

e-ISSN 2477-2038 p-ISSN 2477-1422

JURNAL PENELITIAN DAN PEMBELAJARAN IPA

Vol.6, No.1, p.1-165, May 2020

- Investigating Metacognitive Attitude of High School Biology Teachers
 Zulfiani Zulfiani, Yanti Herlanti, Regiani Yunistika
- Fostering Scientific Creativity in Teaching and Learning Science in Schools: A Systematic Review
 Rubaaiah Sidek, Lilia Halim, Nor Aishah Buang, Nurazidawati Mohamad Arsad
- Crucial Cognitive Skills in Science Education: A Systematic Review

Uswatun Hasanah, Kinya Shimizu

- Exploring Vietnamese Students' Participation and Perceptions of Science Classroom Environment in STEM Education Context Le Hai My Ngan, Nguyen Van Hien, Le Huy Hoang, Nguyen Duy Hai, Nguyen Van Bien
- Development of Learning Tools based on Food Security to Build Scientific Attitude of Undergraduate Students
 Dwi Indah Suryani, Liska Berlian, Dinda Rachmawati, Mila Dewi Laraswati
- The Development of Local Wisdom-Based Physics Cognitive Ability Assessment Instrument for Senior High School Students Tyas Endah Anggraeni, Mundilarto Mundilarto
- The Correlation Between Biology Learning Outcomes and Senior High School Students' Self Concept Siti Rodiah, Ratna Komala, Rusdi Rusdi
- Analysis of Students' Comprehension and Misconception towards the Topic of Salt Solubility Sabila Izzati, Nur Rochmah

PUBLISHED BY DEPARTMENT OF SCIENCE EDUCATION FACULTY OF TEACHER TRAINING AND EDUCATION UNIVERSITAS SULTAN AGENG TIRTAYASA IN COOPERATION WITH PERKUMPULAN PENDIDIK IPA INDONESIA (PPII)/ INDONESIAN SOCIETY FOR SCIENCE EDUCATORS



DEPARTMENT OF SCIENCE EDUCATION FACULTY OF TEACHER TRAINING AND EDUCATION UNIVERSITAS SULTAN AGENG TIRTAYASA 2020

JURNAL PENELITIAN DAN PEMBELAJARAN IPA Vol.6, No.1, p.1-165, May 2020 p-ISSN 2477-1422, e-ISSN 2477-2038

Person in Charge

Dean of Faculty of Teacher Training and Education

Editor in Chief

R. Ahmad Zaky El Islami, M.Pd., Department of Science Education, Faculty of Teacher Training and Education, Universitas Sultan Ageng Tirtayasa, Indonesia

Editorial Boards Regional America

- 1. Prof. Norman G. Lederman, Ph.D, Department of Mathematics and Science Education, Illinois Institute of Technology, Chicago, United States
- 2. Prof. Randy L. Bell, Ph.D, College of Education, Oregon State University, Corvallis, United States

Editorial Board Regional Europe

Prof. Dr. Bayram COSTU, Primary Science Education Division, Yildiz Technical University, Turkey

Editorial Board Regional Africa

Assoc. Prof. Lindelani E. Mnguni, Ph.D, Department of Science & Technology Education, University of South Africa, South Africa

Editorial Board Regional Australia and Oceania

Yulina Eva Riany, Ph.D, Parenting and Family Support Centre, The University of Queensland, Australia

