Rekam Jejak Dosen S3

dan Pengintegrasiannya dalam Mata Kuliah

Berdasarkan rekam jejak keahlian dosen tetap dan pengampu mata kuliah pada PS Doktor Pendidikan IPA dalam pendidikan dan penelitian, terdapat **lima tema/fokus** penelitian yang dikembangkan, yaitu: ***1) Nature of Science* (NOS) dan *Education for Sustainable Development* (ESD) dalam pendidikan IPA; *2) Integrasi* TIK dan Pembelajaran IPA dalam era RI 4.0; 3) Eksplorasi kearifan lokal dan *indigenous knowledge* dalam pendidikan IPA, Pengembangan *Science, Technology, Engineering, and Mathematics* (STEM) dalam Pendidikan IPA,** serta 5) **Penguatan pendidikan karakter dan pengembangan *lesson study* dalam pembelajaran IPA**. Kelima fokus tersebut dijelaskan sebagai berikut.

1. ***Nature of Science* (NOS) dan *Education for Sustainable Development* (ESD) dalam pendidikan IPA**

   Tema ini merupakan respons atas semakin menurunnya daya dukung lingkungan alam maupun sosial-budaya yang semakin fenomenal dan menyangkut isu sains yang kontroversial. Berbagai persoalan berkaitan dengan tema ini antara lain pemanasan global; dampak bioteknologi terhadap harapan-harapan manusia; hubungan antara sains, teknologi, dan masyarakat; penurunan kualitas lingkungan; krisis pangan dunia, ketahanan pangan, dan kedaulatan pangan; krisis energi; energi terbarukan; dan lain-lain. Muara dari tema ini adalah persoalan bagaimana pendidikan yang menjamin kelestarian lingkungan hayati, fisik, sosial, dan budaya.

   Tema ini dikembangkan oleh **Prof. Dr. Zuhdan Kun Prasetyo** dan didukung oleh **Dr. Antuni Wiyarsi, M.Si**

Prof. Dr. Zuhdan Kun Prasetyo	Panjol game with java ethics character, European Journal of Molecular and Clinical Medicine, vol. 7, no. 8, hal: 1-16, https://ejmcm.com/article_3013.html Higher order thinking skill in physics: A systematical review, International Journal of Advanced Science and Technology, 2020, 29(5), pp. 5102–5112, http://sersc.org/journals/index.php/IJAST/article/view/14020 The development of a metacognition instrument for college students to solve physics problems, International Journal of Instruction, 2020, 13(1), pp. 767–782, http://dx.doi.org/10.29333/iji.2020.13149a Psychometric and structural evaluation of the physics metacognition inventory instrument, European Journal of Educational Research, 2020, 9(1), pp. 215–225, https://www.eu-jer.com/psychometric-and-structural-evaluation-of-the-physics-metacognition-inventory-instrument The Effect of Picture Storybook Based on Scientific Approach through Inquiry Method toward Student's Inference Skill, Journal of Turkish Science Education, 2018, 15(Special Issue), 22-32, http://tused.org/index.php/tused/article/view/685 The Effectiveness of a Local Potentiality Based Learning Video About Distillation Clove Leaf Essential Oil to Improve Generic Skill, Journal of Physics: Conf.

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Dr. Antuni Wiyarsi	Vocational High School Students' Chemical Literacy on ContextBased Learning: A Case of Petroleum Topic, Journal of Turkish Science Education, 17(1), 147- 161, https://www.tused.org/index.php/tused/article/view/878 Android-Based-Game and Blended Learning in Chemistry: Effect on Students' Self-Efficacy and Achievement, Cakrawala Pendidikan, 39 (3), 507-521, https://journal.uny.ac.id/index.php/cp/article/view/28335 A Systematic Review: How are Mental Model of Chemistry Concepts?, Universal Journal of Educational Research 8.2 (2020) 332 - 345, https://doi.org/10.13189/ujer.2020.080202 Revisiting the scientific habits of mind scale for socio-scientificissues in the Indonesian context, International Journal of Science Education, 2019, 41(17), 2430–2447, https://doi.org/10.1080/09500693.2019.1683912 Using Technology in Hydrocarbon Topics: A Profile onStudents' Self-Regulated

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2. Integrasi TIK dan Pembelajaran IPA dalam era RI 4.0

Tema ini merupakan respons atas fenomena dinamika masyarakat dunia yang semakin mengecil baik secara politik, ekonomi, dan sosial-budaya berkat perkembangan ilmu pengetahuan dan teknologi informasi. Berbagai isu dan persoalan mendasar di seputar tema ini antara lain pendidikan terdigitalisasi, *e-learning, e-library*; demokrasi degital, *cyber culture*; masyarakat jaringan dan pendidikan; *new-media* dan pendidikan; *offline society* dan *online society.*

