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Students' Knowledge and Attitude towards Biodiversity Conservation

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ABSTRACT

The preservation and protection of biodiversity have been emphasized as one of the main routes to sustainability. However, knowledge and skills are necessary to successfully plan and carry out management strategies for conserving and protecting natural resources. The study aimed to determine the student's level of knowledge and attitude toward biodiversity conservation. The study participants were undergraduate students taking up mathematics and science and technology-related courses. Additionally, the study aimed to determine whether there is any correlation between students' knowledge of and attitudes toward biodiversity conservation. Descriptive statistics and correlation analysis was used in the treatment of data. The findings indicated that the majority of the students have a high level of knowledge of biodiversity and have a positive attitude toward biodiversity conservation. A statistically significant relationship between knowledge and attitude toward biodiversity conservation was found. Therefore, a high level of environmental awareness can lead to a positive attitude in helping preserve biodiversity.

Keywords: Sustainability, biodiversity conservation, environmental awareness

INTRODUCTION

Biodiversity is vital for the sustainability of ecosystems, human welfare, and economic growth. It is essential for the long-term health of our planet. Biodiversity is one of the main routes to sustainability (Huang & Lin, 2014).

Most of the world's population relies on the environment and natural resources, especially forests, as their primary food sources (Coracero et al., 2022).

Biodiversity is the whole of all biotic variation, ranging from the level of genes to ecosystems (Purvis & Hector, 2000). It plays a significant role in the environment and natural resources (Eriksson & Klapwijk, 2019). Biodiversity dramatically impacts the quality of human existence, including agriculture, public health, ecological balance, and climate change (Huang & Lin, 2014).

One of the most pressing environmental concerns is the growing loss of biodiversity brought on by human activity (Bogan et al., 2015). Lack of public understanding of biodiversity conservation, pollution, poaching, unchecked urbanization, human growth, and calamities brought about by nature negatively impact biodiversity (Ibrahim et al., 2022). It is now universally acknowledged that the extinction of species and the demise of the ecosystem rank among the biggest dangers to humanity in the upcoming ten years (World Economic Forum, 2020). However, this can be countered by raising public awareness of discussions surrounding biodiversity issues and concerns, and doing positive acts are crucial to preserving the diversity of life forms. Specifically, if environmental-friendly acts like reforestation and other cleaning and greening initiatives are taken, these changes may be for the better (Bogan et al., 2015). Governmental and non-governmental initiatives are urged to preserve the ecosystem and stop further, more severe resource degradation (Raga, 2013; Basir & Ming, 2019).

One of the Philippines' greatest assets is its abundant biodiversity. Sadly, the diversity of flora and fauna is continuously declining, and the Philippines is no exception. This situation highlights the necessity of educating people, particularly the younger generations, about the worth of and needs to safeguard natural resources and biodiversity (Coracero, 2021).

Education about biodiversity conservation should be covered in primary and secondary school curricula since it significantly influences people's understanding of and attitudes toward biodiversity conservation (Kideghesho et al., 2007). According to research, it is beneficial for younger generations to learn about the future sustainable use of natural resources. For example, they should emphasize biodiversity protection and their duties to preserve nature (Mutisya et al., 2015). Moreover, (Mutisya et al., 2015) elucidate how Kenyan schools' implementation of wildlife-friendly curricula promotes the future preservation of the country's biological diversity.

Programs for biodiversity conservation education can enhance knowledge and abilities (Bogner, 2002; Christensen et al., 2007; Smith-Sebasto & Cavern, 2006). That can lead to critical thinking. However, knowledge alone does not necessarily lead to changes to more environmentally conscious behavior (Jensen,

2002; Urban & Martin, 2015). Some African youngsters may not learn about local natural resources, their types, or their importance, unlike many students in Western institutions (Erhabora & Don, 2016; EU, 2022), even though their community or family may be more reliant on the local environment for their livelihoods (Kioko et al., 2010). This situation is not a dead end, though. Studies have shown that attitudes may be altered with knowledge and practice (Karris et al., 2020; Martinis et al., 2018; Røskaft et al., 2007). Moreover, Drissner et al. (2011) stressed in their study that people often defend what they are familiar with and value. The inculcation of protecting nature and biodiversity to the youth can positively affect valuing biodiversity's importance.