Editorial Boards Regional Asia

- 1. Prof. Lilia Halim, Ph.D, Department of Education Policy and Leadership, Faculty of Education, The National University of Malaysia, Malaysia
- 2. Assoc. Prof. Dr. Prasart Nuangchalerm, Department of Curriculum and Instruction, Faculty of Education, Mahasarakham University, Thailand
- 3. Prof. Antriman Vipinosa Orleans, Ph.D, College of Graduate Studies and Teacher Education Research, Philippine Normal University, Philippines
- 4. Assoc. Prof. Dr. Sjaifuddin Sjaifuddin, M.Si., Department of Science Education, Faculty of Teacher Training and Education, Universitas Sultan Ageng Tirtayasa, Indonesia
- 5. Assoc. Prof. Dr. Suroso Mukti Leksono, M.Si., Department of Science Education, Faculty of Teacher Training and Education, University of Sultan Ageng Tirtayasa, Indonesia
- 6. Assist. Prof. Dr. Lukman Nulhakim, M.Pd., Department of Science Education, Faculty of Teacher Training and Education, Universitas Sultan Ageng Tirtayasa, Indonesia
- 7. Liska Berlian, M.Si., Department of Science Education, Faculty of Teacher Training and Education, Universitas Sultan Ageng Tirtayasa, Indonesia

8. Prasetyaningsih Prasetyaningsih, M.Pd., Department of Science Education, Faculty of Teacher Training and Education, Universitas Sultan Ageng Tirtayasa, Indonesia

Graphic Design

Aditya Rakhmawan, M.Pd., Department of Science Education, Faculty of Teacher Training and Education, Universitas Sultan Ageng Tirtayasa, Indonesia, Indonesia **Secretariat**

- 1. Mudmainah Vitasari, M.Pd., Department of Science Education, Faculty of Teacher Training and Education, Universitas Sultan Ageng Tirtayasa, Indonesia, Indonesia
- 2. Vica Dian Aprelia Resti, M. Pd., Department of Science Education, Faculty of Teacher Training and Education, Universitas Sultan Ageng Tirtayasa, Indonesia, Indonesia

Peer-Reviewers

- 1. Assoc. Prof. Hasan Said TORTOP, Ph.D, Child Development Department, Faculty of Heath Sciences, Istanbul Esenyurt University, Turkey
- 2. Headman Hebe, Ph.D, Department of Science and Technology Education, School of Teacher Education, University of South Africa, South Africa
- 3. Assoc. Prof. Dr. Nguyen Van Bien, Department of Physics, Faculty of Physics, Hanoi National University of Education, Viet Nam
- 4. Prof. Dr. Hj. Anna Permanasari, M.Si., Department of Science Education, School of Postgraduates Studies, Universitas Pendidikan Indonesia, Indonesia
- 5. Prof. Dr. Sudarmin Sudarmin, M.Si., Department of Science Education, Faculty of Mathematics and Natural Science, Universitas Negeri Semarang, Indonesia
- 6. Assist. Prof. Dr. Aliefman Hakim, M.Si., Department of Chemistry Education, Faculty of Teacher Training and Education, Universitas Mataram, Indonesia
- 7. Assist. Prof. Dr. Fahyuddin Fahyuddin, M.Si, Department of Chemistry Education, Faculty of Teacher Training and Education, Universitas Halu Oleo, Indonesia
- 8. Assist. Prof. Dr. Yanti Herlanti, M.Pd., Biology Education Program, Faculty of Tarbiya and Teaching Sciences, UIN Syarif Hidayatullah Jakarta, Indonesia
- 9. Assoc. Prof. Dr. Sigit Saptono, M.Pd., Department of Biology Education, Faculty of Mathematics and Science, Universitas Negeri Semarang, Indonesia
- 10. Munasprianto Ramli, Ph.D, Chemistry Education Program, Faculty of Tarbiya and Teaching Sciences, UIN Syarif Hidayatullah Jakarta, Indonesia
- 11. Assoc. Prof. Dr. Ade Yeti Nuryantini, M.Si, Department of Physics Education, Faculty of Tarbiya and Teaching, UIN Sunan Gunung Djati, Indonesia.

