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The Correlation Between Naturalistic Intelligence and Environmental Concern of Students of UIN Sulthan Thaha Saifuddin Jambi

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ABSTRACT

Environmental destruction in Indonesia is increasingly alarming since the country ranks as the fifth biggest waste producer globally. As the agents of change, students have a significant and strategic role in environmental conservation; however, observations at UIN Sulthan Thaha Saifuddin Jambi indicate that environmental awareness among students remains low. The focus of this research is to understand the correlation between natural intelligence and environmental concern of students in UIN Sulthan Thaha Saifuddin Jambi, which is examined using a quantitative approach with a correlational method to determine the link between the two variables. This research involved 99 students as respondents and was selected randomly using a simple random sampling technique; the data of this research were collected through questionnaires and interviews to measure the students' natural intelligence and environmental concern. The results showed that most students have natural intelligence (64,6%) and environmental concern (72,7%) in the medium category. Correlation analysis Product Moment Pearson generates significant numbers 0,00<0,05 and calculated r 0,604>0,195, indicating a considerable correlation between the two variables in a strong category. Regression analysis resulted in the equation Y = 25,319 + 1,117X, with a practical contribution of 6, 4% of natural intelligence to the environmental concern, while other factors influenced the other 63,6%. The result reiterates the necessity of a comprehensive approach to increasing the environmental concern of the students, not only from natural intelligence development but also from other influential factors such as environmental knowledge, religious values, and access to environmental information.

Keywords: Naturalistic intelligence, Environmental conce, UIN Sulthan Thaha Saifuddin Jambi

Introduction

Environment is a complex system involving biotic and abiotic components, including human interaction, other living beings, and the physical factors that affect the sustainability and general quality of life (Badan Pusat Statistik Indonesia, 2020). According to the newest population data, the total population of Indonesia reached 278,69 million people in mid-2023, with a population growth rate of 1, 05% compared to the previous period. The increase in population impacts the environment due to the increased necessities of life, which has caused the exploitation of nature and environmental damage (Pancasasti, 2018). Environmental damage can be triggered by two primary factors: internal factors, which include scientific phenomena such as volcanic eruptions and earthquakes, and external factors caused by anthropogenic activity in the form of exploitation of nature and various types of pollution (Muttaqin, 2020). Environmental pollution is often related to waste. In this case, Indonesia ranks as the fifth biggest waste producer globally, producing 35.93 million tons of waste in 2022, with food waste and plastic as the most significant contributors (Kementerian Lingkungan Hidup dan Kehutanan, 2023). Waste piles can cause environmental and social damage (Utoyo et al., 2022), therefore, people must raise their awareness and adopt new behavior to care for the environment more (Sutrisnawati & Purwahita, 2018).

Environmental care is a form of human awareness and commitment to do rehabilitative and preventive action to minimize environmental impact (Purwanti, 2017) characterized by a deep motivation for environmental impact (Warni et al., 2022) and implemented through some actions such as no littering and saving (Rahmawati et al., 2021) doing deforestation, managing waste, minimizing the use of plastic, and actively supporting environmental conservation activities (Rochimah, 2018). Environmental concern is an important aspect that benefits us as individuals and society. Students are part of society, the future generation (Cahyono et al., 2019), that has a responsibility as agents of change to make a social improvement, especially to increase awareness of environmental care in society (Istichomaharani & Habibah, 2016). According to Yaumi in Rahmawati (2021), environmental awareness, willingness to repair damage, and ability to protect the environment are signs of naturalistic intelligence.

Naturalistic intelligence is the ability to know natural phenomena and to realize and show sensitivity towards environmental changes (Purwono & Jannah, 2020). A person with naturalistic intelligence has a high sensitivity toward natural phenomena and a desire to conserve the environment; they also have a high interest in plants and animals (Rahmatunnisa & Halimah, 2018). Naturalistic intelligence also includes the ability to recognize and understand the environmental signs or natural change through observation (Juniarti, 2015), which is not limited to an understanding of flora and fauna, but also manifests in the action of environmental conservation that fosters empathy and interest toward nature (Rosiana et al., 2019).

Previous research has proven a correlation between naturalistic intelligence and environmental concern. The first research study by Hartika (2019) shows that naturalistic intelligence and environmental concern are positively correlated. The second is research by Widiantoro (2023) that revealed the significant impact of naturalistic intelligence on environmental concern. Both studies examine different subjects, but the conclusion leads to similar findings. As a result, it can be concluded that someone's environmental concern is related to their naturalistic intelligence. Although understanding the importance of environmental concern and naturalistic intelligence has been widely studied, it shows the differences between the concept and the action of environmental care. Based on the observation in UIN Sulthan Thaha Saifuddin Jambi, there is still much behavior that reflects the low environmental awareness of the students, which can be seen from the food waste left in the corner of the classroom, piles of used plastic packaging in the basement area, cigarette punting scattered in the rooftop area, and wasteful use of electricity in the classroom. This

result showed that the students of Islamic universities do not fully have environmental concerns.

