Biosfer: Jurnal Pendidikan Biologi

Journal homepage: http://journal.unj.ac.id/unj/index.php/biosfer

The influence of knowledge about environmental change, information reception, and naturalistic intelligence on environmental care

Nurfiana Abdullah*, Firdaus Daud, Muhammad Darwis, Muhiddin, Arifah Novia Arifin

Biology Education, Faculty of Mathematics and Natural Sciences, Universitas Negeri Makassar, Indonesia

*Corresponding author: nurfiana19abdullah@gmail.com

ARTICLE INFO

Article history
Received: 05 September 2022
Revised: 28 July 2023
accepted: 08 August 2023

Keywords:
Environmental awareness
Environmental change knowledge
Information reception
Naturalistic intelligence

ABSTRACT

This study is an ex post facto research that aims to discover the influence of knowledge on environmental changes, receiving information, on environmental awareness and the influence of environmental changes, receiving information on environmental awareness by involving naturalistic intelligence. The study population was all students of grade XI at SMAN in East Banggae subdistrict in Majene district, namely SMAN 1 Majene, SMAN 2 Majene, and SMAN 3 Majene. The research instrument employed a test of environmental change knowledge, a questionnaire for information reception, naturalistic intelligence and environmental awareness. The results showed that, 1) environmental changes are in the very low category, information reception is in the medium category, naturalistic intelligence is in the high category.

Abdullah, N., Daud, F., Darwis, M., Muhiddin, M., & Arifin, A. N. (2023). The influence of knowledge about environmental change, information reception, and naturalistic intelligence on environmental care. *Biosfer: Jurnal Pendidikan Biologi, 16*(2), 335-346. https://doi.org/10.21009/biosferjpb.29036

INTRODUCTION

Humans and their environment have become an inseparable unit. Humans need the environment for their survival, and the environment needs the role of humans for its sustainability. Therefore, as consumers of environmental products, humans should always pay attention to environmental sustainability so that they can enjoy it in the long term.

However, nowadays environmental problems have become a serious concern in the State of Indonesia because it has been seen and is increasing environmental pollution caused by human actions. This statement is in line with the opinion of Puspita et al. (2016) that human behavior influences the quality of the environment and most humans make a negative contribution, causing a decrease in environmental quality.

Until the 21st century, environmental problems are now a serious problem because air and water pollution, global warming, climate change and reduced biodiversity can cause global threats in the future (Katuwal, and Bohara, 2011).

The Head of BMKG in the Environmental Statistics book further stated that climate change that occurs will cause other disasters such as floods, landslides, high waves, and rising sea levels that not only claim lives but also cause economic losses and will further cause diseases that can lead to death. Therefore, an immediate solution is needed to prevent the negative impacts caused by decreased environmental quality (Widya et al., 2019).

The solution that can be done is to increase public knowledge regarding the importance of protecting the environment as according to Suhardjo (2016) that the cause of the decline in environmental quality is due to a lack of public knowledge and education about the environment, making it difficult to change bad habits related to their behavior towards the environment.

Education about the importance of protecting the environment should be instilled early in school, one of which is through biology subjects on environmental change material KD 3.11. as Nabilah et al. (2018) that one of the intracurricular activities that can be done to increase students' environmental care is by learning environmental materials at KD 3.11 environmental change. Furthermore, Ardan (2016) states that biological material with studies on the interaction of living things with their environment can be used as an alternative to increase environmental knowledge and develop students' environmental care attitudes, therefore teachers are expected to link the material in class with the conditions and potential of the local environment to maximize environmental protection.

