STAFF

HANDBOOKS

(SCOPUS) (SINTA)

Name	Dr. Firmanul Catur Wibowo, M.Ed.
Position	Lecturer in Physics Education
Educational Background	*1.* Bachelor's degree Physics Education, Semarang State University *2.* Master's degrees Physics Education, Indonesia University of Education *3.* Doctoral degrees Science Education, Indonesia University of Education
Academic Career (Employment)	*1.* Lecturer in Road Transportation Safety Polytechnic (PKTJ) 2011-2014 *2.* Lecturer and in University Sultan Ageng Tirtayasa 2014-2019 *3.* Regional coordinator of SINTA Jabar Banten district Indonesia, Ministry of Education, Culture, Research and Technology 2018-2019 *4.* Lecturer in Masters Physics Education, Jakarta State University
Research and Development project over the last 5 years	*1.* Development of Augmented Reality Integration (ARI) based Model Physics Independent Learning (MPIL) for Facilitating 21st-Century Skills (21-CS) *2.* Development of Augmented Reality Integration Physics (ARIP) to Improve Students' Critical Thinking Skills for Reconstructing Physics Conceptions *3.* Development of an Interactive Digital Physics Module (IDMP). STEM (Science, Technology, Engineering, mathematics) For Increase 21st Century Competencies Employability Skills *4.* Development Flipped Classroom Based Inquiry Learning (FCBIL) For 21-Century Skills (21-CS): Problem Solving Skills and Creativity Skills in Prototype Curriculum Schools *5.* Development Of an Interactive Book Augmented Reality (IBAR) For Lessons On Student Stem For Facilitating 21st-Century Skills (21-CS)

	6. Development of a Stem-Based Physics Learning Website (Wpf) as a Source of Home Learning (Bdr) for High School Students During the Pandemic 7. Development of E-Character Mental Revolution (E-Krm) Based on Mobile Digital Education (MDe) to Strengthen Santri and Students Competence in Facing the Disruptive Era of Game Development Open Online Physics Instructional (Goopi) For Improving 21st-Century Careers: Creativity Skills 8. Designing Moocs With Virtual Microscopic Simulation (Vms) For Student's Levels Of Understanding And Modeling Of Understanding 9. Development of a Virtual Physics Laboratory (VPL) as a Facility for Inquiry and Problem Solving Laboratory Activities for Microscopic Materials for Prospective Physics Teacher Students 10. Development of E-Character Mental Revolution (E-Krm) Based on Mobile Digital Education (MDe) to Strengthen Santri and Students Competence in Facing the Disruptive Era 11. Development of an Assessment Virtual Test (Asvite) Based on Interactive Lecture Demonstration (ILD) to Improve 21st Century Competency Employability Skills 12. Development of a Virtual Physics Laboratory (VPL) as a Facility for Inquiry and Problem Solving Laboratory Activities for Microscopic Materials for Prospective Physics Teacher Students 13. Design For Assessment The Millennial Character Education With Student Character Recording System (Srsc) For Developing 21 Century Skills
Industry collaboration/ Community Services over the last 5 years	1. International Collaborative Community Services (ICCS): Dissemination of Virtual Microscopic Simulation (VMS) to Sparkling Innovation in STEM Education for Facilitating 21st-Century Skills (21-CS) in University Country Jakarta and UniversityScience Malaysia 2. International Collaborative Community Services (Iccs): Dissemination of GOOPI (Games Open On line Physics Instructional) To Sparkling Innovation In Stem Education For Facilitating 21st-Century Skills (21-Cs) In University Country Jakarta And University of Science 3. PPM to improve the quality of PKBM learning in kel. Cape West subdistrict Jagakarsa, administrative city of South Jakarta through the implementation of digital classes based on Microsoft 365 education 4. PPM Speed Orbital (SO) Making Training for Physics Teachers at Dichromatic High School, Bogor Regency, West Java Province 5. PPM Efforts to Improve the Quality of Az-Ziyadah Islamic Boarding School Education in Klender Village, Duren Palm District, East Jakarta City through Learning Using Innovative Smart Orbital (ISO) Media 6. PPM Through Training on the Development of Gangsing Smart Orbitals (Gso) Media to Improve Creative Thinking Skills for

	Physics Teachers at Dichromatic High School, Bogor Regency, WestJava Province
Patents and Intellectual Property Right (IPR)	1. Story Board Optics Virtual Laboratory (OVL) Based On Physics Independent Learning (PIL) 2. Augmented Reality Integration (ARI) Based Model Physics Independent Learning (MPIL) 3. Program Computer Interactive Digital Module Physics (IDMP) STEM-based 4. Program Augmented Computer Reality Integration Physics (ARIP) 5. Book Media Dan Learning Resources 6. Book Strategy Teach AT Level Education Intermediate 7. eSWoP On Heat 8. Light Refraction Practical Tool Using SensorsPhotodiode 9. Games OpenOnline Physics Instructional (GOOPI) 10. Program SRSC Computer 11. Program Computer ASVITE (Virtual Assessment test) 12. Program Computer Movingkalor.com
Important publications over the last 5 years	1. 2022 Digital Learning Research in the Last 30 Years: Important Role of Interactive Learning in Physics 2. 2022 Analyze The Mechanism Of Tsunami Based On The Scopus Database 3. 2022 Implementation Of On line Problem Based Learning Assisted By Digital Book With 3d Animations To Improve Student's Physics Problem-Solving Skills In Magnetic Fields Subject 4. 2021 PhET-assisted electronic student worksheets of physics (eSWoP) on heat for inquiry learning during covid 5. 2021 The technology of interactive book augmented reality (IBAR) for facilitating students 21-century skills 6. 2021 Critical thinking skills on physics learning during COVID- 19 Pandemics: A bibliometric analysis using VOS viewers 7. 2021 E-learning in science learning: A-review of literature 8. 2021 Projects Based Learning (PjBL) learning model in sciencelearning: Literature review 9. 2021 Review of trends project based learning (PjBL) integrated STEM in physics learning 10. 2021 Website of physics instructional (WoPI): Learning physics from home during COVID-19 11. 2021 Trends of flipped classroom studies for physics learning: A systematic review 12. 2021 A review of research on the use of augmented reality in physics learning 13. 2021 Augmented reality geometrical optics (AR-GiOs) for physics learning in high schools 14. 2021 Development of Android Physics Applications (WHAT) USlearning media on dynamic fluid concepts

