



Application of the Climate Kids Interactive Web to Build Understanding of Concepts and Environmental Awareness of Class VI Students on Global Warming Material

Irma Aulia^{1*}, Atep Sujana¹, Cucun Sunaengsih¹

¹ Program Studi Pendidikan Guru Sekolah Dasar UPI Kampus Sumedang, Sumedang, Indonesia

Received: September 4, 2023

Revised: December 12, 2023

Accepted: January 25, 2024

Published: January 31, 2024

Corresponding Author:

Irma Aulia

irmaaulia18@upi.edu

DOI: [10.29303/jppipa.v10i1.6386](https://doi.org/10.29303/jppipa.v10i1.6386)

© 2024 The Authors. This open access article is distributed under a (CC-BY License)



Abstract: There is a problem faced, namely that elementary school students' understanding of science concepts is still low, which has an impact on low environmental awareness. This research aims to determine the application of the Climate Kids interactive web to build students' conceptual understanding and environmental awareness. The method used in this research is quantitative with an exploratory approach and pre-Exploratory with a one group pretest-posttest design. Participants in this research involved 25 students, 10 male students and 15 female students in class VI of one of the state elementary schools in West Bandung Regency, West Java Province. The research results show that the Climate Kids interactive web can build conceptual understanding and environmental awareness as seen from the average pretest score of 37.67 while the posttest average score is 79.87, supported by the results of the Wilcoxon test with $asympt. Sig. 0.000 < 0.05$, which means there is a significant difference between the pretest-posttest results and the average environmental awareness questionnaire results obtained are 92%, which shows that the level of students' environmental awareness after being given learning is in the very high category.

Keywords: Climate Kids Interactive Web; Concept Understanding; Environmental Awareness

Introduction

Global warming is an environmental issue that is being faced by all residents in various parts of the world. Global warming is the process of increasing the average temperature in the atmosphere, sea and earth's surface which is caused by increasing greenhouse gas emissions as a result of increasing human and industrial activities (Wildan et al., 2019). Human activity is the main factor in the imbalance between humans and the environment (Purnami et al., 2021). This imbalance causes climate change which has an impact on the sustainability of ecosystems and threatens the survival of humans, animals and plants. Climate change is an important problem because it has a major impact on the environment, human health, plant productivity and even the death of living populations throughout the world (Meilinda et al., 2017). This serious impact is of

course the human responsibility to understand environmental awareness.

Environmental awareness is a state of awakening the soul to know something in depth about the environment which can be reflected in a person's behavior and actions (Neolaka in Munawar et al., 2019). A person's behavior towards their environment can be seen from their habits, behavior that is irresponsible towards the environment can cause problems and environmental damage (Istiana et al., 2020). Small habits such as littering are often considered trivial by most people. This is because littering is considered nonviolent behavior because there are no sanctions imposed (Agustina et al., 2023).

The habit of littering often occurs in various environments, including schools. It has been proven that there are still many students who throw rubbish out of place and this causes the school environment, even

How to Cite:

Aulia, I., Sujana, A., & Sunaengsih, C. (2024). Application of the Climate Kids Interactive Web to Build Understanding of Concepts and Environmental Awareness of Class VI Students on Global Warming Material. *Jurnal Penelitian Pendidikan IPA*, 10(1), 246–253. <https://doi.org/10.29303/jppipa.v10i1.6386>

outside the school, to still be littered with various types of rubbish (Anjarwati et al., 2022). This indicates that students' environmental awareness is still low. Environmental awareness will be achieved if it is carried out continuously from an early age through a habituation process (Nurulloh, 2019). Instilling an understanding of the importance of protecting the environment is very good if it is implemented through education (Marjohan & Afniyanti, 2018). The educational process is a scientific discipline that cannot be separated from everyday life (Sunaengsih, 2017). Through education, it is hoped that it will function as a long-term non-structural effort to reduce the impact of global warming, especially in elementary schools (Habibah & Irawan, 2023).

At the elementary school level, instilling cultural values and environmental awareness is very important to realize, because culture and environmental awareness will be embedded if they are formed from an early age (Safitri et al., 2022). If students have high environmental awareness, a clean school environment will be created, creating comfort in carrying out the learning process and influencing efforts to reduce the impact of global warming. There is a positive and significant relationship between environmental knowledge and students' environmental awareness (Munawar et al., 2019). This means that environmental knowledge contributes to environmental awareness. In the Indonesian education curriculum, one of the lessons that can increase environmental awareness is through learning Natural Sciences (Parker & Prabawa-Sear, 2019).