Knowledge about the environment is not only obtained through formal education in schools, but also through information in the mass media. Through this easily accessible information, it is hoped that it will increase awareness to protect the environment as according to Kushwaha (2015) that the role of the mass media is very important in giving a positive attitude towards the environment. However, Sukmarani and Syarif (2018) state that in shaping behavior it is also strongly influenced by its multiple intelligences because it can determine their behavior in everyday life and how they act in solving problems. One of the multiple intelligences related to environmental management is naturalistic intelligence. Children with naturalistic intelligence will maximize their ability to protect nature,

Majene Regency is one of the regencies in West Sulawesi with a topography that varies from coastal, lowland, highland, but most of the area is in the form of hills to mountains that stretch from north to south. One of the sub-districts located in the city of Majene is East Banggae District. Based on data from the Central Bureau of Statistics of Majene Regency (2020) that the dominant area of the East Banggae District is in the form of hills to mountains as evidenced by the superior products of plantation crops, namely coconut and cocoa with a forest area of 113.8 hectares consisting of protected forests, mangroves, and urban forests.

However, based on data from the Pokjanis PPSP of Majene Regency, (2012) stated that public awareness to maintain environmental cleanliness is still very lacking so that the waste produced is even partially burned, and most of it is disposed of in drainage channels, causing blockage of drainage channels resulting in flooding. Some of these explanations are the reasons for conducting this research.

METHODS

Research Design

This type of research is an "ex post facto" research which is multiple correlational. this research was carried outin June. The location of the research was in SMA Negeri 1, SMA Negeri 2, and SMA Negeri 3, Majene Regency, West Sulawesi Province, Indonesia.

Population and Samples

The population in this study were all students of SMAN 1 Majene, SMAN 2 Majene, and SMAN 3 Majene class XI MIPA in the 2021/2022 academic year which consisted of study groups with a total of 361 students then with the slovin formula (Soentoro, 2015).Based on the slovin formula, the number of samples was 263 people. There are 3 types of variables, namely the independent variable consisting of knowledge of environmental changes, and information acceptance, as well as the intervening variable, namely naturalistic intelligence, and the dependent variable, namely environmental awareness. The research design can be seen in the Figure 1.

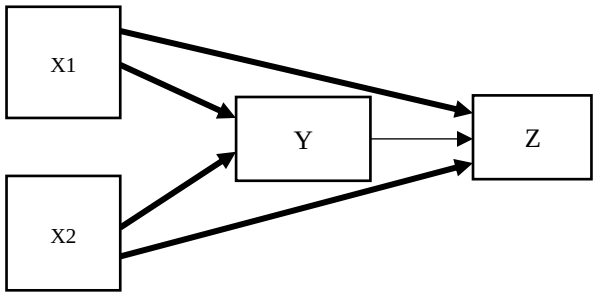

Figure 1. Research Design

Information:
X1 :Environmental Knowledge
X2 :Information Receipt
Y :Naturalistic Intelligence
Z :Environmental Concern

Instruments

The instruments used in this study were test and non-test instruments. The test measures the knowledge of environmental changes whose indicators are developed from the basic competence of 3.11. and 4.11 material on environmental changes for class X SMA. The test has been checked by the validator and declared valid and reliable.There are 11 indicators to measure KD 3.11 which are developed into 25 multiple choice questions. Where as KD 4.11 is in the form of essay questions with 3 indicators then developed 6 numbers. Giving points to essay questions is based on the rubric of the assessment of essay questions that have been made. While non-test in the form of a questionnaire is used to measure the level of acceptance of information, naturalistic intelligence, and environmental awareness.All non-test instruments have been validated and the results are all valid with a total item correlation value > R table, and reliable as evidenced by an alpha coefficient value > R table. The instrument used to measure students' acceptance of information was measured through a questionnaire with seven indicators which were developed into 20-item questions. The level of naturalistic intelligence was measured through a questionnaire with six indicators which was developed into 20-item questions, while for the level of environmental concern students were measured through a questionnaire with eight indicators which were developed into 25-item questions.

The questionnaire used to receive information is in the form of questions about what media respondents get information about the environment, while the naturalistic intelligence and environmental awareness questionnaires are used for the questionnaire. This a closed questionnaire with a Likert scale whose answers have been provided consisting of: of 5 answer choices, namely strongly agree (SS), agree (S), doubtful (RG), disagree (TS) and strongly disagree (STS) in the form of favorable (agree) and unfavorable (negative) statements so that only respondents just choose the appropriate statement or match.