Each nation must encourage its citizens to take part in preserving and protecting the environment and its natural resources (Raja, 2013). However, there are requirements for successfully developing and implementing management strategies for conserving and protecting natural resources, like the knowledge that can be gained through education. Without education, information, and understanding of the issue, having a straightforward progression of conservation and management programs is difficult. Hence, this educational knowledge is a crucial instrument for successfully conserving and managing nations' biodiversity. Early exposure to environmental education can assist in developing young people's perspectives, preparing them to actively participate in natural resource conservation and protection as advocates for biodiversity.

In the Philippines, the initiative for integrating environmental education was passed into law in 2008 as Republic Act No. 9512, also called the "National Environmental Awareness and Education Act of 2008." This law incorporates environmental education at all private and public-school levels, including daycare facilities, elementary, high schools, tertiary (technical-vocational and professional), and indigenous and out-of-school learning systems. (Official Gazette Ph, 2008). This study was conducted in line with the said act and the need to protect biodiversity in the Philippines.

OBJECTIVES OF THE STUDY

The study aimed to (a) assess the student's level of knowledge on biodiversity conservation; (b) assess the students' attitude level toward biodiversity conservation; and (c) determine if a significant relationship exists between students' knowledge and attitude toward biodiversity conservation.

MATERIALS AND METHODS

The study's primary purpose is to assess the student's knowledge and attitude toward biodiversity conservation and identify whether a significant relationship exists between these variables. Descriptive correlational design is used to provide snapshots of situations of a given group of individuals, their thoughts, behaviors, or feelings, and establish the relationship between the variables (McBurney & White, 2009).

The study participants consisted of 81 undergraduate students from Samar, Philippines, determined using non-probability sampling, specifically purposive sampling. The sample voluntarily agreed to participate in the research study and anonymously filled out the survey questionnaire. Among the 81 students, 27 are male, 54 are female, and they are taking undergraduate mathematics, science, and technology courses.

The survey questionnaire used in the research was taken from the study on undergraduate students' attitudes towards biodiversity by Huang & Lin (2014) and public awareness on biodiversity conservation and well being: the case of Gunung Mulu National Park, Sarawak by Ibrahim et al. (2022). The researcher modified the statements that this would also relate to biodiversity conservation. The questionnaire consisted of 6 statements relating to knowledge towards biodiversity and conservation and 13 statements on attitude towards biodiversity conservation. The students indicated the degree of their agreement with the given statements. The degree of agreement with the survey statements was assigned numerical values: Strongly Disagree = 1, Disagree = 2, Uncertain or Unsure =3, Agree = 4, and Strongly Agree = 5. The validity and reliability of the research questionnaire yield a Cronbach alpha coefficient of 0.874.

The data collected was analyzed using IBM SPSS 21. Descriptive statistics such as the mean and frequency count were used to identify the level of knowledge and attitude towards biodiversity. Pearson correlation was employed to determine the statistical relationship between the student's knowledge and attitude toward biodiversity conservation.

