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Environmental Care Attitude Analysis of Prospective Biology Teachers

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Abstract

Current environmental problems are still seriously elevating. One way to reduce the threat of environmental problems is to change students' perspective and behavior to be more concerned toward the environment. This research aims to describe the environmental care attitude of student or biology teacher candidates in University of Papua. The sample in this study amounted to 75 respondents to biology teacher candidates. The data was collected by disseminating questionnaires through Google Form due to the pandemic conditions of Covid-19. The environmental care attitude questionnaire was organized based on 5 indicators, namely limits to growth attitude, anti-anthropocentrism, balance of nature, anti-exemptionalism eco-crisis. The results of the analysis showed that the highest attitude was on the eco-crisis indicator with an average value of 4.00, followed by the balance of nature attitude indicator with an average of 3.99, the limits to growth attitude indicator with an average of 3.81, the anti-anthropocentrism attitude indicator averaging 3.61 and the anti-exemptionalism attitude indicator averaging 3.48. The environmental attitude category was dominated by the good category of 86.7%, the excellent category by 8.0% and the low category by 5.30% and there was no apathy category / no matter the environment. Thus, in general, the students' attitude of caring toward the environment of Biology Study Program in the University of Papua is within the category of Good.

Keywords : Analyses, environmental care attitude, prospective biology teachers.

Introduction

Illegal logging and excessive use of natural resources (SDA) without any sustainable conservation are two of the most commonly debated global environmental challenges. Rapid technological advancements have had both beneficial and harmful effects on the environment. The incidence of environmental degradation, which results in a reduction in environmental quality, is one of the negative consequences (Nasution, 2016)

Environmental elements have a significant impact on human life quality. Similarly, diverse human activities and attitudes have an impact on the environment's quality. Humans are the key subjects who profit from natural resources to support their survival in the interdependent life between the two topics. Humans' position as subjects in the usage of natural resources causes them to lose sight of themselves since they are motivated by the need to meet their own needs (Chu & Karr, 2017).

Development practices that focus solely on economic growth and justice without taking into account environmental sustainability risks degrading or lowering environmental quality. In everyday life, people are confronted with a multitude of behavior options, both harmful and good to the environment (Ahlerup et al., 2014).

It is vital to provide an understanding of the need of sustaining environmental sustainability through educational institutions in order to encourage the attitude of human concern for the environment (Sarnoto & Farida, 2021). A thorough awareness of the environment is supposed to affect the community's behavior and make them more concerned about the environment.

Environmental stewardship is a mindset and activity that aims to prevent damage to the natural environment and make initiatives to restore damage that has already happened (Asmani, 2013). This mentality must be formed into a positive habit for the next generation, and it must be instilled in students as future generations who will serve as active agents of change from an early age. This beneficial habit can be formed through environmentally conscious education. Environmental care is the practice of preserving the environment as much as possible, such as through environmental protection, management, and restoration, as well as environmental maintenance. People that care about the environment will always try to prevent damage to the natural world around them, as well as develop attempts to repair any damage that has already occurred (Sujana, 2018).

Environmental care is a person's internal state of the environment expressed in daily life with the goal of preserving,

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improving, and preventing environmental concerns. Human attitudes toward the environment have the potential to boost the natural environment's carrying capacity. Environmental concern is demonstrated through prudent use of natural resources and avoidance of behaviors that harm the environment. A lack of environmental understanding and concern is causing an increase in serious environmental devastation (Karyanto, 2013).

The character of environmental care is established through creative educational learning in environmental management, according to Fua, Wekke, Sabara, and Nurlila (2018). Environmental ethics have been shaped and provided guidance for its influence on students in engaging with the environment as a result of educational attitudes and actions, which can be an example of environmental education learning in schools(Sarnoto & Farida, 2021). Environmental degradation has educated us about the environmental consequences of human behavior changes. Schools play a role in assisting pupils in comprehending the effects of human actions on nature and the environment. In order to protect environmental sustainability, Rahman (2016) discovered that knowledge elements, attitudes, and environmental management influence 44 percent of environmental behavior and attitudes. The relationship between students' environmental caring attitudes and their interest in learning about environmental topics can encourage fifteen-year-olds to consider a variety of viewpoints toward other people's environments, as well as position themselves in a diversity of individual attitudes that can support each other (Le Hebel, Montpied, & Fontanieu, 2014)to check if the French student population presents similar EA categorization as described in the different models in the literature (e.g. the Model of Ecological Values, Wiseman & Bogner 2003. Moreover, multiple additional studies suggest that students' attitudes toward environmental protection are improving at school. (Febriani, Farihah, & Nasution, 2020; Firmansah & Gusti Putu Suryadarma, 2019; Kantun, Sedyati, & Fitriati, 2019; Muharlisiani et al., 2019; Muharlisiani et al., 2019; Muharlisiani et al., 2019).