Publisher

Department of Science Education, Faculty of Teacher Training and Education, Universitas Sultan Ageng Tirtayasa in Cooperation with Perkumpulan Pendidik IPA Indonesia (PPII)/Indonesian Society for Science Educators

Email and Address

Jl. Ciwaru Raya No. 25 Cipocok Jaya Serang Banten 42117 Email: jppi@untirta.ac.id and jppiuntirta@gmail.com

p-ISSN: 2477-1422 e-ISSN: 2477-2038,

JURNAL PENELITIAN DAN PEMBELAJARAN IPA Vol.6, No.1, p.1-165, May 2020

Jurnal Penelitian dan Pembelajaran IPA is published twice a year, May and November contains publications of research in the field of science learning including chemistry learning, physics learning, biology learning and natural sciences learning. Since 2019 Jurnal Penelitian dan Pembelajaran IPA also covers the issues of environmental based-learning

PUBLISHER

DEPARTMENT OF SCIENCE EDUCATION FACULTY OF TEACHER TRAINING AND EDUCATION UNIVERSITAS SULTAN AGENG TIRTAYASA IN COOPERATION WITH PERKUMPULAN PENDIDIKAN IPA INDONESIA (PPII)/ INDONESIAN SOCIETY FOR SCIENCE EDUCATORS

PREFACE

Praise to Allah SWT who has given all his gifts and favors so that publishers are able to publish the Jurnal Penelitian dan Pembelajaran IPA volume 6, issue 1, May 2020. Shalawat and greetings may be poured into Prophet Muhammad SAW, to his family, His companions and his followers until the end of time. The publication of this journal cannot be separated from the support of various parties, from university to degree level, researchers from within and outside Universitas Sultan Ageng Tirtayasa (UNTIRTA), other partners and stakeholders. Do not forget to thanks the Dean of Faculty of Teacher Training and Education (FKIP) and Head of Department of Science Education, who has provided support in the publication of this journal. We would also like to thanks both the moral and material support given by all parties who provided the way to the publication of this journal. Hopefully this journal can be used and useful for the publication of research in UNTIRTA or outside UNTIRTA.

In volume 5 (five) issue 1 (one) consists of 8 articles. All articles are the result of a research study. The research methods used by the authors include survey, systematic review, descriptive, correlational, case study, and research and development (R & D). The proportion of articles is 100% of articles from outside Universitas Sultan Ageng Tirtayasa

Finally the editorial board realizes that this journal is so far from perfect, constructive feedback and suggestions to publishers for future improvements so publishers hope that this journal can have better quality

Serang, May 2020

Editorial Board

TABLE OF CONTENTS

PREFACE	ii
TABLE OF CONTENTS	iii
Investigating Metacognitive Attitude of High School Biology Teachers	
Zulfiani Zulfiani, Yanti Herlanti, Regiani Yunistika	1
Fostering Scientific Creativity in Teaching and Learning Science in Schools:	
A Systematic Review	
Rubaaiah Sidek , Lilia Halim, Nor Aishah Buang, Nurazidawati Mohamad Arsad	13
Crucial Cognitive Skills in Science Education: A Systematic Review	
Uswatun Hasanah, Kinya Shimizu	36
Exploring Vietnamese Students' Participation and Perceptions of Science	
Classroom Environment in STEM Education Context	
Le Hai My Ngan, Nguyen Van Hien, Le Huy Hoang, Nguyen Duy Hai,	
Nguyen Van Bien	73
Development of Learning Tools based on Food Security to Build Scientific	
Attitude of Undergraduate Students	
Dwi Indah Suryani, Liska Berlian, Dinda Rachmawati, Mila Dewi Laraswati	87
The Development of Local Wisdom-Based Physics Cognitive Ability	
Assessment Instrument for Senior High School Students	
Tyas Endah Anggraeni, Mundilarto Mundilarto	102
The Correlation Between Biology Learning Outcomes and Senior High School	
Students' Self Concept	
Siti Rodiah, Ratna Komala, Rusdi Rusdi	141
Analysis of Students' Comprehension and Misconception towards the Topic of	
Salt Solubility	
Sabila Izzati, Nur Rochmah	152