

**INFUSI *GREEN SKILLS* KE DALAM KURIKULUM
PENGOLAHAN HASIL PERTANIAN
DI SEKOLAH MENENGAH KEJURUAN**

DISERTASI

Diajukan untuk Memenuhi Sebagian dari Syarat Memperoleh Gelar Doktor
Program Studi Pengembangan Kurikulum



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**PROGRAM STUDI PENGEMBANGAN KURIKULUM
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UNIVERSITAS PENDIDIKAN INDONESIA
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Sebuah disertasi yang diajukan untuk memenuhi sebagai syarat memperoleh gelar
Doktor pada Sekolah Pascasarjana

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HASIL PERTANIAN DI SEKOLAH MENENGAH KEJURUAN

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PERNYATAAN

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Bandung, Agustus 2021
Yang membuat pernyataan

Mustika Nuramalia Handayani

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MUSTIKA NURAMALIA HANDAYANI

**INFUSI *GREEN SKILLS* KE DALAM KURIKULUM PENGOLAHAN
HASIL PERTANIAN DI SEKOLAH MENENGAH KEJURUAN**

ABSTRAK

Salah satu prioritas UNESCO terkait pendidikan kejuruan adalah memfasilitasi transisi menuju ekonomi hijau melalui pengembangan *green skills* untuk mendukung tujuan pembangunan berkelanjutan. Studi mengenai pendidikan untuk pembangunan berkelanjutan termasuk integrasi *green skills* dalam kurikulum pendidikan kejuruan di Indonesia belum banyak dikaji khususnya pada kurikulum SMK Agribisnis Pengolahan Hasil Pertanian (APHP). Penelitian ini bertujuan untuk menganalisis kondisi faktual *green skills* siswa, menganalisis kompetensi *green skills* yang perlu dikembangkan pada siswa, menyusun desain kurikulum produksi pengolahan pertanian SMK yang menginfusikan *green skills*, mengevaluasi kelayakan kurikulum, menganalisis keefektifan desain kurikulum dan diseminasi kurikulum yang dikembangkan. Penelitian ini merupakan penelitian pengembangan *Design and Development Research*. Hasil penelitian menunjukkan bahwa siswa SMK APHP belum memiliki kompetensi *green skills* yang sesuai dengan kebutuhan industri dan dunia kerja. Kompetensi *green skills* yang perlu dikembangkan menurut praktisi industri dan guru SMK adalah memiliki kesadaran lingkungan, mampu mengidentifikasi strategi inovatif untuk mendukung pertumbuhan hijau, mampu berkomunikasi mengenai pengolahan pangan berkelanjutan, mampu beradaptasi dalam pekerjaan ramah lingkungan, mampu mengelola limbah industri pengolahan hasil pertanian. Infusi *green skills* ke dalam kurikulum pada penelitian ini mengacu pada *infusion model* dimana kompetensi *green skills* ditanamkan ke dalam setiap kompetensi dasar yang ada dalam kurikulum SMK yang berlaku saat ini. Penilaian kelayakan desain kurikulum melibatkan pakar kurikulum, pakar teknologi pengolahan pangan, pakar pendidikan untuk pembangunan berkelanjutan, praktisi industri pangan dan guru SMK APHP. Hasil uji coba implementasi desain kurikulum menunjukkan bahwa infusi *green skills* ke dalam kurikulum pengolahan hasil pertanian efektif dalam meningkatkan kompetensi siswa. Diseminasi kurikulum dilakukan melalui sosialisasi virtual kepada guru-guru SMK, juga digital *flipbook* yang dapat diakses publik.

Kata kunci: *infusi kurikulum, pengembangan green skills, sekolah menengah kejuruan*

MUSTIKA NURAMALIA HANDAYANI

***GREEN SKILLS INFUSION INTO CURRICULUM OF AGRICULTURAL
PRODUCT PROCESSING IN VOCATIONAL HIGH SCHOOL***

ABSTRACT

One of UNESCO's priorities regarding vocational education is facilitating green economy transition through green skills development to achieve sustainable development goals. However, studies on education for sustainable development including green skills integration in Indonesia vocational curriculum have not been studied, especially in vocational high school of agricultural food processing technology. This study aimed to analyze the factual conditions of students' green skills, analyze green skills competencies that need to be developed in students, design a vocational curriculum infuses green skills, evaluate feasibility of the curriculum, evaluate its effectiveness and dissemination of the developed curriculum. This research was a design and development research. The results showed that students in vocational high school of agricultural food processing technology did not have green skills competencies. According to industry and teachers, green skills competencies that need to be developed are environmental awareness, being able to identify innovative strategies to support green growth, able to communicate about sustainable food processing, able to adapt in green jobs, able to manage food industrial waste. Green skills infusion into curriculum in this study referred to the infusion model where green skills competencies were infused into each of the basic competencies in existing vocational curriculum. The assessment of curriculum design feasibility involved curriculum experts, food processing technology experts, education experts for sustainable development, food industry and vocational teachers. The results of pilot implementation of curriculum design showed its effectiveness in improving students' green skills. Curriculum dissemination was carried out through virtual meeting to vocational teachers, as well as through online flipbook.

Keywords: curriculum infusion, green skills development, vocational school

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DAFTAR PUSTAKA

- Acedo, C. (2014). *Skills for Inclusive and Sustainable Development: Perspectives from the Asia Pacific region and beyond*. Geneva: Springer. <http://doi.org/10.1007/s11125-014-9314-1>
- Adenso-Díaz, B., & Mena, C. (2013). Food industry waste management. *Sustainable Food Processing*, 435-462
- Agustina, N., & Jaedun, M. P. (2017). Kesiapan Guru Jurusan Teknik Gambar Bangunan SMK Negeri 1 Pajangan dalam Implementasi Kurikulum 2013. *E-Journal Pend. Teknik Sipil Dan Perencanaan*, 5(7), 74.
- Alawiyah, F. (2013). Peran Guru dalam Kurikulum 2013. *Jurnal Aspirasi*, 4(1), 65-74.
- Alberty, H. B., & Alberty, E. J. (1962). Utilizing Curriculum Sources in Education. *What Are the Sources of the Curriculum*, 34.
- Alexander, G. (1991). The advantages of infusing microcomputer curricula. *Education*, 112(1), 67-71.
- Ali, M. (2017). *Curriculum Development for Sustainability Education*. Bandung: UPI Press.
- Ali, M. (2019). *Research Methods in Sustainability Education*. Bandung: UPI Press
- Ali & Susilana. (2020). *Perancangan Kurikulum Mikro: Profesionalisme Guru untuk Pendidikan Berkualitas (Micro Curriculum Design: Teachers' Professionalism for Quality Education)*. Jakarta: Raja Grafindo
- Alizamar, A. (2015). *Pengembangan Karakter-Cerdas Mahasiswa melalui Infusi dalam Pembelajaran*. International Counseling Seminar
- Almu'tasim, A. (2018). Menakar Model Pengembangan Kurikulum Di Madrasah. *At-Tuhfah*, 7(2), 1-19.
- Alwi, A., Kamis, A., Affandi, H. M., Yunus, F. A. N., & Rus, R. C. (2017). Green Skills: Innovation In The Subject Of Design And Technology (D&T). In *Proceeding of the 3rd International Conference on Education* (Vol. 3, pp. 145-154).
- Amaranti, R., Irianto, D., & Govindaraju, R. (2017). Green Manufacturing Kajian Literatur. In *Seminar dan Konferensi Nasional IDEC* (pp. 171-181).
- Ana, A., & Rohaeni, N. (2013). Pengembangan Tugas Akhir melalui Project Based Learning Model untuk Meningkatkan Generic Green Skills Siswa. *Jurnal Pendidikan Teknologi dan Kejuruan*, 21(3).
- Ana, A., Subekti, S., & Hamidah, S. (2015). The Patisserie Project Based Learning Model to Enhance Vocational Students' Generic Green Skills. In *3rd UPI International Conference on Technical and Vocational Education and Training*. Atlantis Press.
- Anang, D. M. (2014). Meat Processing. Edited by Brijesh K. Tiwari Department of Food Biosciences, Teagasc Food Research Centre, Dublin, Ireland, 169.