Despite this, Jamian, Zulkipli, Zulkifli, and Nopiah (2018) found that student environmental care surveys fall into the moderate group. The lack of environmental concern among students is due to a learning process that failed to provide solutions to numerous challenges that arose. Students have not been encouraged to consider how to solve environmental issues (Handayani & Sopandi, 2016). Students' ignorance of the surrounding environment leads to poor quality environmental care. Most students are aware of the risks associated with the activities they participate in, but they lack the motivation to change their bad habits. One of the initiatives is to raise environmental awareness through education. Ethics and ideals to care for the environment can be surfaced through education (Sueb, Delima, & Rohman 2020). Furthermore, Aini, Rachmadiarti, and Prastiwi (2014) found that while students' grasp of the idea of the environment is good, their attitude toward environmental care is still inadequate.

Students should be able to resurrect their concern for nature and the environment through learning that is linked to environmental care attitudes (Zuchdi & Darmiyati, 2011). This is in line with Köse, Gezer, and Blen (2010), who believe that one of the learning goals linked with environmental care attitude is to transform students' attitudes about the environment to be more positive. Fostering an attitude of environmental stewardship can be accomplished by teaching kids how to properly dispose of rubbish based on the type of garbage, how to care for plants, how to keep classrooms and schools clean, and so on (Yunansah & Herlambang, 2017). Environmental concern is a broad attitude toward environmental quality contained in the readiness to exhibit actions in any environmentally linked behavior that can improve and sustain environmental quality. Students that care about the environment will always preserve environmental sustainability if their environmental mindset can be translated into action.

Students must be concerned about environmental issues in a globalized and up-to-date manner. Nonetheless, this is inextricably linked to the development of character or the empowering of environmental stewardship views among students(Sarnoto & Siswanto, 2013). Environmental care is a person's internal state of the environment expressed in daily life with the goal of preserving, improving, and preventing environmental concerns. (Karyanto and Nugroho, 2016). Students with a caring attitude toward the environment believe that they must enhance and manage the environment appropriately and effectively. As a result, it can be enjoyed indefinitely without causing harm to its surroundings, resulting in long-term benefits (Kemendiknas, 2010). There is a comprehension of the environment, and it is expected that awareness will arise to study properly and be environmentally conscious. Furthermore, these youngsters will grow up to be leaders who will implement policies aimed at preserving and protecting the environment (Campbel et al., 1999)

Assessments of student paradigms that demonstrate a predisposition to be environmentally worried or do not have the preparedness to be environmentally concerned can be used to determine environmental care attitude in students. The NEP (New Ecological Paradigm) instrument, developed by Dunlap, is used to assess pupils' environmental concerns. The NEP scale proven to be a reliable measuring tool. The NEP scale has been used in a number of research in different countries to assess pro- and anti-environmental attitudes and actions. (Karyanto & Nugroho, 2016). As a result, the goal of this research is to examine the environmental attitudes of biology teacher candidates at the University of Papua.

Method

Research design

The design of this study qualitative descriptive study aims to describe the environmental care attitude of teacher candidates or students in the University of Papua's Biology Program Study.

Participants.

All of the participants in this study were aspiring biology instructors at the University of Papua. The participants in this study were 75 Biology Education students in semester VI of the 2020-2021 academic year.

Data collection tools

Data on environmental care attitudes was collected by the distribution of likert scale questionnaires, consisting of 15 statements gathered on 5 indicators via Google form. The measure was composed of 15 statements and was based on five markers of caring attitude taken from research (Dunlap,Van, Mertig, & Jones, 2000; Aldrich, Grimsrud, Thacher, & Kotchen, 2005) (Table 1).