RESULTS AND DISCUSSION

1. To assess the students' knowledge of biodiversity conservation.

Table 1

Student's overall knowledge level of biodiversity conservation

Range	Interpretation	f	%
4.50-5.00	Very high level of knowledge on biodiversity conservation	17	20.99
3.50-4.49	High level of knowledge on biodiversity conservation	60	74.07
2.50-3.49	Moderate level of knowledge on biodiversity conservation	4	4.94
1.50-2.49	Low level of knowledge on biodiversity conservation		
1.00-1.49	Very low level of knowledge on biodiversity conservation		
Total		81	100

Table 2

Students' knowledge level of biodiversity conservation

Statements	Mean	SD	Interpretation
Biodiversity is a measure of the number of different species of plants and animals in an area.	4.20	0.57	High
Biodiversity is a measure of the extent of genetic variation within a species	4.27	0.77	High
Biodiversity means the number of different ecosystems within a specific area such as the wetlands, the coast, the forest, the meadows.	4.36	0.53	High
Endemic species can only be found in a specific geographic area due to isolation, soil and climate.	3.60	0.90	High
Endangered species are the animals and plants that is threatened with extinction.	4.58	0.50	Very High
Reforestation activities can help maintain biodiversity.	4.51	0.50	Very High
Biodiversity-related laws and policies are very familiar to every student.	2.94	0.76	Moderate
	4.07	0.38	High

Table 1 shows that, on average, the student's knowledge of biodiversity conservation is high. Almost three-fourths of the total sample were classified as having a high level of knowledge of biodiversity conservation, while one-fifth were categorized under a very high level.

It is good to note that the students know well that endangered species are those plants and animals threatened with extinction. Moreover, they considered

reforestation activities as a way to help maintain biodiversity. Other items in Table 2 reflected that students generally know biodiversity's definition and basic concepts. These findings conform with the findings of Ibrahim et al. (2022) that respondents understand the concept of biodiversity at the genetic level through given points. In terms of familiarity with biodiversity-related laws and policies, students needed to be more familiar. It is aligned with the results obtained by Coracero (2021) that among 15 biodiversity-related laws mentioned, only five were commonly known by the students. This result is alarming, but if most students support the government's efforts to safeguard and enhance the nation's biodiversity, the laws, policies, and programs created are worthwhile.

2. To assess the students' attitude towards biodiversity conservation.

Table 3

Students' overall attitude level towards biodiversity conservation

Range	Interpretation	f	%
4.50-5.00	Very positive attitude towards biodiversity conservation	5	6.17
3.50-4.49	Positive attitude towards biodiversity conservation	73	90.12
2.50-3.49	Moderate attitude towards biodiversity conservation	3	3.70
1.50-2.49	Negative attitude towards biodiversity conservation		
1.00-1.49	Very negative attitude towards biodiversity conservation		
Total		81	100

Table 4

Level of student's attitude towards biodiversity conservation

Statements	Mean	SD	Description
*I think the goal of biodiversity conservation is a threat to the continued economic prosperity of our country.	1.48	0.57	Very Negative
*I think the problems of biodiversity issues should be left to experts.	1.41	0.61	Very Negative
*I think the demand for economic growth which concern on some environmental restrictions related to biodiversity issues is less important.	1.85	0.79	Negative
I think any of us can have a significant contribution to solve problem of biodiversity issues.	4.53	0.50	Very positive
I am willing to sacrifice my possessions or money to deal with biodiversity issues and issues.	2.62	0.83	Moderate
I think science & technology can solve all biodiversity issues and problems.	3.65	0.96	Positive

Table 4 continued.

Statements	Mean	SD	Description
I think natural world is sacred and should be left in peace.	3.06	1.05	Moderate
I think almost all human activities cause the loss of biodiversity.	3.25	0.90	Moderate
*I think that the exploitation of natural resources for basic human needs must be developed even though it may result in loss of habitat and wildlife populations.	1.15	0.36	Very Negative
I think that people worry too much about the problem of biodiversity issues.	2.95	0.97	Moderate
I feel alarmed about the extinction of local species of fora and fauna.	4.00	0.67	Positive
*I think there is nothing I can do to help stop the degradation of the world's biodiversity.	1.85	0.61	Negative
I think we will lose some of the endemic species that are the major contributors to biodiversity worldwide if we not protect them.	4.15	0.78	Positive
	3.88**	1.03	Positive

*Negative statements

**Over all mean score obtained considering conversion of scores from negative statements

Based on Table 3, it was found that the students have a positive attitude toward biodiversity conservation. Almost all participants have a mean score of a positive attitude. It is reassuring to see that many students view preserving biodiversity positively.