- Andriani, L. (2014). Pelaksanaan Pengembangan Kurikulum Produktif Pendidikan Vokasional berdasarkan Sistem Manajemen Mutu ISO 9001: 2008. *Jurnal Kebijakan dan Pengembangan Pendidikan*, 2(1)
- Anni, C.T. (2004). *Psikologi Belajar*. Semarang: UPT UNNES Press
- Anuj, K.C., Rundravaram, R., Narasu, M.L., Rao, L.R., Ravindra, P. (2007). Economic and enviromental impact of bioetanol production technology. *Biothechnol. Mol. Biol.*, Rev. 2(1), 14-32.
- Apino, E., & Retnawati, H. (2018). Creative problem solving for improving students' Higher Order Thinking Skills (HOTS) and characters. E. Retnowati, A. Ghufron, Marzuki, Kasiyan, A. Pierawan, & Ashadi (Eds.). Character Education for 21st Century Global Citizens. *Proceedings of the 2nd International Conference on Teacher Education and Professional Development (INCOTEPE)*, 249-256. Routledge.
- Aprilia, W. (2020). Organisasi dan Desain Pengembangan Kurikulum. *ISLAMIKA*, 2(2), 208-226.
- Arifin, Z., Ulfa, S., & Praherdhiono, H. (2018). Pengembangan Kurikulum Muatan Lokal Karawitan Sebagai Upaya Mengkonstruksi Pengetahuan Dan Pelestarian Budaya Jawa Di Jenjang SMA. *Jurnal Kajian Teknologi Pendidikan*, 1(2), 123-132.
- Arum, R., & Shavit, Y. (1995). Secondary vocational education and the transition from school to work. *Sociology of Education*, 187-204
- Asia Business Council (2009). Addressing Asia's new green jobs challenge. Hong Kong: Asia Business Council
- Asih, N. F., & Ellianawati, E. (2019). The Enhancement of Verbal Communication Skills for Vocational Students through Project-Based Learning Physics. *Jurnal Penelitian & Pengembangan Pendidikan Fisika*, 5(1), 21-28.
- Asnawi, R., & Djatmiko, I. W. (2015). A Challenge of Vocational Education for Preparing Green Employment. In *3rd UPI International Conference on Technical and Vocational Education and Training*. Atlantis Press).
- Baker, M. A., Robinson, J. S., & Kolb, D. A. (2012). Aligning Kolb's Experiential Learning Theory with a Comprehensive Agricultural Education Model. *Journal of Agricultural Education*, 53(4).
- Belawati, dkk (2020). Infusi Inti Dasar Capaian Pendidikan (IDCP) dalam Berbagai Rentang Pemikiran. Direktorat Jenderal Pendidikan Tinggi Kementerian Pendidikan dan Kebudayaan.
- Bertrand, J. T., Brown, J. E., & Ward, V. M. (1992). Techniques for analyzing focus group data. *Evaluation review*, 16(2), 198-209.
- Besong, F. A. (2017). *Infusing sustainability in higher education in Ireland: the green curriculum model (GCM) and the dispositions, abilities and behaviours (DAB) competency framework* (Doctoral dissertation, Dublin City University).

- Biasutti, M., De Baz, T., & Alshawa, H. (2016). Assessing the infusion of sustainability principles into university curricula. *Journal of Teacher Education for Sustainability*, 18(2), 21-40.
- Black, D. E. (1981). Infusion: National Project on Career Education. *Handbook on Career Education Infusion*. Washington: Department of Education, Washington, DC. Retrieved from <http://files.eric.ed.gov/fulltext/ED250895.pdf>.
- Boateng, W. (2012). Evaluating the efficacy of focus group discussion (FGD) in qualitative social research. *International Journal of Business and Social Science*, 3(7).
- Boone, H. N., & Boone, D. A. (2012). Analyzing likert data. *Journal of extension*, 50(2), 1-5.
- Boye, J. I., & Arcand, Y. (2013). Current trends in green technologies in food production and processing. *Food Engineering Reviews*, 5(1), 1-17
- Bucur, M., & Petra, C. (2011). Why is communication so special for sustainable development?. *Scientific Bulletin of the "Petru Maior" University of Targu Mures*, 8(1), 48.
- Buntat, Y., Othman, M., Saud, M. S., Mustaffa, M. S., & Mansor, S. M. S. S. (2013). Integration of Green Soft Skills in Malaysian Technical Education. *Advanced Science Letters*, 19(12), 3718-3720.
- Burghardt, M. D., Lauckhardt, J., Kennedy, M., Hecht, D., & McHugh, L. (2015). The effects of a mathematics Infusion curriculum on middle school student mathematics achievement. *School Science and Mathematics*, 115(5), 204-215.
- Burns, H. (2011). Teaching for transformation: (Re) Designing sustainability courses based on ecological principles. *Journal of Sustainability Education*, Vol. 2.
- Burstein, N., Cabello, B., & Hamann, J. (1993). Teacher preparation for culturally diverse urban students: Infusing competencies across the curriculum. *Teacher Education and Special Education*, 16(1), 1-13.
- Campesina, L.V. (2015). Food sovereignty: five steps to cool the planet and feed its people. <https://www.grain.org/en/article/5102-food-sovereignty-five-steps-to-cool-the-planet-and-feed-its-people>. Diakses 20 April 2020.
- Cann, M. C., & Dickneider, T. A. (2004). Infusing the chemistry curriculum with green chemistry using real-world examples, web modules, and atom economy in organic chemistry courses. *Journal of chemical education*, 81(7), 977.
- Caspi, J. (2008). Building a sibling aggression treatment model: Design and development research in action. *Research on Social Work Practice*, 18(6), 575-585
- CEDEFOP (European Centre for the Development of Vocational Training). (2012). *Green skills and environmental awareness in vocational education and training: Synthesis report*, Publications office of the European Union)
- CEDEFOP. (2014). *Green Skills and Jobs-Highlights*. OECD.