Table 1: Indicator of Environmental Care Attitude

No	*Component/Indicator*	*Item Number of Question*
1	Limits to growth	1,6,11
2	Anti-anthropocentrism	2,7,12
3	Balance of nature	3,8,13
4	Anti-exemptionalism	4,9,14
5	Eco-crisis	5,10,15

Source: NEP (New Ecological Paradigm) (Dunlap,Van, Mertig, & Jones, 2000; Aldrich, Grimsrud, Thacher, & Kotchen , 2005)

Data analysis

This study uses descriptive statistics. A descriptive statistic is used to describe the data. Data analysis in this study compared the score of the questionnaire with the criteria. The SPSS program was used to help with the data analysis procedure. For the analysis of environmentally concerned attitudes, a formula adapted from Campbel (1999) was used (Table 2.

Formula: $A = \Sigma S/N \times 100$

Which:
A = Environmental Care Attitude
Σ S = Number of respondent answer score
N = Maximum score

Results

After the dissemination of questionnaires and data processing, analysis was conducted to the achievements per item of environmental care attitudes, attitude achievements per indicator, and adjusting the scores obtained on the scale of environmental care attitude categories. Table 3 presents the learner's environmentally caring attitude score per statement item (Table 3).

15 items of environmental care attitude mostly show an average attitude of agree and hesitation. There are 7 items that express agreement with the statement asked in the

Table 2: Environmental Care Attitude Category

No	*Environmental Attitude Category*	*Score range*
1	Excellent	≥ 94
2	Good	63,5-93,75
3	Fair	31,25-62,5
4	Bad	< 31,25

Source: Adapted from Campbel, 1999. (Bradley, Waliczek, & Zajicek, 1999)

Table 3: New Ecological Paradigm scale item response frequencies and descriptive statistics

No	*NEP Component*	*SA*	*A*	*U*	*D*	*SD*	*Mean*	*Std Dev*
1	The Earth has limitations in providing natural resources.	24.0	36.0	6.7	26.7	6.7	3.44	1.297
2	Humans have the right to change the natural environment to suit their needs.	16.0	42.7	16.0	22.7	2.7	3.47	1.095
3	When humans disturb nature, it often has devastating consequences.	53.3	41.3	5.3	0.0	0.0	4.43	0.756
4	Human ingenuity will ensure that we DO NOT make the earth uninhabitable.	8.0	25.3	22.7	37.3	6.7	2.91	1.105
5	Humans often abuse the environment.	38.7	48.0	9.3	2.7	1.3	4.20	0.822
6	The Earth has many natural resources if we are fair and learn how to develop them.	65.3	29.3	4.0	1.3	0.0	4.59	0.639
7	Plants and animals have as many rights as humans to live.	65.3	29.3	8.0	6.7	0.0	4.17	0.844
8	The balance of nature is strong enough to cope with the impact of modern industry.	20.0	38.7	20.0	17.3	4.0	3.53	1.119
9	Despite our special abilities, humans are still subject to the laws of nature.	22.7	56.0	10.7	9.3	1.3	3.89	0.909

No	*NEP Component*	*SA*	*A*	*U*	*D*	*SD*	*Mean*	*Std Dev*
10	The ecological crisis facing humanity today has been exaggerated.	16.0	49.3	20.0	13.3	1.3	3.65	0.951
11	Earth is like a spaceship with very limited space and resources.	14.7	42.7	12.0	30.7	0.0	3.41	1.079
12	Man is destined to take over the whole of nature.	20.0	29.3	12.0	29.3	9.3	3.21	1.318
13	The balance of nature is very sensitive and easily disturbed.	16.0	72.0	9.3	2.7	0.0	4.01	0.604
14	Humans will eventually learn enough about how nature works and how to control it.	24.0	60.0	13.3	2.7	0.0	4.05	0.695
15	If things continue as they do now, we will soon experience a major ecological disaster.	37.3	48.0	9.3	1.3	0.0	4.16	0.855

Note: SA=strongly agree, A=agree, U=unsure, D=disagree, SD=strongly disagree

Table 4. Environmental care attitude per indicator

No	*Indicator*	*Mean*
1	Limits to growth	3.81
2	Anti-anthropocentrism	3.61
3	Balance of nature	3.99
4	Anti-exemptionalism	3.48
5	Eco-crisis	4.00

questionnaire, then other 7 items express doubt and 1 item of disapproval. Furthermore, an analysis of the achievements per indicator of environmental care attitudes is presented in Table 4.