Science learning is learning that is linked to real conditions that study everything that exists on earth (Gita et al., 2018). Science learning has an important role in fostering understanding of basic scientific concepts for environmental problems (P. Susongko & T. Afrizal, 2018). The aim of science learning is to increase knowledge and understanding of science concepts (Pramesti et al., 2022). The aim of science learning in elementary school is to provide understanding and development of knowledge through science concepts that are interconnected with life to understand the natural environment and physical environment so that students can think scientifically in solving problems through process skills (Marudut et al., 2020).

Concepts are crucial in science learning, because by understanding concepts students not only remember and store the information they get, but students can understand this information well. Understanding concepts is the ability to receive, absorb and understand information in material obtained through a series of events or happenings that can be seen and heard so that they can be realized in everyday life (Susanti et al., 2021). Through good understanding of concepts, students'

understanding of the subject matter will also increase (Aen & Kuswendi, 2020). This means that students' environmental awareness is influenced by how well they understand the concepts they have.

In line with research conducted by (Zahroh et al., 2020), information was obtained that out of 16 students, only 2 students (12.50%) completed the science concept understanding test. This means that there are 14 students (87.50%) who still experience difficulties in understanding science concepts. This figure shows that understanding of science concepts in elementary school is still said to be very low. This is certainly a strong reason why students' environmental awareness in elementary schools is still said to be low because their understanding of science concepts is also very low. Achieving conceptual understanding is influenced by factors related to the learning process provided (Abdillah & Anggara, 2021).

The learning process certainly involves the role of professional educators who are able to manage learning so that the growth of understanding of concepts and environmental awareness can be achieved well. As professional educators, teachers must also have in-depth knowledge and understanding regarding the material they teach (Kartini et al., 2019). To achieve this goal, an educator must be able to apply various supporting tools in the learning process, including the use of technology. Therefore, the learning media used in learning must be able to be integrated with technology (Kurniawan et al., 2022). Through learning media, it is hoped that it can help students achieve learning goals (Sujana & Rachmatin, 2019). The low understanding of concepts and environmental awareness of students in elementary schools proves that there is a need for a supporting tool in the learning process that can increase students' understanding of science concepts and environmental awareness, one of which is by implementing web-based interactive learning media. Web-based learning media is an innovation that has had a big influence on changes in the learning process (Januarisman in Salsabila & Aslam, 2022). Innovation in learning is growing rapidly in the 21st century as a result of advances in technology and science (Mahardika et al., 2020). This provides students with new learning experiences, allowing the learning process to be more varied, interactive and innovative so as to increase student achievement. This statement is supported by research conducted by (Utami et al., 2020) that the use of web-based media is declared suitable for use at the elementary school level because it is very practical and can increase student learning completeness. Currently, there are many web-based learning media that can be used by educators to support the learning process according to the learning context, one of which is the Climate Kids interactive web.

Climate Kids is an interactive website that presents various information about climate and the environment as a learning resource for children, packaged in an interesting, easy to understand and interactive way. This website provides various features such as short animated videos, images, posters, articles and educational games that can explain the concept of climate change. Apart from that, this website is also easy to use and can be accessed via cellphone, computer or laptop as long as it is connected to the internet network. Therefore, the researcher raised the topic of using the Climate Kids interactive web with the main focus being to build conceptual understanding and environmental awareness, especially for class VI students on global warming material.

This research generally aims to determine the application of the Climate Kids interactive web which can overcome the low understanding of science concepts and environmental awareness, especially in class VI elementary school students. Specifically, the aim of this research is to determine the effectiveness of implementing the Climate Kids interactive web in learning and to determine students' understanding of concepts and environmental awareness after being taught using the Climate Kids interactive web.

Method

This research uses quantitative methods with an exploratory approach. Exploratory research is research that attempts to explain or describe facts when the researcher does not yet have an outline or explanation of the facts (Mudjiyanto, 2018). Based on research conducted by (Prihatiningsih et al., 2023) exploratory research does not have a formal plan because it only looks for new ideas or relationships so its implementation depends on the researcher's ability and creativity. Therefore, researchers create a research flow that has been developed according to the needs and topics raised in the research. The flow of the research can be seen in Figure 1.