	15. 2021 Four Tiers Test (FTT) development in the form of virtualization static fluid test (VSFT) using Rasch model analysis tosupport learning during the Covid-19 pandemic 16. 2021 Unveil problem based learning on physics learning: A literature review 17. 2021 Interactive Book Augmented Reality (IBAR) for lessons physics on STEM 18. 2021 Flipped learning models and students' scientific literacy on physics achievement test 19. 2021 Trends of augmented reality in science learning: A review of the literature 20. 2021 Design of Massive On line Simulation (MOS) on concept Archimedes' principles 21. 2021 Design of massive on line simulation in the learning physics of thermodynamics process 22. 2021 Design of Massive Online Simulation (MOS) on kinetics theory of gases 23. 2021 Digital story telling of Physics (DiS-Phy): Learning physics from home through stories 24. 2021 Dissemination of GOOPI (Open Online Physics Game Instructional) to spark innovation in education 25. 2021 Virtual Microscopic Simulation (VMS) design on light waves: Interference and diffraction 26. 2021 Massive Open Online Simulation (MOOS) of physics concepts microscopic for improving creative thinking 27. 2021 Products feasibility study: Development of e-learning media on schoolology-based in problem based learning model on simple harmonious motion materials 28. 2021 Development of Augmented Physics Animation (APA) with the Integration of Crosscutting Concepts about the Covid-19 US a Supplement to the Introductory Physics Course 29. 2021 (ISO) Media for improving learning quality using analysis RapidMiner 30. 2021 Analysis on interest motivation instruments (im) for measure of interest and motivation of study doctoral physics education using RapidMiner 31. 2021 Development of a Basic Physics Practicum Guide that is Integrated with Qur'anic Verses for Prospective Natural Science Teachers 32. 2021 Effectiveness of Virtual Physics Laboratory (VPL) with Dry Cell Microscopic Simulation (DCMS) to Promote Inquiry Activity about the Battery 33. 2021 Implementation of discovery learning in a digital class and its effect on students learning outcomes and learning independence levels [version 1; peers reviews: 1 approved with reservations]

	34. 2020 Development of the innovative smart orbitals (ISO) medium to improve the cognitive skills on the heat transfer concept 35. 2020 Analyzing the students' conceptual change on kinetic theory of gases as a learning effect though computer simulations- assisted conceptual change model 36. 2019 Mobile Digital Education (MDE) for increasing competence of students based on E-Characters Mental Revolution (E-CMR) 37. 2019 Designing MOOCS with Virtual Microscopic Simulation (VMS) for increasing of student's levels ofunderstanding 38. 2019 Effectiveness of learning support of assets (assessment simulation test) for reconstruction physics conception 39. 2019 Unveiling students' misconceptions through computers simulation-based PDEODE learning strategy on dynamic electricity 40. 2019 Unveil virtual physics laboratory (VPL) with battery microscopic simulation (BMS) to promote of problem solving activity 41. 2019 Improvements of students' critical thinking abilities through problem-based learning (PBL) model class XI MIPA 3 on temperature and heat materials 42. 2019 Investigating science interests and cognitive domains with science contextual teaching and learning (SCTL) methods 43. 2019 Effect of welfare and teaching motivation on professional competence of elementary teachers using participatory action research (Par) methods 44. 2019 Identifying pre-service physics teacher mental models on electric conceptions 45. 2019 Optimizing Students' Conceptual Understanding on Electricity and Magnetism through Cognitive Conflict-Based Multimode Teaching (CC-BMT) 46. 2019 Virtual media simulation technology on mathematics representation of sound waves 47. 2019 Virtual simulation instructional training for students' drops out of mathematical science digital entrepreneurs 48. 2019 Educational technology of virtual physics laboratories (VPL) for the microscopic concept 49. 2019 Advanced virtual physics laboratory (VPL) of dynamics electricity 50. 2018 Levels conceptual change pre-service elementary teachers on electric current conceptions through visual multimedia supported conceptual change 51. 2018 Improvising students' conceptions on fluid dynamics through peers teaching model with PDEODE (PTM-PDEODE)

Activities in Professional organizational over the last 5 years	1. Member of the Physical Society of Indonesia (PSI) number: 07201600643 (2016-now) 2. Americans Association of Physics Teachers (AAPT) ID 129181 (2019-now)