lessons Learned. *School Science and Mathematics*, *112*(1), 45–55. https://doi.org/10.1111/j.1949-8594.2011.00110.x

Kang, N.-H. (2019). A review of the effect of integrated STEM or STEAM

(science, technology, engineering, arts, and mathematics) education in South Korea. *Asia-Pacific Science Education*, *5*(1). https://doi.org/10.1186/s41029-019-0034-y

Karakuş, F. (2020). the Effect of Steam-Based Science Teaching on Steam Performance Design-Based Thi. In *International Journal of Education Technology and Scientific Researches* (Vol. 5, Issue 13). https://doi.org/10.35826/ijetsar.256

Kawuryan, S. P. (2010). *Karakteristik Siswa SD Kelas Rendah dan pembelajarannya*. *c*, 1–6.

Kim, B., & Bastani, R. (2017). Students as game designers: Transdisciplinary approach to STEAM education. *Alberta Science Education Journal (ASEJ)*, *45*(1), 45–53.

Kim, D.-H., Ko, D. G., Han, M.-J., & Hong, S.-H. (2014). The Effects of Science Lessons Applying STEAM Education Program on the Creativity and Interest Levels of Elementary Students. *Journal of The Korean Association For Research In Science Education*, *34*(1), 43–54. https://doi.org/10.14697/jkase.2014.34.1.1.00043

Kim, J. O., & Kim, J. (2018). Development and application of art based STEAM education program using educational robot. *International Journal of Mobile and Blended Learning*. https://doi.org/10.4018/IJMBL.2018070105

Kim, Y., & Park, N. (2012). *The Effect of STEAM Education on Elementary School Student ' s Creativity Improvement * Mechanical Mechanism of Rube Goldberg Machine Contest*. 115–121.

King, F., Goodson, L., & Rohani, F. (2003). Higher Order Thinking Skills • Definition • Teaching Strategies • Assessment A publication of the Educational Services Program, now known as the Center for Advancement of Learning and Assessment. *Voices from the Middle*, *88*(18), 495–496. http://llt.msu.edu/issues/june2016/lee.pdfhttp://llt.msu.edu/issues/june2016/lee.pdf%0Awww.cala.fsu.edu%0Awww.ascd.org/memberbooks%0Awww.21stcenturyskills.org%0Ahttp://www.

Krulik, S., & Rudnick, J. A. (1995). *The New Sourcebook for Teaching Reasoning and Problem Solving in Elementary School*.

Liao, C., & Liao, C. (2016). *From Interdisciplinary to Transdisciplinary: An Arts-Integrated Approach to STEAM Education*. *3125*(October). https://doi.org/10.1080/00043125.2016.1224873

Majid, A. (2014). *Pembelajaran Tematik Terpadu*. Remaja Rosda Karya.

McComas, W. F. (2003). *Science & Technology Education Library*.

Miarso, Y. (2007). *Teknologi yang Berwajah Humanis*. *09*.

Miles, Matthew B . Huberman, A. Michael. Saldana, J. (2014). *Qualitative Data Analysis*.

Mirzaqon, A., & Purwoko, B. (2018). Studi Kepustakaan Mengenai Landasan Teori Dan Praktik Konseling Expressive Writing Library. *Jurnal BK UNESA*, *1*, 1–8. https://media.neliti.com/media/publications/253525-studi-kepustakaan-mengenai-landasan-teor-c084d5fa.pdf %0A%0A

Montessori. (2016). *What is Upper Elementary?* https://www.vfkh.org/school_news/what-is-upper-elementary/#:~:text=The Upper Elementary is the,th%2C and 6th grades.

National research council. (1996). National Science Education Standards. In *National Science Education Standards*. https://doi.org/10.17226/4962

National research council. (2010). Exploring the Intersection of Science Education and 21st Century Skills. In *Exploring the Intersection of Science Education and 21st Century Skills*. https://doi.org/10.17226/12771

National Research Council. (2011). Framework for K-12 Science Education : Practices, Crosscutting Concepts, and Core Ideas A Framework for K-12 Science Education : Practices, Crosscutting Concepts, and Core Ideas. In *National Academies Press*.

National Science Board. (2014). Natural Science Board. *Engineering*.

Oh, J., Lee, J., & Kim, J. (2013). Development and application of STEAM based education program using scratch: Focus on 6th graders' science in elementary school. *Lecture Notes in Electrical Engineering*, *240 LNEE*, 493–501. https://doi.org/10.1007/978-94-007-6738-6_60

Oner, A., Nite, S., Capraro, R., & Capraro, M. (2016). From STEM to STEAM: Students' Beliefs About the Use of Their Creativity. *Steam*, *2*(2), 1–14. https://doi.org/10.5642/steam.20160202.06

Osborne, J., Simon, S., & Collins, S. (2003). Attitudes towards science: A review of the literature and its implications. *International Journal of Science Education*, *25*(9), 1049–1079. https://doi.org/10.1080/0950069032000032199

Overby, K. (2011). *Student-Centered Learning*. *9*.

Park, H. J., Byun, S. Y., Sim, J., Han, H., & Baek, Y. S. (2016). Teachers' perceptions and practices of STEAM education in South Korea. *Eurasia Journal of Mathematics, Science and Technology Education*, *12*(7), 1739–1753. https://doi.org/10.12973/eurasia.2016.1531a

Park, N., & Ko, Y. (2012). *Computer Education ' s Teaching-Learning Methods Using Educational Programming Language Based on STEAM Education **. 320–327.