Pengembang utama tema ini adalah **Prof. Dr. Jumadi** dan didukung oleh **Prof. Dr. Dadan Rosana**, **Prof. Drs. Jaslin Ikhsan, M.App.Sc. Ph.D** serta **Prof. Dr. Heru Kuswanto, M.Si**

Prof. Dr. Jumadi	The readiness of the teacher training institution in preparing teacher competencies, Universal Journal of Educational Research, 2020, 8(8), pp. 3751–3758, 10.13189/ujer.2020.080856 Project brief effects on creative thinking skills among low-ability pre-service physics teachers, International Journal of Evaluation and Research in Education, 2020, 9(2), pp. 415–420, Project brief effects on creative thinking skills among low-ability pre-service physics teachers | Habibi | International Journal of Evaluation and Research in Education (IJERE) (iaescore.com) 3D Page-Flipped Worksheet on Impulse-Momentum to Develop Students' Scientific Communication Skills, JPII 2019, 8(*2*), 211-219,

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Designing Optical Spreadsheets-Technological Pedagogical Content Knowledge Simulation (S-Tpack): A Case Study of Pre-Service Teacher Course, Turkish Online Journal of Educational Technology, 2018,17(*1*), 24-36, http://www.tojet.net/articles/v17i1/1714.pdf

Developing a Science Learning Devices Based on Susan Loucks-Horsley Model to Improve Scientific Literacy and Communication and Collaboration Skills, International Journal of Sciences: Basic and Applied Research (IJSBAR), 2017,36(*4*), 175-184, https://www.gssrr.org/index.php/JournalOfBasicAndApplied/search/search

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	Model to Improve Scientific Literacy and General Life Skill, International Journal of Sciences: Basic and Applied Research (IJSBAR), 2017, 36(2), 57-70, https://www.gssrr.org/index.php/JournalOfBasicAndApplied/article/view/8142 Android Based Mobile Learning as One of Instructional Media for Science Materials in the 21st Century, International Journal of Sciences: Basic and Applied Research (IJSBAR), 2016, 35(*2*) / 2017, 36(7)?, http://staffnew.uny.ac.id/upload/132001799/penelitian/Senam-Similarity%20Android%20Based%20Mobile%20Learning.pdf
Prof. Dr. Dadan Rosana	Relationship between Analytical Thinking Skill and Scientific Argumentation Using PBL with Interactive CK 12 Simulation, International Journal on Social and Education Sciences, 2019, 1(1), 16-23 The Evaluation of Science Learning Program, Technology and Society Application of Audio Bio Harmonic System with Solar Energy to Improve Crop Productivity, Jurnal Pendidikan IPA Indonesia, 2017, 6(1), https://doi.org/10.15294/jpii.v6i1.9596 Sets best practice model: Growth Optimization and productivity of organic food plants through Iasmuspec application, Jurnal Pendidikan IPA Indonesia, 6(2), 267-278 Contextual Teaching and Learning to Develop Critical Thinking and Practical Skills, Journal of Physics: Conference Series, 2019, 1233(1), 012102 The Effect of Laboratory Work Style and Reasoning with Arduino to Improve Scientific Attitude, International Journal of Instruction, v12 n2 p321-336 Apr 2019. https://www.researchgate.net/publication/332568597_The_Effect_of_Laboratory_Work_Style_and_Reasoning_with_Arduino_to_Improve_Scientific_Attitude
Prof. Dr. Heru Kuswanto, M.Si	Virtual Physics Laboratory Application Based on the Android Smartphone to Improve Learning Independence and Conceptual Understanding, International Journal of Instruction, v11 n1 p1-16 Jan 2018 Pembelajaran Pada Masa Pandemi Covid-19, Vol 22 No 1 (2020): Jurnal Teknologi Pendidikan, https://doi.org/10.21009/jtp.v22i1.15286 Analysis of Students Critical Thinking Skills Using Partial Credit Models (PCM) in Physics Learning, International Journal of Educational Research Review, 2019, Volume 4, Issue 2, https://doi.org/10.24331/ijere.518068 Android-Assisted Mobile Physics Learning through Indonesian Batik Culture: Improving Students' Creative Thinking and Problem Solving, International Journal of Instruction, v11 n4 p287-302 Oct 2018 Effect of Real-Time Physics Organizer Based Smartphone and Indigenous Technology to Students' Scientific Literacy Viewed from Gender Differences, International Journal of Instruction, v12 n3 p253-270 Jul 2019 The Application Group Investigation (GI) Learning Model assisted Phet to

	Facilitate Student Scientific Work Skills, International Journal of Educational Research Review, 4(2), 2019, https://doi.org/10.24331/ijere.518069

3. Eksplorasi kearifan lokal dan *indigenous knowledge* dalam pendidikan IPA

Tema ini merupakan respons atas menguatnya kecenderungan universalisme yang merambah pada tataran teoretik maupun praktis dalam dunia sosial-pendidikan serta pentingnya relevansi dalam pendidikan IPA. Persoalan di seputar isu utama tema ini antara lain pendidikan berbasis konteks, pengetahuan lokal dan kearifan lokal; lokalitas yang proaktif menyambut hadirnya globalisasi yang menguniversalkan pengetahuan dan praktik gaya hidup; menggeliatnya agama/kepercayaan lokal; dan bangkitnya *indigenous knowledge* atas dominasi pengetahuan Barat serta pengembangan literasi sains.