The exploration used in this research is pre-Exploratory with a one group pretest-posttest design (Lumanauw et al., 2022). Data collection techniques are obtained from test and non-test results. The researcher used a test collection technique in the form of descriptive questions which were carried out twice, namely a pretest and a posttest with 6 questions. The pretest questions are given before learning without giving special treatment, while the posttest questions are given after learning with the Climate Kids interactive web. The pretest-posttest results were analyzed using the Wilcoxon test using the SPSS 26 application. In table 1 is an explanation of the research design used by researchers.

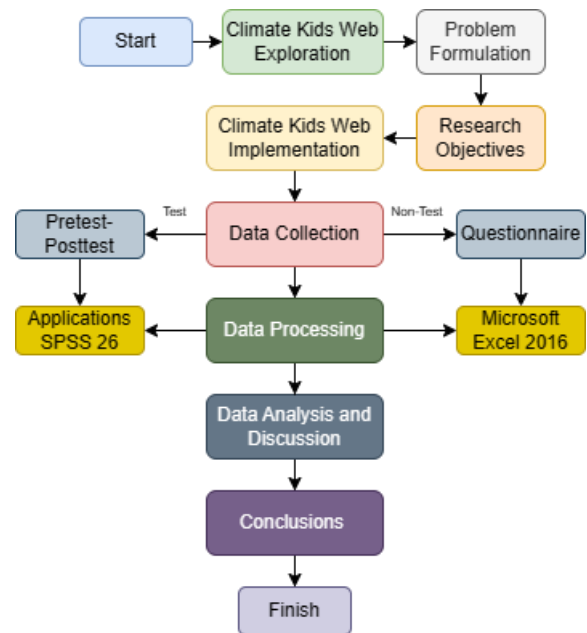


Figure 1. Research Flow

Table 1. One Group Pretest-Posttest Design Experiment

O ₁	X	O ₂
----------------	---	----------------

Information:

O₁: Pretest Value (Initial Observation)

O₂: Posttest Value (Final Observation)

X: Treatment (When given treatment using web learning media Climate Kids interactive)

The non-test data collection technique is in the form of a closed questionnaire to measure students' environmental awareness which is given after learning using the Climate Kids interactive web which consists of 8 questions. The data analysis technique for non-test data uses a Likert scale which is represented in table 2. To convert from value to percentage use equation 1.

Table 2. Likert Scale

Answer Categories	Question Item Score
Strongly agree	5
Agree	4
Neutral	3
Don't agree	2
Strongly Disagree	1

$$Percentage = \frac{Student\ answer\ score}{total\ score} \times 100\% \tag{1}$$

If the score and percentage results have been obtained, then the average calculation is carried out for each indicator with the help of Microsoft Excel 2016. The next step is to interpret the percentage of environmental

awareness assessments based on the categories in table 3.

Table 3. Percentage of Environmental Awareness Assessment

Level	Students' Environmental Awareness Level
80.10-100.00	Very Hight
60.10-80.00	Hight
40.10-60.00	Enough
20.10-40.00	Low
0.00-20.00	Very Low

This research was carried out at one of the elementary schools in West Bandung Regency, West Java Province. Participants in this research were 25 class VI students consisting of 10 male students and 15 female students. This research has two types of variables, namely the dependent variable (understanding of concepts and environmental awareness of Class VI students on Global Warming material) and the independent variable (Climate Kids interactive web). The Wilcoxon test used to analyze the pretest-posttest results aims to determine the influence related to the use of the Climate Kids interactive web to build class VI students' conceptual understanding of global warming material. Meanwhile, a closed questionnaire instrument was used to determine the extent of students' environmental awareness after being taught using the Climate Kids interactive web.

Result and Discussion

Application of the Climate Kids Interactive Web in Learning

In the learning process in an exploratory class, learning starts from introductory, core and closing activities. After the preliminary activities, researchers gave pretest questions to students which aimed to measure students' initial abilities regarding global warming material. The learning carried out in this research helps students to understand science learning material which not only emphasizes mastery of concepts, but science learning can also teach students to have a scientific attitude in respecting the natural surroundings, especially environmental awareness. Therefore, researchers tried to apply the Climate Kids interactive web which was used in the learning process in this research. The display of the Climate Kids interactive web is as shown in Figure 2.