- Chen, K. C., Vanasupa, L., London, B., & Savage, R. N. (2006). Infusing the materials engineering curriculum with sustainability principles. In *American Society for Engineering Education Annual Conference Proceedings*
- Chiang, C. L., & Lee, H. (2016). The effect of project-based learning on learning motivation and problem-solving ability of vocational high school students. *International Journal of Information and Education Technology*, 6(9), 709-712.
- Chiou, R. Y., Belu, R., & Tseng, T. L. (2013), Infusion of green energy manufacturing into engineering and technology curricula. In *ASME International Mechanical Engineering Congress and Exposition* (Vol. 56277, p. V005T05A018). American Society of Mechanical Engineers
- Cleary, J., & Kopicki, A. (2009). Preparing the workforce for a “green jobs” economy. *Rutgers, NJ: John J. Heldrich Center for Workforce Development*
- Council of Australian Governments (COAG). (2009). Green Skills Agreement: an agreement between the Australian Government and the state and territory governments.
- Cohen, L., Manion, L., & Morrison, K. (2013). *Research methods in education*. routledge.
- Cole, et. al. (2014). *Towards a Zero Waste Strategy for an English Local Authority*. Resources, Conservation, and Recycling 89, 64-75.
- Cook, B. G. (2002). Inclusive attitudes, strengths, and weaknesses of pre-service general educators enrolled in a curriculum infusion teacher preparation program. *Teacher Education and Special Education*, 25(3), 262-277.
- Creswell, J.W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. California: Sage Publication, Inc
- David, J.L. (2008). What Research Says About/Project-Based Learning. *Educational Leadership Teaching Students to Think*, 65, 5, 80-82
- Defra (2007). Report of the Food Industry Sustainability Strategy Champions’ Group on Waste, Department for Environment, Food and Rural Affairs, May 2007, DTI, London.
- Direktorat Pembinaan, SMK (2016). Revitalisasi pendidikan vokasi. Kementerian Pendidikan dan Kebudayaan
- Dharmawan, A. H., Sudaryanti, D. A., Prameswari, A. A., Amalia, R., & Dermawan, A. (2018). *Pengembangan bioenergi di Indonesia: Peluang dan tantangan kebijakan industri biodiesel* (Vol. 242). CIFOR.
- Djamarah, S.B. (2002). *Rahasia Sukses Belajar*. Jakarta: Rineka Cipta
- Dobbs, R. Oppenheim, J., Thompson, F., Brinkman, M. and Zornes, M. (2011) Resources Revolution: Meeting the world’s energy, materials, food, and water needs, *McKinsey Global Institute*, McKinsey & Company.
- Dukic, V.N. and Okanavic, D.G. (2011) Application of best available techniques for environmental prevention in meat processing. *Food and Feed Research*, 38: 87 –93.

- Dwiyanti, V., Ana, A., & Widianingsih, I. (2018). Industrial education impact on vocational student social skills. *Innovation of Vocational Technology Education*, 14(2), 98-103
- Efstratia, D. (2014). Experiential education through project based learning. *Procedia-social and behavioral sciences*, 152, 1256-1260.
- Ellis, T. J., & Levy, Y. (2010). A guide for novice researchers: Design and development research methods. In *Proceedings of Informing Science & IT Education Conference (InSITE)* (Vol. 10, pp. 107-118).
- EU. Revised waste framework directive, 2008/98/EC; 2008, diakses dari <http://ec.europa.eu/environment/waste/framework/>
- Evans-Klock, C., Poschen, P., Sanchez, A. B., & Hofmann, C. (2009). ILO green jobs initiative and implications for skills development. *Cedefop, Future skills needs for the green economy. Luxemburg: Publications Office of the European Union*, 8-17)
- Evans, N. S., Stevenson, R. B., Lasen, M., Ferreira, J. A., & Davis, J. (2017). Approaches to embedding sustainability in teacher education: A synthesis of the literature. *Teaching and Teacher Education*, 63, 405–417. <http://doi.org/10.1016/j.tate.2017.01.013>
- Fajra, M., & Novalinda, R. (2020). Project Based Learning: Innovation to Improve The Suitability of Productive Competencies in Vocational High Schools with The Needs of The World of Work. *International Journal of Multi Science*, 1(08), 1-11.
- FAO (2006). *Livestock's long shadow: environmental issues and options*. UN Food and Agriculture Organization, Rome.
- Fajri, K. N. (2019). Proses Pengembangan Kurikulum. *ISLAMIKA*, 1(2), 35-48
- Fellows, P. (2000). *Food Processing Technology, Principles and Practice*, 2nd Edition, Woodhead Publishing Limited, Cambridge, UK.
- Fiala, N. (2008). Meeting the demand: An estimation of potential future greenhouse gas emissions from meat production. *Ecological Economics*, 67, 412–419.
- Flores, J. G., & Alonso, C. G. (1995). Using focus groups in educational research: Exploring teachers' perspectives on educational change. *Evaluation Review*, 19(1), 84–101. <https://doi.org/10.1177/0193841X9501900104>
- Fogarty, R. J., & Pete, B. M. (2009). *How to integrate the curricula*. Corwin Press.
- Gallehr, S., Lambing, J., Merkle, G., Schuhmacher, H., & Rao, N. (2009). A new industrial revolution: eco-innovation and the Humboldtian approach. *European Centre for the Development of Vocational Training–Cedefop (Hrsg.)(2009): Future skill needs for the green economy*, 82-87.)
- Garnett, T. (2007). *Meat and dairy production and consumption – exploring the livestock sector's contribution to the UK's greenhouse gas emissions and assessing what less greenhouse gas intensive system of production and consumption might looklike*. UK Food Climate Research Network, Centre for Environmental Strategy, University of Surrey.