Pengembang utama tema ini adalah **Prof. Dr. IGP. Suryadharma** dan didukung oleh **Prof. Dr. Insih Wilujeng** dan **Prof. Dr. Mundilarto, M.Pd**

Prof. Dr. Insih Wilujeng	The Development of Science Domain Based Learning Tool Which is Integrated with Local Wisdom to Improve Science Process Skill and Scientific Attitude, Jurnal Pendidikan IPA Indonesia, 2017, 6(1), https://doi.org/10.15294/jpii.v6i1.7205 Pengembangan LKPD inkuiri terbimbing untuk meningkatkan keterampilan berpikir kritis dan hasil belajar peserta didik, Jurnal Inovasi Pendidikan IPA, 2018, 4(1), 26-40 The Development of Science Student Worksheet Based on Education for Environmental Sustainable Development to Enhance Scientific Literacy, Universal Journal of Educational Research, v6 n6 p1339-1347 2018 The effectiveness of project-based e-learning to improve ict literacy, Jurnal Pendidikan IPA Indonesia, 2016, 5(1), 51-55 The Impact of Problem Solving Instruction on Academic Achievement and Science Process Skills among Prospective Elementary Teachers, Elementary Education Online, 2019, 8(2), http://ilkogretim-online.org.tr/index.php/io/article/view/2905 The Effect of Science Learning Integrated with Local Potential of Wood Carving and Pottery Towards the Junior High School Students' Critical Thinking Skills, Jurnal Pendidikan IPA Indonesia, 6(1), 2017, https://doi.org/10.15294/jpii.v6i1.9598 Analysis of Students Critical Thinking Skills Using Partial Credit Models (PCM) in Physics Learning, International Journal of Educational Research Review, 2019, Volume 4, Issue 2, https://doi.org/10.24331/ijere.518068
Prof. Dr. Mundilarto, M.Pd.	effect of problem-based learning on improvement physics achievement and critical thinking of senior high school studenT, Journal of Baltic Science Education, 2017, 16(5), 761-780 Development of Physics Lab Assessment Instrument for Senior High

	School Level, International Journal of Instruction, 2018, 11(4), 17-28, https://www.e-iji.net/dosyalar/iji_2018_4_2.pdf Outdoor Learning Model through Fieldwork to Improve Physics Achievement in Dynamic Fluid, Journal of Turkish Science Education, 2017, 14(3), 73-86, https://www.tused.org/index.php/tused/article/download/164/119/ SETS approach-based audiovisual media for improving the students' critical thinking skills, Psychology, Evaluation, and Technology in Educational Research, 2019, 1(2), 95-103, http://petier.org/index.php/PETIER/article/view/15 Pre-Service Physics Teachers' Research Activities by Research Based Learning, Journal of Turkish Science Education. 2019, 16(1), 77-84, http://www.tused.org/index.php/tused/article/view/214 PhET simulation as means to trigger the creative thinking skills of physics concepts, International Journal of Emerging Technologies in Learning, 2020, 15(6), 166-172. https://doi.org/10.3991/ijet.v15i06.11319 Project brief effects on creative thinking skills among low-ability pre-service physics teachers, International Journal of Evaluation and Research in Education (IJERE), 2020, 9, 415-420. https://eric.ed.gov/?id=EJ1256104

4. Pengembangan *Science, Technology, Engineering, and Mathematics* (STEM) dalam Pendidikan IPA

Tema ini merespon pengembangan pentingnya pembelajaran terpadu yang mengintegrasikan antara sains, teknologi, rekayasa dan matematik dalam pembelajaran IPA agar peserta didik mampu memandang permasalahan sains dalam berbagai sudut pandang dan memahami keterkaitan sains dengan disiplin ilmu lain.