The students' view was negative and positive to certain items about their attitude towards biodiversity conservation, as shown in Table 4. If the values obtained from negatively stated items was converted, the overall attitude of the students towards biodiversity conservation was found to be positive.

Students firmly believe that the purpose of biodiversity conservation is not a threat to the country's ability to maintain and continue its economic prosperity. They find that it is crucial to refrain from the necessary demand for economic growth, which concerns some environmental restrictions related to biodiversity issues. They also consider that it is not only the experts who should be left with the problems of biodiversity issues, for they are optimistic that everyone can significantly contribute to solving them. This result aligns with the findings (Huang & Lin,2014) that American students were confident they could contribute to solving biodiversity problems. Moreover, despite this attitude, the students are unsure whether they are willing to make personal sacrifices with their possessions and money to contribute to dealing with biodiversity issues. Aside from that,

the mathematics, science, and technology students were still determining if the natural world should be left in peace and that a loss of biodiversity results from practically all human activity.

Though everyone considerably experiences the problem with biodiversity, it was revealed in the study results that people do not worry too much about problems on biodiversity issues. This result is similar to what Huang & Lin (2014) obtained from their study participated by Taiwanese and American undergraduate students. However, when speaking about flora and fauna, the students were alarmed about the extinction of some local species and that later, if the endemic species will not be adequately protected, there is a tendency to lose it. It would mean that the contributors to worldwide biodiversity will lessen, so a positive attitude towards conserving plant and animal species is necessary.

3. To determine the significant relationship among students' knowledge and attitude towards biodiversity conservation.

Table 5

Correlation analysis results

Dimension	N	R	Relationship	p-value
Knowledge and Attitude	81	0.648**	Strong Positive	0.000

**Correlation is significant at the 0.01 level (2-tailed)

The result showed a significant relationship between student's knowledge and attitude towards biodiversity conservation. There is a strong positive linear relationship exists between the variables. It means that if the level of knowledge increases, then the attitude also increases regarding biodiversity conservation. According to (Aminrad et al., 2013; Hassan, 2017; Ibrahim et al., 2021), the higher the knowledge of biodiversity, the higher the positive attitude toward conserving natural resources. Nevertheless, this is contrary to the findings of (Efe & Efe, 2022), which posits that while secondary school students' scores for attitudes toward biodiversity were high, their biodiversity knowledge levels were low.

CONCLUSIONS

This study investigated the mathematics, science, and technology undergraduate students' knowledge and attitude toward biodiversity conservation. The study revealed that the student's level of knowledge on

biodiversity conservation is high, which means there is a firm agreement with each item relating to the fundamentals of biodiversity and conservation. However, the students were not very familiar with the laws and policies concerned with the protection and improvement of national biodiversity. They were unaware of those laws, policies, and programs, but their attitude toward biodiversity conservation was positive. They believed that anyone could make a significant contribution or effort to solve the problems concerning biodiversity. Furthermore, the students do not fully agree that exploiting natural resources for basic human needs must be developed, even if it may result in losing habitat and wildlife populations. Thus, it can be concluded that the students' level of knowledge on biodiversity conservation can be associated with their attitude towards biodiversity conservation as depicted in the study results.

RECOMMENDATIONS

A study may be conducted regarding the students' knowledge or awareness of the existing laws, policies, and biodiversity protection and conservation programs. The study participants may be extended to other learners, which is included in the scope of the National Environmental Awareness and Education Act of 2008. It could be suggested that a study on how to integrate environmental education in the curriculum effectively helps students choose their paths to sustainable living as they develop their action skills to positively impact biodiversity.

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