- Garrett, S. and Feenstra, G. (1999). Growing a Community Food System. Community Ventures: Partnerships in Education and Research Circular Series. Western Regional Extension Publication in Cooperation with the U.S. Department of Agriculture. Washington State University.
- Giroto, F., Alibardi, L., & Cossu, R. (2015). Food waste generation and industrial uses: a review. *Waste management*, 45, 32-41
- Gizir, S. (2007). Focus groups in educational studies. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 3(1).
- Green, R. K., Dezendorf, P. K., Lyman, S. B., & Lyman, S. R. (2005). Infusing gerontological content into curricula: Effective change strategies. *Educational Gerontology*, 31(2), 103-121.
- Green Growth Institute, (2015). Mewujudkan pertumbuhan ekonomi hijau untuk Indonesia yang sejahtera: Sebuah peta jalan untuk kebijakan, perencanaan dan investasi.
- Gunawan, J., & Fraser, K. (2013). Developing 'green' labour in Indonesia: What is the current state of play?. *Labour and Management in Development Journal*, 14(1), 1-23.)
- Gustavsson, J., Cederberg, C., Sonesson, U., van Otterdijk, R. and Meybeck, A., (2011) Global food losses and food waste. http://www.fao.org/fileadmin/user_upload/ags/publications/GFL_web.pdf.
- Hamdouch, A., Depret, M. H. (2010). Policy Integration Strategy of the 'Green Economy': Foundations and Implementation Patterns. *Journal of Environmental Planning and Management*, 53(4), 473-490).
- Hamid, H. (2008). *Evaluasi kurikulum*. Bandung: PT Remaja Rosda Karya
- Hana, O. (2019). Penerapan Industri Hijau Terus Dipacu. <https://ekonomi.bisnis.com/read/20191216/257/1181837/penerapan-industri-hijau-terus-dipacu>. Diakses 24 Desember 2019.
- Handler, B. (2010). Teacher as curriculum leader: A consideration of the appropriateness of that role assignment to classroom-based practitioners. *International Journal of Teacher Leadership*, 3(3), 32-42.
- Harun, R.N.S, J.L. Fook Lee, A. Omar, M.H. Hanif, L. M. Pillay Arumugam (2018) Developing And Validating A Curriculum Framework For Preparing Quality Teachers For The Future, *INTED 2018 Proceedings*, Pp. 7845-7853.
- Harjanto, et. al., (2020). Learning evaluation using work preparation in turning machine process lessons. *Journal of Physics: Conference Series*, 1446 012023
- Harjanto, C. T., & Surono, S. (2020). Faktor-Faktor Yang Mempengaruhi Kompetensi Pemesinan Siswa Pada Pendidikan Kejuruan. *Jurnal Pendidikan Teknologi dan Kejuruan*, 17(2), 177-187.
- Haynes, D. (1999). A theoretical integrative framework for teaching professional social work values. *Journal of Social Work Education*, 35(1), 39-50.
- Heong, Y.M., Sern, L.C., Kiong, T.T., & Mohamad, M.M. (2016). *The Role of Higher Order Thinking Skills in Green Development*. MATEC Web of

- Conferences **70**, 05001 DOI: 10.1051/mateconf/20167005001.
- Hermann, T. M., and Pentek, T. (2015). Design principles for industrie 4.0 scenarios: *a literature review*, 1, 3-15. <http://dx.doi.org/10.13140/RG.2.2.29269.22248>
- Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science research in information systems. *Management Information Systems Quarterly*, 28(1), 75-105
- Howes, S. and Wyrwoll, P. (2012), 'Asia's Environmental Problems: Common Features, and Possible Solutions', in Zhang, Y., F. Kimura and S. Oum (eds.), *Moving Toward a New Development Model for East Asia- The Role of Domestic Policy and Regional Cooperation*. ERIA Research Project Report 2011-10, Jakarta: ERIA. pp.55-120
- Hunkins, F. P., & Ornstein, A. C. (2018). *Curriculum: Foundations, principles, and issues*. Pearson Education
- Ibrahim. (1988). *Inovasi Pendidikan*. Jakarta: Proyek Pengembangan Lembaga Pendidikan Tenaga Kependidikan, Ditjen Dikti Depdikbud.
- Ibrahim, Z., Lai, C. S., Zaime, A. F., Lee, M. F., & Othman, N. M. (2020). Green skills in knowledge and attitude dimensions from the industrial perspective. In *IOP Conference Series: Materials Science and Engineering* (Vol. 917, No. 1, p. 012025). IOP Publishing.
- Imaduddin, M. (2019). Infusing Islamic Values and Sustainable Development Into Chemistry for Pre-Service Islamic Elementary School Teachers. *Jurnal Pendidikan Sains (Jps)*, 7(1), 47.
- Jasmi, N., & Kamis, A. (2019). Importance of Green Technology, Education for Sustainable Development (ESD) and Environmental Education for Students and Society. *Journal of Engineering Research and Application*, 9(2), 56-59.
- Johnson, R. B., & Christensen, L. (2014). *Educational research: Quantitative, qualitative, and mixed approaches*. SAGE Publications, Incorporated
- Kamis, A., Mustapha, R., Wahab, N. A., & Ismail, B. L. H. (2016). Green Skills as an added-value element in producing competent students. *International Journal of Engineering Research and Applications*, 6(11), 12-21
- Kamis, A., Alwi, A., & Yunus, F. A. (2017). Integration of Green Skills in Sustainable Development in Technical And Vocational Education. *International Journal of Engineering Research and Applications (IJERA)*, 7(12), 08-12. <http://doi.org/10.9790/9622-0712030812>
- Kamis, A., Rus, R.C., Rahim, M.B., Yunus, F.A.N., Zakaria, N., Affandi, H.M., (2017). Exploring Green Skills: A Study on the Implementation of Green Skills Among Secondary School Students. *International Journal of Academic Research in Business and Social Sciences vol.7 (12)*. pp.327-345
- Kamis, A., Ismail, B. L. H., & Alwi, A. (2018). Green technology in development country, community awareness and the implementation in

- TVET. *Comparative Issues And Research Concerns In The National Landscapes Of Vocational Education & Training*, 126.
- Karpudewan, M., Ismail, Z., & Mohamed, N. (2009). The integration of green chemistry experiments with sustainable development concepts in pre-service teachers' curriculum: Experiences from Malaysia. *International Journal of Sustainability in Higher Education*, 10(2), 118-135.
- Karl, T. R., & Trenberth, K. E. (2003). Modern global climate change. *science*, 302(5651), 1719-1723.
- Kasztelan, A. (2017). Green growth, green economy and sustainable development: terminological and relational discourse. *Prague Economic Papers*, 26(4), 487-499
- Kostoulas-Makrakis, N. (2010). Developing and applying a critical and transformative model to address ESD in teacher education. *Journal of Teacher Education for Sustainability*, 12(2)
- Kelley, K., Clark, B., Brown, V., & Sitzia, J. (2003). Good practice in the conduct and reporting of survey research. *International Journal for Quality in health care*, 15(3), 261-266.
- Kementerian Lingkungan Hidup (2014). *Prakarsa Strategis Pengembangan Konsep Green Economy*.
- Kholis, M. N., & Sari, M. (2018). Potensi Biomassa Limbah Pertanian Dalam Produksi Bioetanol. In *Conference on Innovation and Application of Science and Technology (CIASTECH)* (Vol. 1, No. 1, pp. 453-458)
- Kim, M.H., Song, Y.E., Song, H.B., Kim, J.W., Hwang, S.J. (2011) Evaluation of food waste disposal options by LCC analysis from the perspective of global warming: Jungnang case, South Korea. *Waste Management*, 31, 2112–2120.
- Kmj. (2019). Menperin Dorong Sektor Manufaktur Terapkan Industri Hijau. <https://economy.okezone.com/read/2019/02/25/320/2022446/menperin-dorong-sektor-manufaktur-terapkan-industri-hijau>. Diakses 24 Desember 2019.
- Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. FT press.
- Kokotsaki, D., Menzies, V., & Wiggins, A. (2016). Project-based learning: A review of the literature. *Improving schools*, 19(3), 267-277.
- Krebbs, M. J. (2000). Values infusion: A systematic response to Catholic identity. *Journal of Catholic Education*, 3(3), 306-314.
- Kristiyanto, B. N. A. (2018). Upaya Peningkatan Kompetensi Siswa Melalui Kerjasama Yang Efektif SMK dengan Dunia Usaha. *Prosiding Konferensi Nasional Ke- 7 Appptma*. 124-134
- Kroyer, G. T. (1995). Impact of food processing on the environment—an overview. *LWT-Food Science and Technology*, 28(6), 547-552
- Kumar, V., Haapala, K. R., Rivera, J. L., Hutchins, M. J., Endres, W. J., Gershenson, J. K., ... & Sutherland, J. W. (2005). Infusing sustainability