Partnership for 21st Century. (2017). *21St Century Skills Early Learning 21St Century Skills Early*. 20. http://static.battelleforkids.org/documents/p21/P21_ELF_Framework_Final_20pgs.pdf

Partnership for 21st Century learning. (2015). *21st CENTURY STUDENT OUTCOMES*. 1–9. http://www.p21.org/our-work/p21-framework

Perignat, E., & Katz-Buonincontro, J. (2018). From STEM to STEAM: Using Brain-Compatible Strategies to Integrate the Arts , . *Arts Education Policy Review*, *119*(2), 107–110. https://doi.org/10.1080/10632913.2017.1300970

Permendiknas No. 22. (2006). *Permendiknas No. 22*. 1–48.

Platz, J. (2007). *How do you turn STEM into STEAM? ADD THE ARTS*. *October*, 1–7.

Quigley, C. F., Herro, D., & Jamil, F. M. (2014). *Developing a Conceptual Model of STEAM Teaching Practices*. 1–12.

Quigley, C. F., Herro, D., King, E., & Plank, H. (2020). STEAM Designed and Enacted: Understanding the Process of Design and Implementation of STEAM Curriculum in an Elementary School. *Journal of Science Education and Technology*, *29*(4), 499–518. https://doi.org/10.1007/s10956-020-09832-w

Ridwan, A., Rahmawati, Y., & Hadinugrahaningsih, T. (2017). STEAM INTEGRATION IN CHEMISTRY LEARNING FOR DEVELOPING 21ST CENTURY SKILLS. *MIER Journail of Educational Studies, Trends & Practices*, *7*(2), 184–194.

Rileys, S. (n.d.). *What is STEAM Education?* Retrieved February 17, 2021, from https://artsintegration.com/what-is-steam-education-in-k-12-schools/

Rozi, F., & Hanum, C. B. (2019). Pembelajaran Ipa Sd Berbasis Hots (Higher Order Thinking Skills) Menjawab Tuntutan Pembelajaran Di Abad 21. *Seminar Nasional Pendidikan Dasar Universitas Negeri Medan*, *1*(4), 246–311.

Ruseffendi, H. E. . (2006). *Perkembangan Pendidikaan Matematika*. 1–40.

Saddhono, K., Sueca, I. N., Sentana, G. D. D., Santosa, W. H., & Rachman, R. S. (2020). The application of STEAM (Science, Technology, Engineering, Arts, and Mathematics)-based Learning in Elementary School Surakarta District. *Journal of Physics: Conference Series*, *1573*(1), 0–7. https://doi.org/10.1088/1742-6596/1573/1/012003

Sani, R. A. (2019). *Pembelajaran Berbasis HOTS*. https://books.google.co.id/books?hl=en&lr=&id=GrfrDwAAQBAJ&oi=fnd&pg=PR5&dq=kreativitas+higher+order+thinking+skills&ots=kHvQOT4xx6&sig=2KSVdJJqH9rL5wIWwqXJuEzdc20&redir_esc=y#v=onepage&q=kreativitas higher order thinking skills&f=false

Sari, M. (2020). Penelitian Kepustakaan (Library Research) dalam Penelitian Pendidikan IPA. *Natural Science: Jurnal Penelitian Bidang IPA Dan Pendidikan IPA*, *6*(1), 41–53. https://ejournal.uinib.ac.id/jurnal/index.php/naturalscience/article/view/1555/1159

Starzinski, A. (2017). *Foundational Elements Of A Steam Learning Model For Elementary School*. 146.

Sukardjono. (2000). Hakikat dan Sejarah Matematika. *Filsafat Dan Sejarah Matematika*, 1–44.

Supardi. (2013). *Aplikasi Statistika dalam Penelitian : Konsep Statistika yang Lebih Komprehensif*.

Suprapto, N., Sunarti, T., Suliyanah, Wulandari, D., Hidayaatullaah, H. N., Adam, A. S., & Mubarok, H. (2020). A systematic review of photovoice as participatory action research strategies. *International Journal of Evaluation and Research in Education*, *9*(3), 675–683. https://doi.org/10.11591/ijere.v9i3.20581

Yakman, G. (2008). *STEAM EDUCATION: AN OVERVIEW OF CREATING A MODEL OF INTEGRATIVE EDUCATION*.

Yakman, G., & Lee, H. (2012). *Exploring the Exemplary STEAM Education in the U.S. as a Practical Educational Framework for Korea*.

Yoon, M. B., & Baek, J. E. (2018). Development and application of the STEAM education program based on the soccer robot for elementary students. *International Journal of Mobile and Blended Learning*, *10*(3), 11–22. https://doi.org/10.4018/IJMBL.2018070102

Young, V. M., House, A., Wang, H., Singleton, C., & Klopfenstein, K. (2011). Inclusive STEM Schools : Early Promise in Texas and Unanswered Questions. *The Committee on Highly Successful Schools or Programs for K-12 STEM Education*, 1–34. http://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse_072639.pdf

Zed, M. (2014). *Metode Penelitian Kepustakaan*.