Procedure

This research procedure is divided into 3 stages, namely the initial stage, the implementation stage, and the final stage. The initial stage is the preparation stage. Some of the preparations made by researchers before taking data at schools such as making observations to schools selected as research subjects to obtain student data which will later be used as research samples. The research implementation stage is the distribution of instruments to respondents after an expert validator has

declared the instrument valid. The final stage is also known as the evaluation stage. At this stage, the researcher tabulates the instrument answers that the respondents have filled in, analyzes the processed data and then draws conclusions.

Data Analysis Techniques

The data that has been obtained were analyzed descriptively and inferentially.The descriptive analysis used is the frequency distribution and data description that includes the average score, maximum value, minimum value, standard deviation and coefficient of variance.Data on environmental change knowledge, information acceptance, naturalistic intelligence and environmental awareness obtained by studentsgrouped by categorization according to Azwar (2012). While the inferential analysis consists of testing assumptions and testing hypotheses.The basic assumption test consists of normality, multicollinearity, and heteroscedasticity tests. If the assumption test is met, then proceed with hypothesis testing. This study also uses path analysis techniques. According to Thoifah (2015), the path analysis method is used to test the effect of intervening variables. Path analysis is a technique to analyze causal relationships that occur in multiple regression, not only direct but also indirect effects.

RESULTS AND DISCUSSION

Descriptive analysis aims to describe each variable consisting of a frequency distribution and description of the data, including the average score, maximum value, minimum value, standard deviation and coefficient of variance. Data on environmental change knowledge, information reception, naturalistic intelligence and environmental concern obtained by students are then grouped based on the following categorization guidelines.

Table 1.
Descriptive Statistical Analysis of Each Variable in Class XI Students of SMAN Banggae Timur District

Variables	intervals	Percentages	Categories
Knowledge of Environmental Change	score 64	34%	Very low
Information Receipt	64 <score 68	33%	currently
Naturalistic Intelligence	55 <score 65	44%	tall
Environmental Concerns	score 80	50%	Very low

Based on Table 1, it is known that only the naturalistic intelligence variable has a high category.Learners can have high naturalistic intelligence because it is influenced by environmental factors such as school conditions and the environment where they livemake it easier for students to come into contact with the surrounding natural environments thathave a sensitivity to nature more than other people and likes to pay attention to the state of the natural surroundings, animals and plants.
Inferential statistical analysis aims to draw conclusions or test hypotheses.

a. Test the Effect of Knowledge of Environmental Changes (X1) and Information Reception (X2) Simultaneously on Naturalistic Intelligence (Y)

Table 2.
ANOVA Test Results Effect of Knowledge of Environmental Change and Receiving Information Simultaneously on Naturalistic Intelligence.

Independent Variables	dependent variables	Sig.	F Count
Knowledge of Environmental Changes and Information Reception	Naturalistic Intelligence	0.001	7,478

Based on Table 2, it can be concluded that Ho is rejected because Sig. (0.001) < 0.05 so that there is an effect of knowledge of environmental changes and receiving information simultaneously on naturalistic intelligence. Test the Effect of Environmental Change Knowledge (X1), Information Reception (X2) and Naturalistic Intelligence (Y) Simultaneously on Environmental Concern (Z)

Table 3.
The results of the ANOVA test simultaneously influence environmental change knowledge, information reception, and naturalistic intelligence on environmental changes

Independent Variables	dependent variables	Sig.	Fcount
Knowledge of environmental change, acceptance of information and naturalistic intelligence	Environmental Concerns	0.000	10.305

Based on Table 3, sig. (0.000) < 0.005it is concluded that Ho is rejected so that there is a simultaneous influence of knowledge of environmental change, information acceptance and naturalistic intelligence on environmental awareness.

b. Test of the Effect of Knowledge on Environmental Change (X1), Simultaneous Receipt of Information (X2) on Environmental Concern (Z)

Table 4.
The results of the Anova test influence knowledge of environmental changes, receiving information, simultaneously on environmental changes

Independent Variables	dependent variables	Fcount	Sig.
Knowledge of environmental changes, and acceptance of information	Environmental Concerns	10,976	0.000