Figure 2. Main appearance of the Climate Kids website

On the main web display, you can see several features that can be used, such as topic boards, games, activities and so on. In this case, researchers focus on the Weather & Climate topic section.



Figure 3. Animation Video Display

Researchers use animated video features in learning. This website provides short animated videos on each discussion topic that explain scientific concepts in a way that is interesting and easy for children to understand.



Figure 4. Article display

Researchers utilize article features in learning. This website is equipped with short articles that include information about climate change including its impacts and explain how to contribute to environmental care. The articles provided are very informative based on existing facts supported by pictures that are interesting for children.



Figure 5. Poster display

Researchers use the available posters as support for understanding global warming material in learning. Almost every topic has poster images available so that children don't feel bored while learning.



Figure 6. Game Display

Researchers use interactive games on websites for learning because the games on this website provide scientific concepts and facts related to climate change so that children are very interested in playing these games. During the learning process, most of the students were very enthusiastic about learning using the Climate Kids interactive website, because according to them this was a new experience that they found in learning. Apart from that, during the learning process it was seen that students were very active in asking questions, could listen to videos and explanations on the Climate Kids website, were enthusiastic in playing interactive games, and were active in discussions. In this lesson, students were divided into 5 large groups, each group consisting of 5 people and each group holding 1 cellphone to be able to access the Climate Kids website with the help of researchers and according to the guidelines written on the students' worksheets.

Class VI Students' Understanding of Science Concepts on Global Warming Material

Researchers conducted a concept understanding test using pretest and posttest questions for class VI students. The pretest and posttest questions were made the same, totaling 6 questions at HOTS (High Order Thinking Skill) level. Posttest questions were given to

measure students' conceptual understanding of global warming material before being given treatment, and posttest questions were given to measure students' conceptual understanding of global warming material after being given treatment. From 25 class VI student participants, the following description of pretest and posttest scores was obtained.

Table 4. Pretest and Posttest Descriptive Statistics

	N	Min	Max	Mean	Std. Deviation
Pretest	25	12.5	70.8	37.668	16.8912
Posttest	25	45.8	100.0	79.876	13.9688
Valid N (listwise)	25				

Based on table 4, it is known that the minimum pretest score is 12.50 and the maximum score is 45.80. Meanwhile, in the posttest results, the minimum value was 70.80 and the maximum value was 100.0. Apart from that, in the table above it is known that the average pretest score is 37.67, which shows that students' conceptual understanding is still relatively low, while the average posttest score is 79.88, indicating an increase in conceptual understanding. To see whether the two pretest and posttest data were normal or not, the Kolmogorov-Smirnov test was carried out because the data amounted to < 30 which can be seen in table 5.

Table 5. Kolmogorov-Smirnov Normality Test Results

	Statistic	df	Sig.
Pretest	0.252	25	0.000
Posttest	0.115	25	0.200*

In table 5, information is obtained that the pretest data has a sig value. < 0.05 which means that the data is not normally distributed, whereas the posttest data has a sig value. > 0.05 which means the data is normally distributed. To avoid concerns that a total of 25 participant data did not meet the requirements for using parametric statistics, a non-parametric test was carried out using Wilcoxon to determine whether there were differences between pretest data and posttest data which can be seen in table 6.

Table 6. Wilcoxon Test Results

	Posttest - Pretest
Z	-4.375 ^b
Asymp. Sig. (2-tailed)	0.000

In table 6, based on the Wilcoxon test results, the asymp results are obtained. Sig. amounting to 0.000 < 0.05 which can be concluded that there is a significant difference between pretest data and posttest data. In this case, researchers can obtain information that the

application of the Climate Kids interactive web can build class VI students' conceptual understanding of global warming material.

Environmental Awareness of Class VI Students After Learning

To measure the environmental awareness of class VI students, researchers used a non-test instrument in the form of a closed questionnaire which was distributed to students after completing the posttest questions. The aim of giving environmental awareness questionnaires is to measure the extent of students' level of environmental awareness after being given lessons using the Climate Kids interactive website which presents facts about the current state of the Earth. In the environmental awareness questionnaire, it consists of 4 statement indicators or observed indicators, where each indicator consists of 2 statements so that the number of statements that students must answer is 8 statements. The following is a recapitulation of the average percentage of each indicator observed which can be seen in table 7.