The indicator of growth limits demonstrates pupils' grasp of the earth's resource limitations. The anti-anthropocentrism indicator reveals that no student has a large ego in relation to the environment. Finally, the anti-exemptionalism indicator demonstrates that pupils are capable of environmental responsibility.

Table 4 reveals that University of Papua Biology Education students have the best environmental attitude on the eco-crisis attitude index. It means that students already understand that humans are the primary cause of environmental damage, followed by the balance of nature attitude indicator, which indicates that students have no potential to harm nature in the future, limits to growth attitude indicator, which reflects students' understanding of the earth's natural resource limitations, and anti-anthropocentrism indicators, which demonstrate that no student has a high ego for the environment. Graph of achievement of each indicator is presented in Figure 1

Figure 1 shows that the indicator of eco-crisis attitudes (students already understand about environmental damage mostly caused by humans) has the highest average achievement. Meanwhile, indicator of anti-exemptionalism attitude (students are responsible for the environment) shows the lowest average. The result of data analysis of each indicator and the score of the scale of environmental care attitude is presented in Table 5.

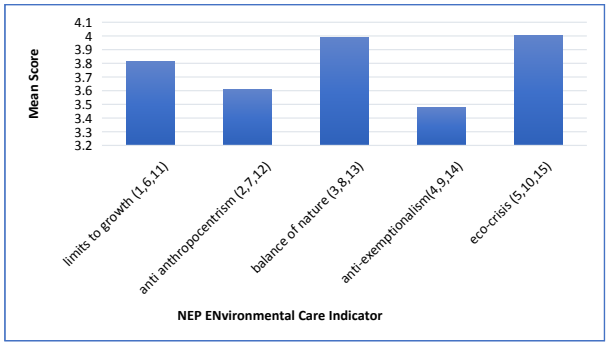

Fig. 1: Achievement's graph per indication of environmental care

Table 5: Attitude category concerned about environmental care

No	*Attitude Category*	*f*	*%*
1	Excellent	6	8.0
2	Good	65	86.7
3	Fair	4	5.3
4	Bad	0	0.0
Total		75	100

Table 5 shows that the highest student environmental care attitude is in the good category of 86.7%, followed by the excellent category scored 8.0%, and the fair category 5.3%. Meanwhile, there are no students with bad categories.

Discussion

Table 4 shows that items 3,5,6,7,13,14, and 15 are all higher than a 4 on the scale. This indicates that pupils already have a positive attitude toward environmental protection. Meanwhile, the results of items 1, 2, 8, 9, 10, 11, and 12 demonstrate that a number of students are still unwilling to take action. There is also a disapproving statement for statement number four. This is in line with a study by Istiqomah (2019), which found that the general attitude toward environmental protection is positive, albeit some people are still apprehensive. According to Perkasa (2020), environmental concern is still centered on understanding the definitions or scientific concepts, rather than complete awareness and full participation.

As a result, attitude formation is mostly the product of a person's socialization and contact with his environment, which is the embodiment of one's thoughts, feelings, and judgment of an object based on information, understanding, opinion, and beliefs to produce a predisposition to act (Suharyat, 2014). According to the findings of Sujana, Hariyadi, and Purwanto (2018), the best way to improve environmental care behavior is to raise environmental care attitudes. This is because a person's attitude toward environmental care will always be consistent with their conduct; if a person's attitude toward environmental care is positive, their behavior will be positive as well.

As a result, additional conservation improvement through knowledge and awareness on environmental issues is required. While the obtained results for each item indicator of environmental care attitudes show that students or teachers candidate of Biology Education in University of Papua have the best environmental attitude on the indicator of eco-crisis attitude with an average of 4.00, its mean students can already understand about environmental damage mostly caused by humans, then on the indicator of balance of nature attitude with an average of 3.99 meaning students have no potential to damage nature in the future, Limits to growth attitude indicators show the results of understanding the limitations of the earth in providing natural resources already controlled by students, then anti-anthropocentrism indicators no student has a high ego towards the environment and the last indicator of anti-exemptionalism attitude shows students can already be responsible for the environment.