Based on Table 4, value Sig. (0.000) < 0.05 it can be concluded that Ho is rejected so that there is a simultaneous influence of knowledge of environmental change and acceptance of information on environmental awareness.

d. Test the Effect of Knowledge of Environmental Change (X1) Directly on Naturalistic Intelligence

Table 5.
T test results of the Effect of Knowledge of Environmental Change Directly on Naturalistic Intelligence

Model	Sig.	tcount
Knowledge of Environmental Change	0.035	2.117

Based on the table 5, value sig. (0.035) < 0.005 it is concluded that H0 is rejected so that there is a direct influence of knowledge of environmental changes on naturalistic intelligence.

e. Test the Effect of Receiving Information (X2) Directly on Naturalistic Intelligence

Table 6.
T test results of the Effect of Receiving Information (X2) Directly on Naturalistic Intelligence

Model	Sig.	tcount
Information Receipt	0.007	2,707

Based on the table 6 of Sig. (0.007) < 0.005it is concluded that Ho is rejected so that there is a direct effect of receiving information on naturalistic intelligence.

f. Test the Effect of Naturalistic Intelligence (Y) Directly on Environmental Concern (Z)

Table 7.
T test results the Effect of Naturalistic Intelligence Directly on Environmental Concern.

Model	t Count	Sig.
Naturalistic Intelligence	2,888	0.004

Based on table 7, Sig. (0.004) < 0.05, it can be concluded that Ho is rejected so that naturalistic intelligence has a direct influence on environmental awareness.

g. Test the Indirect Effect of Knowledge of Environmental Changes (Through Naturalistic Intelligence) on Environmental Concern

Table 8.
T-test results the Indirect Effect of Knowledge of Environmental Changes (Through Naturalistic Intelligence) on Environmental Concern

Model	t Count	Sig.
Knowledge of Environmental Change	2,948	0.003

Based on Table 8, Sig. (0.003) < 0.005 it can be concluded that the variable environmental knowledge changes have an indirect effect (through naturalistic intelligence) on environmental awareness.

h. Test the Effect of Indirect Information Receipt (Through Naturalistic Intelligence) on Environmental Concern

Table 9.
T-test results the Effect of Indirect Information Receipt (Through Naturalistic Intelligence) on Environmental Concern

Model	t Count	Sig.
Information Receipt	2055	0.041

Based on Table 9, Sig. (0.041) < 0.05 it can be concluded that the variable of receiving information indirectly (through naturalistic intelligence) affects environmental awareness.

1. Path Analysis
Table 10.
Path Analysis

Dependent Variables	Intervening Variables	Independent Variables	Direct Influence	Indirect Influence	Total Influences
Knowledge of Environmental Change	Naturalistic Intelligence	Environmental Concerns	X1 → Y 0.131 X1 → Z 0.179	0.022*	0.201**
Information Receipt	Naturalistic Intelligence	Environmental Concerns	X2 → Y 0.167 X2 → Z 0.125	0.029*	0.154**

Based on the calculation results of Table 10, it is known that the value of the direct effect of knowledge of environmental change (X_1) on environmental concern (Z) is 0.179. The indirect effect of knowledge of environmental change on environmental concern through naturalistic intelligence is 0.022 which means that knowledge of environmental change gives positive changes to environmental concern from naturalistic intelligence is 0.022, while in total the influence of knowledge of environmental changes and receiving information affects environmental awareness of 0.201. The value of the direct effect of receiving information (X_2) on environmental concern (Z) is 0.125 and the indirect effect of receiving information on environmental concern through naturalistic intelligence is 0.029

Based on the descriptive analysis of the knowledge of environmental changes, students are in the very low category. The cause of the low knowledge of students' environmental changes can be due to the provision of this material taking place online (in a network) with the most dominant media used being the whatsapp group (WAG). WAG is more dominantly used in learning because it is easier than other applications such as google meet, and zoom. In fact, according to Budiyanto et al., (2021) that the shortage of WA applications is that teachers cannot control the seriousness of students and students will be more easily distracted by other things during learning.