Table 7. Criteria for Environmental Awareness Questionnaire Results

Observed Indicators	Percentage (%)	Level of Environmental Awareness
Knowledge Regarding Global Warming	90.00	Very Hight
Attitudes Toward the Environment	94.00	Very Hight
Awareness Regarding Global Warming	89.00	Very Hight
Environmental Behavior	94.00	Very Hight

In table 7, information is obtained that the first indicator has a percentage of 90% with a very high level of environmental awareness. The second indicator obtained a percentage of 94% with a very high level of environmental awareness. The third indicator obtained a percentage of 89% with a very high level of environmental awareness. The fourth indicator obtained a percentage of 94% with a very high level of environmental awareness. In this case, researchers obtained information that the application of the Climate Kids interactive web can build environmental awareness in class VI students.

Conclusion

The research results show that the application of the Climate Kids interactive web in learning Global Warming material has been able to build conceptual understanding and environmental awareness in class VI

students. This is proven by an increase in pretest and posttest results seen from the average pretest score of 37,668 while the average posttest score was 79,876, supported by the results of the Wilcoxon test with asymp.Sig. equal to 0.000 < 0.05, which means there is a difference in students' understanding of concepts before and after learning using the Climate Kids interactive web. Apart from that, based on the results of the environmental awareness questionnaire after learning, the average of each indicator observed was 92%, which means the students' level of environmental awareness was in the very high category.

Acknowledgments

The researcher expresses deep gratitude to Allah SWT. God of the universe who always gives grace, health and ease in completing this article. Continuous thanks to parents, siblings and those closest to you who always pray, guide and provide moral and material support. As well as many thanks to the supervisors, namely Mr. Atep Sujana, and Mrs. Cucun Sunaengsih, who always provided guidance and direction in the preparation of this article so that the preparation of the scientific article could be completed on time. The researcher would also like to thank the Principal, Teachers and Students at one of the elementary schools in West Bandung Regency, West Java Province who always provided permission and facilities to carry out this research.

Author Contributions

The contribution of the authors involved in preparing this scientific article consisted of Irma Aulia (Author 1) who acted as a researcher who carried out observations at one of the schools that were the subject of the research and acted as a compiler of the scientific article. Mr. Atep Sujana, (Author 2) and Mrs. Cucun Sunaengsih, (Author 3) as supervisors who assist in directing, guiding and evaluating researchers in the research process and preparing scientific articles.

Funding

This research received no external funding

Conflicts of Interest

The researcher states that this scientific article is only submitted to fulfill his final assignment and is not related to any other interests

References

Abdillah, C., & Anggara, D. S. (2021). Analisis Pemahaman Konsep Ipa Siswa Pada Pembelajaran Predict-Observe-Explain Ditinjau Dari Rasa Ingin Tahu Siswa Kelas Iv Sekolah Dasar. *Jurnal Cakrawala Pendas*, 7(1). <https://doi.org/10.31949/jcp.v7i1.2463>

Aen, R., & Kuswendi, U. (2020). Meningkatkan Pemahaman Konsep Ipa Siswa Sd Menggunakan Media Visual Berupa Media Gambar Dalam Pembelajaran Ipa. *Journal Of Elementary Education*, 251