- principles into manufacturing/mechanical engineering curricula. *Journal of manufacturing systems*, 24(3), 215-225.
- Latan, H. (2014). Aplikasi Analisis Data Statistik Untuk Ilmu Sosial Sains dengan IBM SPSS. Bandung: Alfabeta.
- Lebersorger, S. and Schneider, F. (2011) Discussion on the methodology for determining food waste in household waste composition studies. *Waste Management*, **31**, 1924–1933.
- Leiserowitz, A. (2007). International public opinion, perception, and understanding of global climate change. *Human development report, 2008*, 1-40.
- Lorie, S. B., Kritikos, E.P., Messerer, J., & LeDosquet, P. (2007). Curriculum Infusion Of Real Life Issues. Northeastern Illinois University
- Lunenburg, F. C. (2011). Key components of a curriculum plan: Objectives, content, and learning experiences. *Schooling*, 2(1), 1-4
- Loewenstein, S. (1979). Integrating content on feminism and racism into the social work curriculum. *Journal of Education for Social Work*. 12 (Winter), 92–97.
- Mabruro., Aminah, A.N. (2019). Bogasari Raih Penghargaan Industri Hijau Kemenperin. <https://republika.co.id/berita/q2ncxi384/bogasari-raih-penghargaan-industri-hijau-kemenperin>. Diakses 24 Desember 2019.
- Maclean, R., Jagannathan, S., & Panth, B. (2017). *Education and Skills for Inclusive Growth, Green Jobs and the Greening of Economies in Asia—Case Study Summaries of India, Indonesia, Sri Lanka and VietNam*. Asian Development Bank
- Mager, R. F. (1984). *Preparing Instructional Objectives*, 2nd ed., Belmont, CA: Fearon.
- Marsh, K. and Bugusu, B. (2007) Food packaging—roles, materials, and environmental issues. *Journal of Food Science*, **72**, R39–R55.
- Majumdar, S. (2009). Major challenges in integrating sustainable development in TVET. In *International Conference: Reorienting TVET Policy Towards Education for Sustainable Development, Berlin, Germany*. Retrieved from http://www.unevoc.unesco.org/fileadmin/user_upload/docs/402-0002-2010_lowquality.pdf.
- Majumdar, S. (2011). Developing a greening TVET framework. In *UNESCO/UNEVOC, CSP, GIZ: Transforming TVET for Meeting the Challenges of the Green Economy. Report of the International Consultation Meeting* (pp. 27-30).
- Marcinkowski, T. J., Volk, T. L., & Hungerford, H. R. (1990). *An environmental education approach to the training of middle level teachers: A prototype programme* (Vol. 178). Paris: Unesco.
- Mawardi, I. (2019). Evaluasi penerapan pembelajaran sistem blok di jurusan teknik pemesinan SMK Muhammadiyah Prambanan. *Jurnal Pendidikan Vokasional Teknik Mesin*, 7(2), 127-134.

- McBrien, J. L., & Brandt, R. S. (1997). *The language of learning: A guide to education terms*. Alexandria, VA: Association for Supervision and Curriculum Development
- McGibbon, C., & Van Belle, J. P. (2015). Integrating environmental sustainability issues into the curriculum through problem-based and project-based learning: a case study at the University of Cape Town. *Current Opinion in Environmental Sustainability*, 16, 81-88.
- Munadi, S., Widarto, Yuniarti, N., Jerusalem, M. A., Hermansyah, Rahmawati, F. (2018). *Employability Skills Lulusan SMK dan Relevansinya Terhadap Kebutuhan Dunia Kerja*. Direktorat Pembinaan SMK Dirjen Dikdasmen Kemendikbud.
- Miller, J. P., & Seller, W. (1985). *Curriculum Perspectives and Practice*. Longman Inc., 95 Church Street, White Plains, NY 10601
- Misbah, Z., Gulikers, J., Dharma, S., & Mulder, M. (2019). Evaluating competence-based vocational education in Indonesia. *Journal of Vocational Education & Training*, 1-29
- Mitchell, S. L., Darrow, S. A., Haggerty, M., Neill, T., Carvalho, A., & Uschold, C. (2012). Curriculum infusion as college student mental health promotion strategy. *Journal of College Student Psychotherapy*, 26(1), 22-38
- Mokhtar, S. B., Mokhtar, S. I., Mokhtar, S. L., & Mokhtar, S. W. (2018). Generic Green Skills Attributes And Delivery In Polytechnic Teaching And Learning Process. *International Journal Of Academic Research In Business And Social Sciences*, 8(12).
- Morgan, D. L., & Spanish, M. T. (1984). Focus groups: A new tool for qualitative research. *Qualitative sociology*, 7(3), 253-270.
- Mueller-Hanson, R.A., S.S. White, D.W. Dorsey, and E.D. Pulakos (2005). *Training Adaptable Leaders: Lessons from Research and Practice* (Alexandria, VA: US Army Research Institute, Report No. 1844).
- Murphy, F., McDonnell, K., & Fagan, C. C. (2014). Sustainability and environmental issues in food processing. *Clark, S., Jung, S., and Lamsal, B*, 207-232.
- Mustapha, R. B. (2015). Green and Sustainable Development for TVET in Asia. *INVOTEC (The International Journal of Technical and Vocational Education)*, 2(April 2016), 133–142. <http://doi.org/10.17509/invotec.v1i1i2.2147>
- Nasucha, J. A. (2021). Difusi dan Desiminasi Inovasi Pendidikan. *Intizam, Jurnal Manajemen Pendidikan Islam*, 4(2), 1-10.
- NCVER. (2013). *Glossary of VET*. Retrieved from <http://www.voced.edu.au/glossary-vet> .
- Nieveen, N., & Folmer, E. (2013). Formative evaluation in educational design research. *Design Research*, 153, 152-169.