Students are in the medium category based on the descriptive analysis of information acceptance. The cause of this can be seen from environmental news factors in the mass media only related to natural disasters so that coverage and production of news texts that raise environmental realities such as environmental damage caused by human activities (pollution, floods, landslides, deforestation) are only raised at certain times. only and unsustainable. In fact, to be able to carry out the function of the mass media as an educational medium, it is necessary to have an element of sustainability so that it is not just

passing information.This is in line with the opinion of Yanuari and Gumgum (2018) that the news about environmental pollution such as the lack of clean water, garbage accumulation, and land conversion is minimal in the mass media, even though news like this is very important to know in order to provide a solution.

Students are in the high category based on the descriptive analysis of naturalistic intelligence. The reason for this can be seen from the sample factors of this study coming from the science department, as the subject matter in the science department is more about nature and living things compared to other majors so that it can stimulate an increase in naturalistic intelligence as research conducted by Ahsan et al., (2015) that the multiple intelligences that have the potential to be possessed by students in the science department are logical intelligence, kinesthetic intelligence, verbal-spatial intelligence, and naturalist intelligence, while for social studies majors include logical intelligence, intrapersonal intelligence, and interpersonal intelligence.

Based on the descriptive analysis of environmental awareness, students are in the very low category. This can cause this because students have not been actively involved in protecting the environment. Akpofure (2018) states that environmental awareness or environmental care must lead to action, not just the accumulation of practical knowledge or skills, so habituation is needed. This is in line with Wardani (2019) that although the school has participated in independent Adiwiyata activities, the formation of environmental care characters needs to be supported by habituation, for example, fostering student discipline, integrating environmental materials in lessons, routine activities and developing school culture. Retnowati et al. (2020) states the same thing that the formation of environmental attitudes needs to be integrated into all school activities such as including it in the rules and providing sanctions for those who violate it, and a teacher must be able to be a good example for students . The results of this description analysis are very important to be used as a basis for teachers to act because according to Tuncay et al. (2011) that good environmental ethics will affect a person's morale which he then uses to overcome environmental problems.

The magnitude of the influence of knowledge of environmental changes and receiving information simultaneously on naturalistic intelligence for the research sample in class XI SMAN Banggae District is only 5.4% while the rest is influenced by other variables that are not controlled in this study. The effective contribution of knowledge of environmental changes to naturalistic intelligence is 2.187%, while the effective contribution of receiving information to naturalistic intelligence is 3.25%, so it can be concluded that in this study the variable of receiving information has a dominant influence on increasing naturalistic intelligence.

The low simultaneous influence of the variable knowledge of environmental changes and receiving information simultaneously on naturalistic intelligence can be caused by Ningtyas, (2019) thatnaturalistic intelligence is an ability to recognize flora and fauna and solve environmental problems and this can be honed not only through knowledge at school but can be influenced by local culture. So, someone who has a good paradigm about the environment through education in his environment can increase his naturalistic intelligence.

The magnitude of the influence of knowledge of environmental changes, information acceptance, and naturalistic intelligence simultaneously on environmental awareness for the research sample in class XI SMAN Banggae District is 10.7% while the rest is influenced by other variables that are not controlled in this study. The effective contribution of knowledge of environmental change to environmental awareness is 4.20%, the effective contribution of receiving information is 2.47% and the effective contribution of naturalistic intelligence to environmental awareness is 3.98% so it can be concluded that in this study the variable knowledge of change environment has a dominant influence on increasing environmental awareness.

The results of this analysis are in line with the statement of Irfianti et al., (2016) that in shaping one's attitude it is necessary to include new ideas, thoughts, opinions, and even facts through communicative messages. One's ideas, thoughts, and opinions can be formed through classroom learning in this case the provision of environmental change material that examines the impact of environmental change and the efforts that can be made as well as the habit of learning in the open so that it can form naturalistic intelligence.