This is in line with Patriana's research, which claims that the New Environmental Paradigm (Nep) assesses students' readiness to be environmentally conscious in the classroom. According to Nugroho & Karyanto (2016), SSP-based PBL combined with the NEP strategy can improve environmental care attitudes. As a result, it can be utilized as a reference in future research and development to promote environmental stewardship attitudes. Research conducted by Aldrich, Grimsrud, Thacher, & Kotchen (2005) about the New Ecological Paradigm Scale (NEP) consists of a set of 15 likert scale questions indicating whether an individual holds belief about environmental care or not. NEP becomes a reasonable source of data to use in measuring environmental attitudes. Environmental care as competencies that must be improved can be measured using the New Ecological Paradigm (NEP) questionnaire from Dunlap (2000). The NEP dimension consists of balance of nature, limits to growth, anti-anthropocentrism, anti-exemptionalism, and ecocrisis. NEP questionnaire results show the lowest to highest order of values, namely dimensions of nature balance, anti exemptionalism, ecocrisis, limits to growth, and anti-anthropocentrism.

Table 5 shows that the percentage of students who care about the environment is very good at 8.00% or as many as 6 people have had an excellent environmental care attitude category. The percentage of good categories dominates student attitudes, which is 86.7% or as many as 65 people. Low environmental care attitudes is 4.00% or as many as 4 people. Lastly, bad category or apathy is 0% or no students who do not care. Environmental care is the behavior of preserving the environment as well as possible, such as by protecting, managing, and restoring, also maintaining the environment. People who care about the environment will always try to prevent damage that occurs in the surrounding natural environment, and develop efforts to repair natural damage that has occurred (Sujana et al., 2018). Environmental care is a person's internal state of the environment embodied in everyday life to preserve, improve, and prevent environmental problems. Human attitudes towards the environment can increase the carrying capacity of the natural environment. Concern for the environment is indicated by utilizing natural resources wisely and not taking actions that damage the environment. The worsening environmental damage is caused by a lack of awareness and concern for the environment (Karyanto,2013).

According to Sadik & Sadik (2014), the study of environmental knowledge and environmental care for teachers candidate have more positive attitude in environmental attitudes but low environmental behavior. Furthermore, the result of study by Narut & Nardi (2019) showed that the average score of environmental care was in the good category. According to Asmani (2013), environmental care is in the form of actions that always try to prevent damage to the surrounding natural environment, in addition to the developing efforts to repair natural damage that has occurred. Furthermore, Zuchdi (2011) explained, caring for the environment is an attitude and action that always seeks to prevent damage to the surrounding natural environment, and develop efforts to repair natural damage that has occurred. Thus, environmental attitudes are actions or statements that show partisanship towards environmental sustainability.

According to Rifki & Listyaningsih (2017) there is a positive relationship between the extracurricular activities of nature lovers and the environmental care attitude for the students. The attitude possessed by students who follow the extracurricular activities of nature lovers is that students are consciously able to maintain the sustainability of nature and cleanliness of the surrounding environment. According to Aksan (2014: 69), environmental care is an attitude and action that always seeks to prevent damage to the natural environment and develop efforts to repair natural damage that has occurred. The environment has an important role to support human life in achieving a better quality of life. Along with the times, the function of the environment as a support for human life is now threatened by pollution, waste of natural resources, and population pressures (Aini, Rachmadiarti, & Prastiwi, 2014).

Conclusion

Based on the discussion that has been described, the environmental care attitudes of prospective biology teacher candidates for the Biology Study Program, University of Papua are generally in the good category, but some of the environmental care attitudes of prospective biology teacher students are still in the moderate category. Therefore, it is necessary for the department of biology to facilitate students, especially prospective biology teachers in each lesson to instruct them to care about the environment so that students have knowledge and realize how important it is to protect the environment and natural resources in the future. Furthermore, it is necessary to provide pedagogic development for prospective biology teachers or competencies to design teaching in the form of learning that involves students to always care about the environment so that learning is more meaningful

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