Based on the explanation above, this research focuses on finding the correlation between naturalistic intelligence and environmental concern of UIN Sulthan Thaha Saifuddin Jambi students. This research is essential considering the role of students as agents of social change and future leaders. Understanding the correlation between naturalistic intelligence and environmental concern can provide a valuable insight into developing programs and policies to increase environmental awareness among students of Islamic universities.

Methods

This research uses a quantitative approach with a correlation method to determine the correlation between natural intelligence and students' environmental concerns. This research occurred in June–August 2024, at Universitas Islam Negeri Sulthan Thaha Saifuddin Jambi, located on Jalan Lintas Jambi-Ma. Bulian KM 16, Simpang Sungai Duren, District Muaro Jambi, Province Jambi. This research population involved all UIN Sulthan Thaha Saifuddin Jambi students, totaling 13.029 students from seven faculties. The sample was chosen using a simple random sampling technique with sample size determination using the Yamane formula at a 10% error rate; thus, 99 students were obtained as respondents. Sample distribution was done proportionally from each faculty: Adab dan Humanities (5 respondents), Dakwah (4 respondents), Economy and Islamic business (21 respondents), Science dan Technology (10 respondents), Syariah (17 respondents), Tarbiyah and Education (37 respondents), and Ushuluddin (5 respondents).

The instrument of this research consisted of a questionnaire and interview guidelines. The questionnaire was prepared using a Likert scale with four response categories: Always (SL), Often (S), Sometimes (KD), and Never (TP), with the range of scores 1-4. The naturalistic intelligence variable was measured through one aspect with four indicators, namely: (1) Camping or outbound as a hobby (2) enjoying being creative with natural sources such as leaves; rocks, flowers, seeds, and shells (3) cares about the environment with sub-indicators love to cook with their garden products, and (4) is touched when seeing environmental damage and have willingness to repair it.

Meanwhile, the variable of environmental concern is measured by five indicators, namely: (1) actual action to protect nature, (2) initiative to preserve nature, (3) respect for health and hygiene, (4) wisdom in using natural resources, and (5) responsibility for the environment. Before data collection, the research instrument was tested using the product-moment correlation formula with valid criteria if the significance level < 0.05, and reliability testing with reliability criteria if the Cronbach's alpha value > the significance level.

This research uses interviews to collect in-depth data in addition to a questionnaire. The interview guideline was arranged based on the same indicators as the questionnaire and validated by experts in naturalistic intelligence with a master's degree (S2). The validation process includes checking the content and language and giving comments and assessments to improve the interview guidelines. The respondents for the interview were chosen based on their natural intelligence and the results of the questionnaire.

Furthermore, the data analysis stage includes three main components. First, descriptive analysis is used to describe a data characteristic using frequency distribution, with the determination of interval classes using Sturges' formula and categorizing data into three levels (low, medium, high) based on mean and standard deviation. Second, the classical assumption test includes the normality test using the Kolmogorov-Smirnov method and the linearity test using the Test for Linearity. Third, the hypothesis test aimed to find the correlation between variables using product-moment correlation analysis, from very low (0,00-0,199) to very strong (0,80-1,000). The statistical analyses were conducted using Microsoft Excel and SPSS 22 software.

Results and Discussion

This research uses a questionnaire to collect data that includes two variables: naturalistic intelligence and environmental concern. Before being distributed to respondents, the questionnaire underwent a validation test by the experts. The questionnaire uses a scale with a score of 1-4 and is filled out by 99 students as respondents of the research. After the data from the questionnaire had been collected, the researcher conducted a data analysis that started with prerequisite tests, namely the normality test and the linearity test. The test aimed to see whether the data of two variables are distributed normally and have a linear correlation. After the data meet the assumption of both normality and linearity, it can be analyzed further using the hypothesis test using software SPSS version 22 to make it easier.