The magnitude of the contribution of knowledge of environmental change with the simultaneous receipt of information on environmental awareness is 7.8% while the rest is influenced by other factors that are not controlled in this study. The contribution of knowledge of environmental change and

receiving information simultaneously to environmental awareness (7.8%) was smaller than the contribution of knowledge of environmental change, acceptance of information, and naturalistic intelligence to environmental awareness (10.7%). This is in line with the previous hypothesis and proves that in order to maximize the formation of the character of the environmental concern, students' naturalistic intelligence is also needed.

The magnitude of the influence of knowledge of environmental changes on naturalistic intelligence is known from the path coefficient value (β) of0.131 which shows a positive effect. score. This implies that if the increase in knowledge of environmental change is 1%, it will also be followed by an increase in naturalistic intelligence of 13.1%. So it can be concluded that the higher the knowledge of environmental changes, the higher the naturalistic intelligence.

The results of this analysis are in line with Santrock (2004) that to improve one's naturalist skills, one can do it by involving them to learn about nature, and observe flora and fauna. In addition, research that has been conducted by Rahman et al., (2018) related to increasing naturalist intelligence through biological materials using observation, investigation and experimental methods in plant and animal matter gives the result that naturalistic intelligence can be improved through biological materials.

The magnitude of the effect of receiving information on naturalistic intelligence can be seen from the value ofpath coefficient(β) of0.167 which shows a positive effect. scorethis means that if the increase in information acceptance is 1%, it will also be followed by an increase in naturalistic intelligence of 16.7%. So it can be concluded that the higher the acceptance of information, the higher the naturalistic intelligence.

The effect of receiving information on naturalistic intelligence is confirmed by research conducted by Ningrum et al. (2018) about*Naturalistic Intelligence and Environmental Awareness among Graduate Students*. This research explains that one of the indicators to measure naturalistic intelligence is to be very interested in lessons or television shows, videos, books or objects about nature.

The magnitude of the influence of naturalistic intelligence on environmental awareness can be seen from the value ofpath coefficient (β) of 0.174 which indicates that if there is an increase in naturalistic intelligence of 1%, it will be followed by an increase in environmental awareness of 17.4%. So it can be concluded that the higher the naturalistic intelligence, the higher the environmental awareness.

Previous research related to the relationship between naturalistic intelligence and environmental awareness has been carried out by Rahmawati et al. (2021) with research results showing that there is a positive and significant relationship between naturalistic intelligence and environmental care attitudes so that the higher the student's naturalistic intelligence level, the higher the student's caring attitude towards the environment. Jena and Bhagirath (2017) state that someone who has emotional closeness to nature and loves nature will play an important role in pro-environmental activities because interactions with their emotions strongly influence the emergence of action.

Lee et al., (2013) stated that environmental awareness or sensitivity includes affective and cognitive dimensions, which means that a person must have environmental knowledge to increase environmental awareness. because there is a partially significant relationship between naturalistic intelligence and environmental awareness, but students who have high knowledge of environmental change will automatically have a high level of environmental awareness even though the child basically has no interest in talking about nature, or even though the child does not like to explore in nature as a characteristic of people who have naturalistic intelligence. So that in educational activities, the effort that can be done is always to involve students for environmental protection so that they have awareness and knowledge of ecological principles that aim to maintain a balance between individual, community and environmental health (Lualhati, 2019). or even if the child does not like to explore in nature as it is characteristic of people who have naturalistic intelligence. So that in educational activities, the effort that can be done is always to involve students for environmental protection so that they have awareness and knowledge of ecological principles that aim to maintain a balance between individual, community and environmental health (Lualhati, 2019). or even if the child does not like to explore in nature as it is characteristic of people who have naturalistic intelligence.

Students who often get information or news related to the environment in the mass media will automatically have awareness and be moved to protect the environment. Therefore, through the results of this study it is suggested toincreasing creativity in conveying information through the mass media related to environmental issues and the intensity of its delivery needs to be prioritized compared to

other information due to increasingly apprehensive environmental conditions.According to Yanuari and Gumgum (2018), environmental issues are rarely raised as a major issue and pay much more attention to political issues, so almost all mass media have political rubrics. Whereas information in the mass media is basically a public agent to control power and fight for public interests and saving the environment is part of the public interest.So thateffort to deliver appeals to all parties is participation in the movement save environmental sustainability.