- 3(3), 99–103.
<https://doi.org/10.22460/collase.v3i3.4273>
- Agustina, H., Herdiansyah, H., & Adinegoro, H. (2023). Analysis Of Waste Management Processes Based On Peer Interaction. *Jurnal Penelitian Pendidikan Ipa*, 9(10), 8963–8973.
<https://doi.org/10.29303/Jppipa.V9i10.5302>
- Anjarwati, A., Fa, A., Mia, I., Sania Putri, D., & Sulthan Bayu Santoso, M. (2022). Peduli Lingkungan Melalui Program Kegiatan Memilah Sampah Di Sdn Sukabumi 2 Probolinggo. *Jurnal Guru Kita Pgsd*, 6(4), 390.
<https://doi.org/10.24114/Jgk.V6i4.38195>
- Gita, S. D., Annisa, M., & Nanna, W. I. (2018). Pengembangan Modul Ipa Materi Hubungan Makhluk Hidup Dan Lingkungannya Berbasis Pendekatan Kontekstual. *Lensa (Lentera Sains): Jurnal Pendidikan Ipa*, 8(1).
<https://doi.org/10.24929/Lensa.V8i1.28>
- Habibah, M., & Irawan, F. A. (2023). Tingkat Kesadaran Lingkungan Siswa Dalam Menghadapi Pemanasan Global Dalam Kegiatan Literasi Bumiku Program Kampus Mengajar 4. *Jurnal Pendidikan Geosfer*, 8(1).
<https://doi.org/10.24815/Jpg.V8i1.29167>
- Istiana, R., Suhardi, E., Misdaligo, N. E. S., Ichsan, I. Z., Sigit, D. V., Fachrial, N. F. H., Prayitno, T. A., Arif, W. P., & Rismayati, A. I. (2020). Perilaku Bertanggung Jawab Lingkungan: Kesadaran Lingkungan Siswa Pada Pendidikan Biologi. *Jurnal Ilmiah Pendidikan Biologi*, 4(2), 87–96.
<https://doi.org/10.31629/ph.v4i2.2786>
- Kartini, K., Doyan, A., Kosim, K., Susilawati, S., Khasanah, B. U., Hakim, S., & Mulyadi, L. (2019). Analysis Of Validation Development Learning Model Attainment Concept To Improve Critical Thinking Skills And Student Learning Outcomes. *Jurnal Penelitian Pendidikan Ipa*, 5(2), 185–188.
<https://doi.org/10.29303/Jppipa.V5i2.262>
- Kurniawan, C., Dhiyaulkhaq, M., Wijayati, N., Kasmui, K., Nasekhah, D., & Ismail, M. H. (2022). Android-Based Mobile Learning Application Design: Its Implementation And Evaluation For Aiding Secondary School Students' To Study Inorganic Compound Nomenclature. *Jurnal Pendidikan Ipa Indonesia*, 11(3), 469–476.
<https://doi.org/10.15294/Jpii.V11i3.38243>
- Lumanauw, C., Liando, N., & Andries, F. (2022). Improving Students' Reading Comprehension Using Project-Based Learning. *Journal Of Teaching English*, 1(4), 515–527.
<https://doi.org/10.2801/jotell.v1i4.3704>
- Mahardika, I. K., Astutik, S., Zakaria, A. F., Doyan, A., & Susilawati, S. (2020). Pengembangan Model Pembelajaran Meaningful Investigation Laboratory (Mil) Untuk Meningkatkan Keterampilan Representasi Verbal, Grafik, Dan Matematis (R-Vgm) Pada Pembelajaran Fisika Sma Di Jawa Timur. *Jurnal Pendidikan Sains Indonesia*, 8(2), 280–291.
<https://doi.org/10.24815/Jpsi.V8i2.17386>
- Marjohan, M., & Afniyanti, R. (2018). Penerapan Nilai Pendidikan Karakter Peduli Lingkungan Di Kelas Tinggi Sekolah Dasar. *Jurnal Gentala Pendidikan Dasar*, 3(1), 111–126.
<https://doi.org/10.22437/Gentala.V3i1.6767>
- Marudut, M. R. H., Bachtiar, I. G., Kadir, K., & Iasha, V. (2020). Peningkatan Kemampuan Berpikir Kritis Dalam Pembelajaran Ipa Melalui Pendekatan Keterampilan Proses. *Jurnal Basicedu*, 4(3), 577–585.
<https://doi.org/10.31004/Basicedu.V4i3.401>
- Meilinda, M., Rustaman, N. Y., & Tjasyono, B. (2017). The Perceptions Of Pre-Service Science Teachers And Science Teachers About Climate Change. *Jurnal Pendidikan Ipa Indonesia*, 6(2), 292.
<https://doi.org/10.15294/Jpii.V6i2.9490>
- Mudjiyanto, B. (2018). Tipe Penelitian Eksploratif Komunikasi. *Jurnal Studi Komunikasi Dan Media*, 22(1), 65.
<https://doi.org/10.31445/Jskm.2018.220105>
- Munawar, S., Heryanti, E., & Miarsyah, M. (2019). Hubungan Pengetahuan Lingkungan Hidup Dengan Kesadaran Lingkungan Pada Siswa Sekolah Adiwiyata. *Lensa (Lentera Sains): Jurnal Pendidikan Ipa*, 9(1), 22–29.
<https://doi.org/10.24929/Lensa.V1i1.58>
- Nurulloh, E. S. (2019). Pendidikan Islam Dan Pengembangan Kesadaran Lingkungan. *Jurnal Penelitian Pendidikan Islam*, 7(2), 237.
<https://doi.org/10.36667/Jppi.V7i2.366>
- P. Susongko, & Afrizal, T. (2018). The Determinant Factors Analysis Of Indonesian Students' Environmental Awareness In Pisa 2015. *Jurnal Pendidikan Ipa Indonesia*, 7(4).
<https://doi.org/10.15294/Jpii.V7i4.10684>
- Parker, L., & Prabawa-Sear, K. (2019). *Environmental Education In Indonesia*. Routledge.
<https://doi.org/10.4324/9780429397981>
- Pramesti, K. A., Perdiansyah, F., & Wibisana, E. (2022). Pengaruh Media Audiovisual Terhadap Pemahaman Konsep Ipa Kelas V Sdn Cogreg I Kabupaten Tangerang. *Jurnal Pendidikan Dan Konseling*, 4(5), 5484–5491.
<https://doi.org/10.31004/jpdk.v4i5.7535>
- Prihatiningsih, T., Agustin, R., Sugiarto, W. P., Fitriana, L., & Anjaksana, F. (2023). Penerapan Studi Eksploratif Yang Memengaruhi Efektivitas Anak Untuk Meningkatkan Zona Belajar Di Desa