Naturalistic Intelligence

Table 1. Descriptive data of naturalistic intelligence

Variabel	Total Item	Statistik	Data Result
Naturalistic Intelligence	12	Amount of data	99
		Score minimum	12
		Score maximum	39
		Mean	24,67
		Median	25
		Modus	26
		Standard deviation	5,81

The descriptive analysis of naturalist intelligence characteristics yielded an average value (mean) of 24.67 and a standard deviation of 5.81. Based on this average value, the naturalist intelligence of UIN Sulthan Thaha Saifuddin Jambi students is classed as moderate. This demonstrates that, in general, students have a reasonable level of ability to recognize, classify, and interact with natural elements, while they have not yet attained their full potential. After doing descriptive analysis, the categorization of naturalist intelligence variable data is based on the following Table 2.

Table 2. Naturalistic Intelligence Frequency Category

No	Criteria	Frequency	Presents	Category
1.	$X < 19$	15	15,2%	Low
2.	$19 \leq X < 30$	64	64,6%	Medium
3.	$30 \leq X$	20	20,4%	High
	Total	99	100%	

According to the categorization of the research data result, most of the students of UIN Sulthan Thaha Saifuddin Jambi have naturalistic intelligence at a medium level, reaching 64,6% of the total respondents. This condition shows that most students have sufficient sensitivity to the natural environment, but it has to be improved to reach a higher level of naturalistic intelligence. Meanwhile, the students with high and low categorization of naturalistic intelligence amounted to 20.4% and 15.2%. This distribution identifies the potential to improve students' naturalistic intelligence through some activities and learning programs integrated with the natural environment.

Environmental Concern

Table 3. Descriptive data of Environmental concern

Variable	Total Item	Statistik	Data Result
Environmental concern	19	Amount of data	99

Variable	Total Item	Statistik	Data Result
		Score minimum	19
		Score maximum	73
		Mean	52.85
		Median	53
		Modus	52
		Standard deviation	8.16

The descriptive analysis of the environmental care attitude variable yielded an average value (mean) of 52.85 and a standard deviation of 8.16. The mean result falls in the moderate category ($45 \leq X < 61$), indicating that UIN Sulthan Thaha Saifuddin Jambi students generally have a positive attitude towards the environment. This demonstrates an understanding and concern for environmental issues, if not yet at an optimal level in daily practice. After doing descriptive analysis, the categorization of data on environmental care attitude variables is based on the following Table 4:

Table 4. Environmental concern Frequency Category

No	Criteria	Frequency	Presents	Category
1.	$X < 45$	12	12.1%	Low
2.	$45 \leq X < 61$	72	72.7%	Medium
3.	$61 \leq X$	15	15.2%	High
	Total	**99**	**100%**	

Based on a more detailed classification of the research data results, most UIN Sulthan Thaha Saifuddin Jambi students had a moderate attitude toward environmental care, accounting for 72.7% of the total respondents. This conclusion indicates that most students have sufficient environmental awareness and concern but require further development to acquire a greater attitude toward environmental care. Meanwhile, students with high and low environmental concern accounted for 15.2% and 12.1%, respectively. This distribution illustrates the possibility of improving students' environmental concern through various environmental education programs and practical activities that encourage environmentally friendly conduct among students.

Hypothesis Test

Table 5. Hypothesis Test

		Naturalis Intelligence	Environmental Concern
Naturalis Intelligence	Pearson Correlation	1	.604**
	Sig. (2-tailed)		.000
	N	99	99
Environmental Concern	Pearson Correlation	.604**	1
	Sig. (2-tailed)	.000	
	N	99	99

Table 5 shows a positive and substantial correlation between naturalistic intelligence and environmental care attitudes among Jambi Sulthan Thaha Saifuddin UIN students, with a count value of 0.604 and a significance value of 0.000 (<0.05). The correlation value of 0.604 falls into a strong connection category since it is within the range of 0.60-0.799. As previously stated, according to the categorization of Sugiono (2019). The coefficient of determination (r^2) of 0.364 reveals that naturalistic intelligence contributed 36.4% of environmental concern;

meanwhile, 63.6% of others were influenced by other factors that are not the variables of this research.

Simple linear regression analysis produces the equation Y = 25.319 + 1.117X. In this case, Y is environmental concern, and X is naturalistic intelligence. This equation shows that for every unit increase in naturalistic intelligence, the environmental concern will increase by 1.117 units. The Constanta 25.319 identifies that without naturalistic intelligence (X = 0), the environmental concern of the students still has a fundamental value of 25.319. The positive regression coefficient (1.117) confirms that the higher the naturalist intelligence of students, the higher their tendency to care about the environment. The result of this research proves there is a significant correlation between naturalistic intelligence and environmental concern of the students of UIN Sulthan Thaha Saifuddin Jambi. These findings are related to the research by Rahmawati et al. (2021) which mentioned a considerable correlation between naturalistic intelligence and environmental concern. However, the research results show that the level of environmental concern among students has not yet reached the maximum level, with the majority of respondents (72.7%) in the medium category. This condition aligns with the findings by Armanda & Saputri (2019). This shows that students' environmental awareness still has to be strengthened. When asked to demonstrate the implementation of this mentality outside of class or on campus, some students confessed that they still litter and have not become used to sorting wet and dry waste. This highlights the need for more initiatives to raise environmental awareness among students. It is related to the research by Novotný et al. (2021) on the students of Universitas Presov, which shows that the students have a high environmental awareness in cognitive and emotional aspects. However, the awareness of the behavioral aspect is still at a medium level. In this context, social media and the internet have become vital sources of information for students and must be optimized to improve their knowledge.