- Nimawati, N., & Zaqiah, Q. Y. (2020). Proses Inovasi Kurikulum: Difusi dan Diseminasi Inovasi, Proses Keputusan Inovasi. *MISYKAT: Jurnal Ilmu-ilmu Al-Quran, Hadist, Syari'ah dan Tarbiyah*, 5(2), 81-98.
- Njezic, Z. and Okanovic, D.G. (2010) Environmental protection in meat industry. *Food and Feed Research*, 37, 31
- Noddings, N. (2007). Aims, goals, and objectives. *Encounters in Theory and History of Education*, 8.
- Nurjan, S. (2016). *Psikologi belajar*. Ponorogo: Wade Group.
- Nyumba, T., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and evolution*, 9(1), 20-32.
- O'Connell, D., E. McNeely, and D. T. Hall, "Unpacking personal adaptability at work," *Journal of Leadership and Organizational Studies*, 14 (2008), 248–259.
- Oktavia, M., Mardiah, E., Chaidir, Z. (2013). Produksi Bioetanol dari Tongkol Jagung dengan Metoda Simultan Sakarifikasi dan Fermentasi. *Jurnal Kimia*, 2(1), 107-112.
- Parfitt, J., Barthel, M. and Macnaughton, S. (2010) Food waste within food supply chains: quantification and potential for change to 2050, *Philosophical Transactions of the Royal Society*, **365**, 3065–3081.
- Renzulli, J. S., & Waicunas, N. (2016). An infusion-based approach to enriching the standards-driven curriculum. *Reflections on gifted education: Critical works by Joseph S. Renzulli and colleagues*, 411-428
- Ridwan. (2019). Penerapan Industri Hijau Mampu Hemat Energi sebesar Rp. 3,49 Triliun. <https://www.industry.co.id/read/58749/penerapan-industri-hijau-mampu-hemat-energi-sebesar-rp-349-triliun>. Diakses 24 Desember 2019.
- Roy, P., Orikasa, T., Nakamura, N., & Shiina, T. (2013). Environmental sustainability in food processing. *Sustainable Food Processing*, 39-62.
- OECD (2011). *Green Growth Strategy*, Paris: Organization for Economic Cooperation and Development;
- OECD. (2014). *Greener Skills and Jobs*. OECD).
- OECD (2019), *Tinjauan OECD Terhadap Kebijakan Pertumbuhan Hijau Indonesia 2019*, OECD Publishing, Paris/Ministry of Environment and Forestry, Indonesia, Jakarta, <https://doi.org/10.1787/5668086d-id>
- Oliva, P. F., & Gordon II, W. R. (1997). *Developing the curriculum*. Pearson Higher Ed.
- Palacin-Silva, M. V., Seffah, A., & Porras, J. (2018). Infusing sustainability into software engineering education: Lessons learned from capstone projects. *Journal of cleaner production*, 172, 4338-4347
- Pamungkas, S. F., Widiastuti, I., & Suharno. (2019). Kolb's experiential learning for vocational education in mechanical engineering: A review. In *AIP Conference Proceedings* (Vol. 2114, No. 1, p. 030023). AIP Publishing LLC.

- Pap N, Pongrácz E, Myllykoski LRK (2004) Waste minimization and utilization in the food industry: processing of arctic berries, and extraction of valuable compounds from juice – processing by-products. *Proceedings of the Waste Minimization and Resources Use Optimization Conference*, 10 June, University of Oulu, Finland. Oulu: Oulu University Press, pp. 159–168.
- Papargyropoulou, E., Lozano, R., Steinberger, J. K., Wright, N., & bin Ujang, Z. (2014). The food waste hierarchy as a framework for the management of food surplus and food waste. *Journal of cleaner production*, 76, 106-115.
- Pavlova, M. (2011). Economic competitiveness and ‘green skills’ development: Issues and concerns for research. Presented at the international conference, Green Korea 2011, Seoul.
- Pavlova, M., & Huang, C. L. (2013). Advancing employability and green skills development: Values education in TVET, the case of the People’s Republic of China. In *Skills Development for Inclusive and Sustainable Growth in Developing Asia-Pacific* (pp. 327-343). Springer, Dordrecht.
- Pavlova, M. (2017). Green skills as the agenda for the competence movement in vocational and professional education. In *Competence-based Vocational and Professional Education* (pp. 931-951). Springer, Cham).
- Pavlova, M. (2018). Fostering inclusive, sustainable economic growth and “green” skills development in learning cities through partnerships. *International Review of Education*, 64(3), 339-354).
- Pavlova, M., & Chen, C. S. (2019). Facilitating the development of students’ generic green skills in TVET: An ESD pedagogical model. *TVET@ Asia*, 12.
- Peppers, K., Tuunanen, T., Rothenberger, M. A., & Chatterjee, S. (2007). A design science research methodology for information systems research. *Journal of Management Information Systems*, 24(3), 45-77
- Percapita. (2010). *International approaches to green skills and sustainability, at green skills*. Material presentation at Green Skills Research Project ISC Conference.
- Percival, F., & Ellington, H. A. (1984). *Handbook of Educational Technology*. London.
- Powers, A. L. (2004). Teacher preparation for environmental education: Faculty perspectives on the infusion of environmental education into preservice methods courses. *Journal of Environmental Education*, 35, 3-18.
- Posner, G. J., & Rudnitsky, A. N. (1994). *Course design: A guide to curriculum development for teachers*. Longman, 10 Bank Street, White Plains, NY 10606-1951.
- Pulakos, E. D., Arad, S., Donovan, M. A., & Plamondon, K. E. (2000). Adaptability in the workplace: Development of a taxonomy of adaptive performance. *Journal of applied psychology*, 85(4), 612.
- Ployhart, R. E., & Bliese, P. D. (2006). Individual adaptability (I-ADAPT) theory: Conceptualizing the antecedents, consequences, and measurement of

- individual differences in adaptability. In *Understanding adaptability: A prerequisite for effective performance within complex environments*. Emerald Group Publishing Limited.
- Pratama, I. K., Toenlioe, A. J., & Ulfa, S. (2018). Pengembangan kurikulum muatan lokal tari boran sebagai langkah pelestarian kebudayaan Lamongan pada jenjang sekolah menengah pertama. *Jurnal Kajian Teknologi Pendidikan*, 1(2), 103-108.
- Pratiwi, P. K. (2015). Hubungan Penerapan Jam Pelajaran Sistem Blok Dan Minat Belajar dengan Prestasi Belajar Mata Pelajaran Teknik Kerja Bengkel Siswa Kelas X SMK N 1 Magelang
- Ramli, S., Rasul, M. S., & Affandi, H. M. (2018). Fourth Industrial Revolution (4IR). *International Journal Of Academic Research In Business And Social Sciences*, 8(9).
- Ramli, S., Rasul, M. R., & Mohd Affandi, H. (2019). The Importance of Green Skills-from the Perspective of TVET Lecturers and Teacher Trainees. *International Journal of Innovation, Creativity and Change*, 7(6), 186-199.
- Rahmawati, D. M., & Susiati, Y. T. (2015). Kesiapan Guru terhadap Pelaksanaan Kurikulum 2013 dalam Perspektif Guru Dan Siswa Program Studi Keahlian Tata Boga Sekolah Menengah Kejuruan Negeri 4 Yogyakarta. *Keluarga: Jurnal Ilmiah Pendidikan Kesejahteraan Keluarga*, 1(2).
- Raisanen, A., & Rakkolainen, M. (2009). Social and Communicational Skills in Upper Secondary Vocational Education and Training. *Online Submission*, 6(12), 36-45.
- Raymond, C. D. (1980). Career Education Infusion: A Review of Selected Curriculum Guides for the Middle School. Information Series No. 211.
- Ratu, Y. H. (2016). Efektifitas Penerapan Pembelajaran Dengan Sistem Blok Jurusan Teknik Mekanik Otomotif di SMK Muhammadiyah Prambanan. *E-Jurnal Pendidikan Teknik Otomotif-S1*, 15(2).
- Red Meat Abattoir Association – RMAA (2012). *By-products management – Red meat abattoirs*. 3rd Edition. Vereniging – Association. Available online: [http://rvav.co.za/wp-content/uploads/2012/06/WASTE-BY-PRODUCTS - Guideline-RMAA17-April-2012.pdf](http://rvav.co.za/wp-content/uploads/2012/06/WASTE-BY-PRODUCTS-Guideline-RMAA17-April-2012.pdf). Diakses 13 April 2020
- Richey, R. C., & Klein, J. D. (2007). *Design and development research*. Routledge. Taylor & Francis Group
- Richey, R. C., & Klein, J. D. (2014). Design and development research. In *Handbook of research on educational communications and technology* (pp. 141-150). Springer, New York, NY
- Rogers, E. M. (2010). *Diffusion of innovations*. New York: The Free Press.
- Rosentrater, K., & Kongar, E. (2008). Not just informative, but necessary: infusing green and sustainable topics into engineering and technology curricula.