- Kedungdalem. *Jurnal Pengabdian Masyarakat*, 4(3), 6686–6691.
<https://doi.org/10.31004/cdj.v4i3.18296>
- Purnami, W., Ashadi, A., Suranto, S., Sarwanto, S., Sumintono, B., & Wahyu, Y. (2021). Investigation Of Person Ability And Item Fit Instruments Of Eco Critical Thinking Skills In Basic Science Concept Materials For Elementary Pre-Service Teachers. *Jurnal Pendidikan Ipa Indonesia*, 10(1), 127–137. <https://doi.org/10.15294/jpii.v10i1.25239>
- Safitri, N., Marini, A., & Nafiah, M. (2022). Manajemen Lingkungan Berbasis Sekolah Dalam Penanaman Karakter Dan Kesadaran Lingkungan Hidup Berkelanjutan Di Sekolah Dasar. *Jurnal Pendidikan Dasar*, 13(01), 1–9. <https://doi.org/10.21009/jpd.v13i01.27060>
- Salsabila, F., & Aslam, A. (2022). Pengembangan Media Pembelajaran Berbasis Web Google Sites Pada Pembelajaran Ipa Sekolah Dasar. *Jurnal Basicedu*, 6(4), 6088–6096. <https://doi.org/10.31004/basicedu.v6i4.3155>
- Sujana, A., & Rachmatin, D. (2019). Literasi Digital Abad 21 Bagi Mahasiswa Pgsd: Apa, Mengapa, Dan Bagaimana. *Current Research In Education: Conference Series Journal*, 1(1), 003–013.
- Sunaengsih, C. (2017). *Pengelolaan Pendidikan*. Upi Sumedang Press.
- Susanti, N. K. E., Asrin, A., & Khair, B. N. (2021). Analisis Tingkat Pemahaman Konsep Ipa Siswa Kelas V Sdn Gugus V Kecamatan Cakranegara. *Jurnal Ilmiah Profesi Pendidikan*, 6(4), 686–690. <https://doi.org/10.29303/jipp.v6i4.317>
- Utami, R. S., Aji, S. D., & Chrisyarani, D. D. (2020). Pengembangan Media Pembelajaran Berbasis Website Tema 6 Subtema 1 Kelas IV. *Prosiding Seminar Nasional Pgsd*, 4(1), 249–255. Retrieved from <https://conference.unikama.ac.id/artikel/index.php/pgsd/article/view/504>
- Wildan, W., Hakim, A., Laksmiwati, D., & Supriadi, S. (2019). Sosialisasi Perangkat Pembelajaran Berbasis Lingkungan Untuk Guru Ipa Smp/Mts Di Lombok Barat Dalam Upaya Mengurangi Laju Pemanasan Global. *Jurnal Pendidikan Dan Pengabdian Masyarakat*, 2(1), 109–113. <https://doi.org/10.29303/jppm.v2i1.1025>
- Zahroh, F., Setyawan, A., & Citrawati, T. (2020). Studi Permasalahan Dalam Pembelajaran Tematik Muatan Ipa Kelas Iv Sdn Socah 4 Kabupaten Bangkalan. *Prosiding Nasional Pendidikan*, 1(1), 474–479.