Tema ini dikembangkan oleh **Prof. Dr. Ariswan** dan didukung oleh **Dr. Slamet Suyanta**, **Vinta A. Tiarani, Ph.D serta Dr. Asri Widowati**

Prof. Dr. Ariswan	Moodle as e-learning media in physics class, Journal of Physics: Conference Series, 2020, 1567(3), 032075, Moodle as e-learning media in physics class - IOPscience Developing a PBL-based interactive physics CD to improve diagram and mathematics representation ability on simple harmonic material, International Journal of Scientific and Technology Research, 2019, 8(12), pp. 584–585, Developing-A-Pbl-based-Interactive-Physics-Cd-To-Improve-Diagram-And-Mathematics-Representation-Ability-On-Simple-Harmonic-Motion-Material-.pdf (ijstr.org) Physicochemical Properties of Chromium-doped Titanium Dioxide Mesoporous and Its Application for Antifogging Materials, Chiang Mai Journal of Science, 2017, 44*(3)*,1056-1064, http://epg.science.cmu.ac.th/ejournal/journalDetail.php?journal_id=8294

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Dr. Slamet Suyanta	The implementation of the scientific approach through 5Ms of the revised curriculum 2013 in Indonesia, Cakrawala Pendidikan, 2018, 37(1), 22-29, https://doi.org/10.21831/cp.v37i1.18719 A reflection on the implementation of a new curriculum in Indonesia: A crucial problem on school readiness, AIP Conference Proceedings, 2017, 1868(1), 100008, https://doi.org/10.1063/1.4995218 Indonesian graphemic syllabification using a nearest neighbour classifier and recovery procedure, International Journal of Speech Technology, 2019, 22(1), 13-20, https://doi.org/10.1007/s10772-018-09569-3 Indonesian abstractive text summarization using bidirectional gated recurrent unit, Procedia Computer Science, 2019, 157, 581-588, 10.1016/j.procs.2019.09.017 ' Flipping onsets to enhance syllabification, International Journal of Speech Technology, 2294), 1031-1038, https://doi.org/10.1007/s10772-019-09649-y (2019). Improving Students' Scientific Reasoning Skills through the Three Levels of Inquiry. International Journal of Instruction, 12(4), 689-704. https://doi.org/10.29333/iji.2019.12444a
Dr. Asri Widowati, M.Pd	Developing science learning material with authentic inquiry learning approach to improve problem solving and scientific attitude. Jurnal Pendidikan IPA Indonesia Vol 6, Nomer 1 https://journal.unnes.ac.id/nju/index.php/jpii/article/view/4851. DOI: 10.15294/jpii.v6i1.4851 The Innovative Framework for Developing Science Teacher Education: NOS Within TPACK. Journal of Physics: Conference Series, Volume 1233, International Seminar on Science Education 13 October 2018, Yogyakarta, Indonesia. https://iopscience.iop.org/article/10.1088/17426596/1233/1/012091/meta Innovative Education Program for Science Preservice Teachers: Technological, Pedagogical, and Science Knowledge - Contextual (TPACK - C) Approach. International Journal of Innovation, Creativity and Change. www.ijicc.net Volume 12, Issue 11, 2020. https://www.ijicc.net/images/vol12/iss11/121112_Widowati_2020_E_R.pdf

5. Penguatan pendidikan karakter dan pengembangan *lesson study* dalam pembelajaran IPA

Tema ini mengacu pada pendidikan karakter konstruksi negara yang meliputi 18 karakter dalam kaitannya dengan upaya membentuk dan mengembangkan bangsa Indonesia berbasis nilai-nilai agama dan budaya nasional yang berdaya saing global serta pengembangan keterampilan berpikir tingkat tinggi peserta didik untuk menghadapi abad 21.

Tema ini dikembangkan oleh **Prof. Dr. Sri Atun** dan didukung oleh **Prof. Dr. Paidi, M.Si**

Prof. Dr. Paidi, M.Si	The divergent thinking of basic skills of sciences process skills of life aspects on natural science, Asia-Pacific Forum on Science Learning and Teaching | vol: 17 | issue : 1 | 2016 The development of blended learning based on handphone for computer system subject on Xi grade of SMA, Humanities and Social Sciences Reviews | vol: 7 | issue : 3 | 2019 Teacher s TPACK Profile: The Affect of Teacher Qualification and Teaching Experience, Journal of Physics: Conference Series | vol: 1397 | issue : 1 | 2019-12-19 | Pengembangan LKS biologi berbasis masalah untuk meningkatkan kemampuan pemecahan masalah dan karakter peduli lingkungan, Jurnal Inovasi Pendidikan IPA, 2(1), 35-45 The divergent thinking of basic skills of sciences process skills of life aspects on natural sciences subject in Indonesian elementary school students, Asia -Pacific Forum on Science Learning and Teaching, 2016, 17(1) Development of Instrument to Assess Cognitive Process and Product in Biology Senior High School, International Journal of Environmental and Science Education, 2017, 12(8), 1719-1735 Implementation of Technology-based Guided Inquiry to Improve TPACK among Prospective Biology Teachers, International Journal of Instruction, 2020, 13(2)