A deeper analysis of the naturalistic characteristics studied in this study—such as Camping or outbound as a hobby, liking to create with natural elements, and caring about the environment—shows significant variations. According to the interview results, "enjoying being creative with natural sources such as leaves, rocks, flowers, seeds, and shells" got the lowest response compared to other aspects. This implies that students lack experience in creative activities based on natural materials, even though some students express curiosity and initiative in utilizing natural materials. It is in line with the findings by Wirdianti et al. (2020) that low naturalist intelligence can be influenced by factors such as motivation, culture, and experience. In addition, health and environmental factors also influence naturalist intelligence (Pangesti et al., 2022). It was mentioned in research by Robianti et al. (2024) that exposure to nature-based learning activities also significantly influences the development of naturalist intelligence in individuals.

Meanwhile, an analysis of environmental concern attitudes, which include hard work to protect nature, initiatives to preserve nature, respect for health and cleanliness, being wise in using natural resources, and environmental responsibility, reveals that the aspect of "being wise in using natural resources" received the lowest score. It has the same findings as the research by Alsaati et al. (2020). The result is that the students' awareness of using natural resources wisely still needs to be improved through an integrated environmental education program. Although naturalistic intelligence significantly contributes to environmental concern, 63,6% of other factors influenced the environmental concern of the students, according to Putra et al. (2024). Environmental knowledge, religious values, social influence, and availability of environmental information all impact the development of environmentally conscious attitudes. This condition emphasizes the significance of a comprehensive strategy to improve students' attitudes toward environmental awareness by increasing naturalist intelligence and strengthening other influential variables.

This finding is supported by the interview results, which revealed certain creative expressions based on nature, even though it is not yet a typical practice among students.

Although the overall score is low, the interview results revealed that some students take the initiative and creatively use the natural elements around them. In the July 21, 2024, interview, VN disclosed that he and his friends create bookmarks from leaves found in the forest. They also enjoy collecting flowers and tying the stems to create unique things. VN mentioned that they can do that because they live near the forest. In addition to VN's comment, S indicated in an interview on July 24, 2024, that they could utilize nature because they had always lived in that environment. S's statement also indicates that students are aware of and can utilize natural resources around them to create creations.

Cultural and experience factors, as mentioned by Wirdianti et al. (2020), may have a significant role. In today's digital era, students may be less exposed to creative activities with natural materials. Motivational factors can also influence low scores on this indicator. Students may be more interested in modern or technology-based activities. Moreover, the environmental factors mentioned by Pangesti et al., (2022) are also relevant. Students living in urban areas may have limited access to nature and natural materials, reducing their opportunities to be creative with these materials. Madyawati (2016) also mentioned that one factor that influences naturalist intelligence is the formation factor, both planned, such as in school, and unplanned, such as the influence of the surrounding environment. In addition, naturalist intelligence can also be increased by engaging in deeper activities with the environment (Hambali, 2017). Thus, low naturalist intelligence results from a lack of experience, motivation, and opportunity to interact creatively with nature, which is influenced by cultural and environmental factors, as well as learning methods that do not support the development of a person's naturalist intelligence.

The supporting factors of naturalist intelligence in students are seen in the highest score in indicator 4, namely "touched when seeing environmental damage and have a willingness to repair it." This indicator reaches an average score of 274 with a percentage of 69%, indicating students' high sensitivity and concern towards the natural environment. High scores on the indicator indicate students have an emotional connection with nature and high environmental awareness. It creates high ecological awareness and a strong emotional connection of the students with nature. The interview result with RS on 20 July 2024 strengthened this finding. RS emphasized his regret over humans damaging the environment and his attempts to prevent plastic trash. This statement shows environmental awareness and specific efforts to improve behavior and reflects daily practice issues. The high score on this indicator is supported by the interview findings, which revealed that students are sensitive to environmental issues and motivated to act. Although there is still recognition of imperfection, the awareness and efforts to change indicate positive developments in students' naturalist intelligence. In line with Yaumi (Rahmawati et al., 2021), people with high naturalist intelligence care about their surroundings, desire to fix damage, and can maintain the environment properly. This research demonstrates significant potential for developing naturalist intelligence among kids, which can serve as the foundation for environmental education programs and nature conservation projects that actively engage students.