CONCLUSION

The level of knowledge of environmental changes of students in class XI SMAN in the District of Banggae, Majene Regency is in the very low category, the level of information acceptance of students is in the medium category, the level of naturalistic intelligence of students is in the high category, and the level of environmental awareness of students is in the very category. low. There is an effect of knowledge of environmental changes and receiving information simultaneously on the naturalistic intelligence of class XI SMAN students in East Banggae District, Majene Regency. There is a simultaneous influence of environmental change knowledge, information acceptance, and naturalistic intelligence on environmental awareness of class XI SMAN students in East Banggae District, Majene Regency. There is an effect of knowledge of environmental changes and the simultaneous reception of information on environmental awareness of class XI SMAN students in East Banggae District, Majene Regency. Environmental change knowledge has a direct and significant effect on the naturalistic intelligence of class XI SMAN students in East Banggae District, Majene Regency. There is a direct and significant effect of receiving information on the naturalistic intelligence of class XI SMAN students in East Banggae District, Majene Regency. There is a direct and significant influence of naturalistic intelligence on environmental awareness of class XI SMAN students in East Banggae District, Majene Regency. There is an indirect influence of knowledge of environmental changes (through naturalistic intelligence) on environmental awareness of class XI SMAN students in East Banggae District, Majene Regency. There is an indirect effect of receiving information (through naturalistic intelligence) on environmental awareness of class XI SMAN students in East Banggae District, Majene Regency.

ACKNOWLEDGMENTS

My thanks go to Ministry of Education, Culture, Research and Technology which has provided funding for this master's research. ToMrs. Arsiah Sudirman, S.Pd., M.Pd as a biology teacher at SMAN 1 Majene Regency, Mrs. Nurlela S.Ag as a biology teacher at SMAN 2 Majene, and Mrs. Roslini S.Pd as a biology teacher at SMAN 3 Majene Regency and all of the students who have helped the research process run well.

REFERENCES

Ahsan, M., Santoso, P. B., & Dachlan, H. S. (2015). Multiple Intelligence Menentukan Jurusan di SMA Menggunakan Teknik Multi-Attribute Decision Making. *Jurnal EECCIS (Electrics, Electronics, Communications, Controls, Informatics, Systems)*, *9*(1), 25-30. https://doi.org/10.21776/jeeccis.v9i1.270

Akpofure, R. R. (2018). Responsible environmental behaviour: An Observational study of packaging of household generated waste for disposal in Port Harcourt, Nigeria. *International Journal of Waste Resources*, *8*(2).

Ardan, A. S. (2016). The Development of Biology Teaching Material Based on the Local Wisdom of Timorese to Improve Students Knowledge and Attitude of Environment in Caring the Preservation of Environment. *International Journal of Higher Education*, *5*(3), 190-200. https://doi.org/10.5430/ijhe.v5n3p190

Azwar, S. (2012). Preparation of the 2nd Edition of the Psychological Scale. Yogyakarta: Student Library.

Budiyanti, R. T., Roro Isyawati Permata Ganggi., Penggalih Mahardika Herlambang. (2021). Use of WhatsApp Groups as an Online Learning Media during the COVID-19 Pandemic. *SSEJ Journal. 1*, (2).

Irfianti, M. D., Khanafiyah, S., & Astuti, B. (2016). Perkembangan karakter peduli lingkungan melalui model experiential learning. *UPEJ Unnes Physics Education Journal*, *5*(3), 72-79. https://doi.org/10.15294/upej.v5i3.13768

Jena, L. K., & Behera, B. (2017). Environmental crisis and human well-being: A review. *International Journal of Development and Sustainability*, *6*(8), 561-574.

Katuwal, H., & Bohara, A. K. (2011). Knowledge, Attitude, and Behavior towards Environmental Quality.