- In *Proceedings of the 2008 ASEE Annual Conference & Exposition, paper AC2008-574*
- Roy P, Nei D, Orikasa T et al. (2009) A review of life cycle assessment (LCA) on some food products. *Journal of Food Engineering* **90**(1): 1–10.
- Rusdiana, A. (2014). *Konsep Inovasi Pendidikan*. Bandung: Pustaka Setia.
- Rusman. (2013). *Belajar dan Pembelajaran Berbasis Komputer*. Bandung : Alfabeta.
- Saepuloh, D. (2018). Kesiapan Guru Dalam Melaksanakan Pembelajaran Kurikulum 2013 (Studi Kasus Pada SMK Lab Business School Tangerang). *JIPIS*, 27(1), 33-50.
- Sahrir, M. S., Alias, N. A., Ismail, Z., & Osman, N. (2012). Employing Design and Development Research (DDR): Approaches in the Design and Development of Online Arabic Vocabulary Learning Games Prototype. *Turkish Online Journal of Educational Technology-TOJET*, 11(2), 108-119.
- Sanjaya, W. (2008). *Perencanaan dan Desain Sistem Pembelajaran*. Jakarta: Kencana.
- Saputra, D. I., Abdullah, A. G., & Hakim, D. L. (2013). Pengembangan model evaluasi pembelajaran project based learning berbasis logika fuzzy. *Innovation of Vocational Technology Education*, 9(1).
- Satbyul, K. E., Ho, K., Yeora, C. (2014). A New Approach to Measuring Green Growth: Application to the OECD and Korea. *Futures*, 63, 37–48. <https://doi.org/10.1016/j.futures.2014.08.002>.
- Scherer, L., Svenning, J. C., Huang, J., Seymour, C., Sandel, B., Mueller, N., & Siebert, S. (2020). Global priorities of environmental issues to combat food insecurity and biodiversity loss. *Science of the Total Environment*, 139096.
- Scriven, M. (1967). The Methodology of Evaluation. In Tyler, RW, Gagne, RM, Scriven, M.(ed.): Perspectives of Curriculum Evaluation. *^eds.): Book The Methodology of Evaluation. In Tyler, Rw, Gagne, Rm, Scriven, M.(Ed.): Perspectives of Curriculum Evaluation, Rand McNally, Chicago.*
- Seliger, S. T. G. (2016). Opportunities of Sustainable Manufacturing in Industry 4.0. *Procedia CIRP*, 40(1), 536-541. <http://dx.doi.org/10.1016/j.procir.2016.01.129>
- Sern, L. C., Zaime, A. F., & Foong, L. M. (2018). Green Skills for Green Industry: A Review of Literature. In *Journal of Physics: Conference Series* (Vol. 1019, No. 1, p. 012030). IOP Publishing
- Setiawan, A. (2017). Identification of Green Skills Acquisition in Indonesian TVET Curricula. *AIP Conference Proceedings* (pp. 1–7). <http://doi.org/10.1063/1.5003557>
- Setiawan, D. (2017). Pengembangan Model Kurikulum Berorientasi KKN di Fakultas Ilmu Sosial Universitas Negeri Medan. *Jupii: Jurnal Pendidikan Ilmu-Ilmu Sosial*, 9 (2), 112-120.

- Shanghi, S., & Sharma, J. (2014). Local development strategy, green jobs and skills in the Indian context. *Greener Skills and Jobs*, 179
- Shavit, Y., & Muller, W. (2000). Vocational secondary education. *European societies*, 2(1), 29-50.
- Sovacool, Benjamin K. (2014). Environmental Issues, Climate Changes, and Energy Security in Developing Asia. *ADB ECONOMICS WORKING PAPER SERIES*. No. 399, June 2014. Asian Development Bank
- Sterling, S. (2004). *Higher Education and the Challenge of Sustainability: Problematic, Promise and Practice*. London: Springer
- Stevenson, R. B., Lasen, M., Ferreira, J. A., & Davis, J. (2017). Approaches to embedding sustainability in teacher education: A synthesis of the literature. *Teaching and Teacher Education*, 63, 405-417.
- Sudira, P. (2012). *Filosofi dan teori pendidikan vokasi dan kejuruan*. Yogyakarta: UNY.
- Sudijono, A. (2012). Pengantar Evaluasi Pendidikan. Jakarta: rajawali Pers.
- Sukmadinata, N. S. (1997). *Pengembangan kurikulum: teori dan praktik*. PT Remaja Rosdakarya.
- Sunardi, S., Purnomo, P., & Sutadji, E. (2016). Pengembangan Employability Skills Siswa Smk Ditinjau Dari Implementasi Pendekatan Sainifik. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 1(7), 1391-1398.
- Strietska-Ilina, O.; Hofmann, C.; Haro, M.D.; Jeon, S. (2011). Skills for green jobs: a global view. Synthesis report based on 21 country studies (Geneva, ILO and Cedefop).
- Sudira, P. (2016). TVET abad XXI: Filosofi, teori, konsep, dan strategi pembelajaran vokasional. *Yogyakarta: UNY*.
- Suranto, S. (2019). Developing assessment instruments of communication skill s for vocational school students. E. Retnowati, A. Ghufon, Marzuki, Kasiyan, A. Pierawan, & Ashadi (Eds.). *Proceedings of the 2nd International Conference on Teacher Education and Professional Development (INCOTEPD)*, 597-605. Routledge.
- Surono, dan Harjanto, "Pengembangan paket latihan dan penilaian berbantuan komputer untuk pembelajaran alat ukur mekanik presisi," *Jurnal Dinamika Vokasional Teknik Mesin*, 4(2), 134-143, 2020.
- Taba, H. (1962). *Curriculum development: Theory and practice*. New York: Harcourt Brace Jovanovich.
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273-1296
- Tantri, I. D., & Aznam, N. (2019). The effect of science fair integrated with project-based learning o n creativity and communication skills. E. Retnowati, A. Ghufon, Marzuki, Kasiyan, A. Pierawan, & Ashadi (Eds.). *Proceedings of the*