However, the questionnaire findings on the environmental care attitude variable showed the lowest score on indicator number 2, "initiatives to preserve nature," with an average score of 197 and a percentage of 49%. Although this score is relatively low, interviews with students found that students made minor but persistent attempts to conserve the environment, such as using tumblers, choosing ecologically friendly transportation, and engaging in tree planting activities, according to respondents on July 21, 2024 interview, VN disclosed that he and his friends create bookmarks out of leaves found in the forest. They also enjoy collecting flowers and tying the stems to create unique things. VN mentioned that they can do that because they live near the forest. This activity benefits the environment and engages society; it shows a bigger initiative for environmental preservation and involves the community.

On the other hand, the indicator "wise in using the natural resource" on the questionnaire of environmental concern got the highest score of 346,6 and a percentage of 88%. This indicates a high awareness among the respondents of the need to use natural sources wisely, contributing to environmental concern overall. The interview result strengthened this finding. They show understanding and behavior that support using natural sources wisely and appropriately in daily life. For example, PF mentioned the importance of saving electricity and unplugging the charger from the wall socket when not in use to prevent fire. AN added that the habit of saving electricity and water had already been taught since they were young. Next, Respondent DF also talked about wise shopping habits and buying according to needs to avoid food waste.

Meanwhile, the RN explained the wise use of air conditioning, with awareness of the impact of excessive use of AC on global warming. Environmental concern shown by the students is influenced by many related factors such as knowledge, environmental knowledge, socio-demographic characteristics, family, residence, hobby, and culture, all of which have a role in building environmental concern (Ningrum et al., 2018). Environmental education, both formal and informal, plays a vital role in establishing environmental ideals. This is consistent with UNESCO's idea of Education for Sustainable Development, which emphasizes the significance of incorporating sustainable development principles into all parts of educational practice. An example is AN's statement that the tendency to save resources has been fostered since childhood. Sociodemographic and residential characteristics also influence environmental behavior. Students who live in climate-vulnerable places may be more conscious of the necessity of environmental conservation. Parents' educational background, nature-related activities, and environmentally conscious culture can promote responsible use of natural resources. These data indicate that initiatives to raise environmental awareness have resulted in favorable outcomes. However, given the complexities of future environmental concerns, long-term plans that consider these factors are required. Understanding and leveraging the relationships between these factors allows us to build more successful techniques for raising environmental awareness and encouraging sustainable behavior among students and the larger community. Although the results of this study show a positive and significant correlation with a strong category between the variables of naturalist intelligence and environmental care attitudes, there is still a gap between the potential of naturalist intelligence that students should have and the realization of active environmental care attitudes. Students should have high naturalist intelligence, but many are only in the moderate category. This reflects a mismatch between the potential possessed by students and the implementation of environmental care attitudes that should be stronger and more active in everyday life. Although the correlation between naturalist intelligence and environmental care attitudes is relatively strong, there is still a gap in its application, and many students have not changed their understanding into real action.

Conclusion

This research revealed a huge correlation between naturalist intelligence and environmental awareness of UIN Sulthan Thaha Saifuddin Jambi students, with a correlation coefficient of 0.604 (strong category). Regression analysis produced the equation Y = 25.319 + 1.117X, indicating that every one-unit increase in naturalist intelligence will increase environmental awareness by 1.117 units. Naturalist intelligence effectively contributes 36.4% to ecological awareness, while factors outside the variables of this study influence the other 63.6%. The categorization results show that most students have naturalist intelligence (64.6%) and environmental awareness (72.7%) in the medium category, indicating potential for development that can still be optimized.

Analysis of the naturalist intelligence aspect revealed significant variations in the four indicators studied, with the aspect of "enjoying being creative with natural elements"

receiving the lowest response. Meanwhile, regarding environmental awareness, the indicator "being wise in using natural resources" requires special attention to be improved. These findings imply the need for a comprehensive approach to developing students' environmental awareness, not only through improving naturalist intelligence but also by considering other influential factors such as ecological knowledge, religious values, and access to environmental information.

Based on the research findings, suggestions can be made that students are expected to be proactively involved in various environmental activities and implement an attitude of environmental care as an integral part of daily activities. Meanwhile, lecturers can use learning methods that stimulate naturalist intelligence, such as ecological project-based learning or case studies, and encourage students to be involved in environmental care activities on and off campus.

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