Kushwaha, V. S. (2015). Mass media in disseminating environmental awareness. *Social Issues and Environmental Problems*, *3*(9), 1-4. https://core.ac.uk/download/pdf/144846643.pdf

Lee, T. H., Jan, F. H., & Yang, C. C. (2013). Environmentally responsible behavior of nature-based tourists: A review. *International Journal of Development and Sustainability*, *2*(1), 100-115. https://www.isdsnet.com/ijds-v2n1-8.pdf

Lualhati, G. P. (2019). Environmental awareness and participation of Filipino pre-service teachers. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, *5*(2), 345-352. https://doi.org/10.22219/jpbi.v5i2.8524

Nabilah, N., Arwin Surbakti, and Tri Jalmo. (2018). Relationship between Knowledge of Ecosystems and Environmental Change with Environmental Care Attitudes. *Bioterdidik Journal*. Vol. 6. No. 1.

Ningrum, Z. B., Soesilo, T. E. B., & Herdiansyah, H. (2018). Naturalistic intelligence and environmental awareness among graduate students. In *E3S Web of Conferences* (Vol. 68, p. 02004). EDP Sciences. https://doi.org/10.1051/e3sconf/20186802004.

Ningtyas, L. D. (2019). Pengaruh Naturalistic Intelligence dan New Environmental Paradigm terhadap Environmental Sensitivity. *IJEEM-Indonesian Journal of Environmental Education and Management, 4*(2), 82-94.

Pokjanis for the Acceleration of Settlement Sanitation Development (PPSP) Majene Regency. (2012). Majene District Sanitation White Paper. Majene. BPS Majene.

Puspita, I., Linda Ibrahim, and Djoko Hartono. (2016). The Influence of the Behavior of People Living in Riverbank Areas on Decreasing Water Quality in the Karang Anyar River, Tarakan City. *Journal of Human and Environment, 23*(2).

Rahman, I. F., Yusuf, S., & Akhmad N. (2018). Improving Natralist Intelligence through Observation, Investigation and Experiment Methods in Plant and Animal Materials. *Scientific Journal of Elementary School Teacher Education, 5*(3).

Rahmawati, Indah., Fina Fakhriyah., Sekar Dwi Ardianti. (2021). Correlation Between Naturalist Intelligence and Concern for the Environment Around Students of SD Negeri Pulorejo 01. *Journal of Educational Research, 8*(1).

Retnowati, Rita., Muhammad Taufik Awaluddin., and Esa Rahma Heryawati. (2020). Developing an integrated biology module for students' environmental attitude instruments. *Journal of Indonesian Biology Education, 6*(2).

Santrock, John. (2004). *Educational Psychology*. Jakarta: Kencana

Soentoro, AI. (2015). *An Easy Way to Learn Research Methodology with Statistical Applications*. Depok: PT. Taramedia Bakti Persada.

Suhardjo. (2016). The Relationship between Environmental Preservation Knowledge and Student Intentions on School Output with Student Participation in Environmental Cleanliness. *Journal of Environmental Education and Sustainable Development, XVII*(2).

Sukmarani, D., and Ahmad S. *Correlation Between Naturalist Intelligence and Environmental Awareness of SD IT Muhammadiyah Bandongan Magelang Students.* Urecol. Muhammadiyah University of Magelang.

Thoifah, An. (2015). *Educational Statistics and Quantitative Research Methodology*. Malang: Member of IKAPI.

Tuncay, Busra.Ozgul Yilmaz-Tuzun, and Gaye Tuncer-Teksoz. (2011).The Relationship between Environmental Moral Reasoning and Environmental Attitudes of Pre-Service Science Teachers. *International Electronic Journal of Environmental Education, 1*(3). https://files.eric.ed.gov/fulltext/EJ1057520.pdf.

Wardani, Diyan Nurvika Kusuma. 2019. Analysis of the Implementation of the Adiwiyata Program in Building Environmental Care Character (Case Study at Min 1 Ponorogo). *Southeast Asian Journal of Islamic Education Management, 1*(1).

Widya, C., Riska A, & Novita N.P. (2019). Indonesian Environmental Statistics. Central Bureau of Statistics/BPS

Yanuari, D. A. & Gumilar, G. (2018). Construction of the Reality of Journalists' Thoughts Regarding Mainstreaming of Environmental Issues. *Journalism Studies, 1*(2).