- 2nd International Conference on Teacher Education and Professional Development (INCOTEPD)*, 473-480. Routledge
- Thirupathy, S., & Mustapha, R. (2020). Development of Secondary School Students' Green Skills for Sustainable Development. *International Journal Of Academic Research In Business And Social Sciences*, 10(3)
- Thompson, F. (1980). The ECOS proces for curriculum developmen. the ECOS Training Institute. Yorktown Heights, NewYork.
- Tissot, P. (2004). Terminology of vocational training policy. European Centre for the Development of Vocational Training. <http://www.biblioteca.porto.ucp.pt/docbweb/MULTIMEDIA/ASSOCIA/PDF/TERM.PDF>.
- Tiwari, B. K., Norton, T., & Holden, N. M. (Eds.). (2013). *Sustainable food processing*. John Wiley & Sons)
- Teixeira, J. A. (2018). Grand Challenges in Sustainable Food Processing. *Frontiers in Sustainable Food Systems*, 2, 19.
- Tyler, R. W. (1949). *Basic principles of curriculum and instruction*. University Chicago Press.
- UNCTAD. (2011). *UNCTAD Annual Report*. Retrieved from http://unctad.org/en/PublicationsLibrary/dom2012d1_en.pdf
- Undang-undang Republik Indonesia nomor 20 tahun 2003 tentang sistem pendidikan nasional. *Jakarta: Pemerintah Republik Indonesia*.
- UNEP (2011). *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*. [Retrieved 2015-11-03] Available at: http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf ;
- UNEP, ILO (2011). *Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World*, UNEP
- UNESCO. (2012) . ESD + TVET: Promoting Skills for Sustainable Development. <https://unesdoc.unesco.org/ark:/48223/pf0000216269>. Diakses 16 Maret 2018.
- UNESCO. (2012b). Shanghai Consensus. Recommendations of the third international congress on TVET: Transforming TVET: Building Skills for Work and Life. Shanghai, 14–16 May 2012. <http://unesdoc.unesco.org/images/0021/002176/217683e.pdf>
- UNESCO. (2016). The implications of greening industries on education systems and training policies in developing and advanced economies. *Global Education Monitoring Report*)
- United Nations Educational, Scientific and Cultural Organization (UNESCO). (2016). Strategy for technical and vocational education and training (TVET)(2016-2021)
- United Nations (2016) Sustainable development knowledge platform. [Online] Available at: <https://sustainabledevelopment.un.org/topics/education>

- University of Richmond. 2017. *Curriculum Infusion*.
- Unruh, G. G., & Unruh, A. (1984). *Curriculum development: Problems, processes, and progress*. McCutchan Pub Corp.
- Untari, R. S., Mukhadis, A., & Waras, W. (2015). Kesiapan Guru SMK Program Keahlian Teknik Komputer dan Informatika dalam Pelaksanaan Kurikulum 2013. *Teknologi Dan Kejuruan: Jurnal Teknologi, Kejuruan Dan Pengajarannya*, 38(1).
- Usman, H., & Darmono. (2016). Pendidikan Kejuruan Masa Depan. Jakarta: Pusat Kurikulum dan Perbukuan Balitbang Kemendikbud.
- Van Dam, K. (2013). Employee adaptability to change at work: A multidimensional, resource-based framework. *The psychology of change: Viewing change from the employee's perspective*, 123-142
- Vona, F., Marin, G., Consoli, D., & Popp, D. (2015). *Green Skills*. National Bureau of Economic Research. Cambridge.
- Wahyudin, D. (2016). A view on teaching philosophy in curriculum implementation at the Indonesia University of Education. *SOSIOHUMANIKA*, 9(2), 235-248.
- Wahyudin, D., & Suwirta, A. (2017). The Curriculum Implementation for Cross-Cultural and Global Citizenship Education in Indonesia Schools. *EDUCARE*, 10(1).
- Wahyudin, D. (2017). *Curriculum Development and Philosophy of Teaching*. Saarbrochen, Germany: Lambert Academic Publishing.
- Wahyudin, D. & Suwirta, A. (2020). Politics of Curriculum in the Educational System in Indonesia. *TAWARIKH*, 11(2), 143-158
- Wahyuni, L., Masih, I., & Rejeki, I. M. (2018). Communication Skill Attributes Needed for Vocational Education enter The Workplace. In *Journal of Physics: Conference Series* (Vol. 953, No. 1, p. 012111).
- Wang, F. & Hannafin, M.J. (2005). Design-based research and technology-enhanced learning environments. *ETR&D*, Vol. 53, No. 4, 2005, pp. 5–23, ISSN 1042–1629
- White, S., Park, Y. S., & Cordero, E. D. (2010). Impact of curriculum infusion on college students' drinking behaviors. *Journal of American college health*, 58(6), 515-522.
- Wibowo, N. (2016). Upaya memperkecil kesenjangan kompetensi lulusan sekolah menengah kejuruan dengan tuntutan dunia industri. *Jurnal Pendidikan Teknologi dan Kejuruan*, 23(1), 45-59.
- Wilkinson, D., & Birmingham, P. (2003). *Using research instruments: A guide for researchers*. Psychology Press.
- Wong, L. P. (2008). Focus group discussion: a tool for health and medical research. *Singapore Med J*, 49(3), 256-60.
- World Bank (2012). *Inclusive Green Growth: The Pathway to Sustainable Development*. Washington D.C.: The World Bank. [Retrieved 2015-11-03]

Available at:
http://siteresources.worldbank.org/EXTSDNET/Resources/Inclusive_Green_Growth_May_2012.pdf)

- Wu, M., Siswanto, I., Suyanto, W., Sampurno, Y. G., & Tan, W. (2018). Creative thinking curriculum infusion for students of teachers' education program. *Jurnal Pendidikan Teknologi dan Kejuruan*, 24(1), 1-12
- Xian, C. Y., Sin, T. C., Liyana, M. R. N., Awang, A., & Fathullah, M. (2017). Green perspective in food industry production line design: A review. In *AIP Conference Proceedings* (Vol. 1885, No. 1, p. 020103). AIP Publishing
- Zaharim, A., Yusoff, Y., Omar, M. Z., Mohamed, A., & Muhamad, N. (2009). Engineering employability skills required by employers in Asia. In *Proceedings of the 6th WSEAS international conference on Engineering education*(pp. 195-201)
- Zais, R. S. (1976). *Curriculum: Principles and foundations*. Ty Crowell Company.
- Zaituni, F., Samuel, A. R., Imelda, H., & Tanujaya, O. (2010). *Skills for Green Jobs in Indonesia*. International Labour Organization.
- Zimmerman, J. B., & Anastas, P. T. (2009). Integrating Green Engineering into Engineering Curricula. *Green Chemistry Education: Changing the Course of Chemistry*, 1011, 137.
- Zhou, D., Kwok, R. C., Zhang, Q., & Ma, J. (2001). A new method for student project assessment using fuzzy sets. In *Proceedings Joint 9th IFSA World Congress and 20th NAFIPS International Conference (Cat. No. 01TH8569)* (Vol. 1, pp. 586-591).