

Aware Today, Sustainable Tomorrow: Students' Environmental Awareness at Mindanao State University Sulu Senior High School

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Abstract. Environmental awareness plays a pivotal role in promoting sustainable behavior among students. And with that, this study was conducted to determine the level of environmental awareness among students of Mindanao State University–Sulu Senior High School in terms of cognitive, affective, conative, and active dimensions, identify the highest and lowest dimensions, examine differences when grouped according to gender and strand, and determine the relationships among these dimensions. The respondents consisted of 228 senior high school students from GAS and STEM strands of MSU–Sulu Senior High School. Using a descriptive-correlational and comparative design, data were collected through a validated questionnaire. Findings revealed that students demonstrated an overall “high” level of environmental awareness. The conative dimension attained the highest mean, while the active dimension had the lowest mean, indicating a gap between willingness to act and their actual behavior. Furthermore, no significant differences were found in cognitive, affective, and conative dimensions in terms of strand, while a significant difference was observed in the active dimension. In terms of gender, no significant differences were found in conative, and active dimensions, while the affective and cognitive dimension showed a significant difference. In addition, all four dimensions showed a significant relationship towards each other. It was highly recommended that students should actively engage in an environmental program, parents should reinforce environmental practices at home, teachers should integrate environmental education, communities should conduct awareness campaigns, and future researchers should employ a mixed-method approaches.

Keywords: Affective; Cognitive; Conative; Environmental awareness; Sustainable environment

Introduction

Environmental problems such as climate change, pollution, deforestation, and loss of biodiversity have become serious global concerns that threatened both present and future generations. These issues highlighted the important role of education in developing environmentally responsible citizens, specifically among students who will become future decision-makers. According to the United Nations (2023), more than 70% of the global population is projected to live in cities by 2050, placing immense pressure on natural resources, infrastructure, and public services. As the world moves toward sustainable development, youths play a vital role in promoting responsible behavior in protecting natural resources. Therefore, understanding students' level of environmental awareness in terms of cognitive, affective, conative, and active dimensions are essential in promoting sustainable behavior and in achieving the vision of a sustainable future, as reflected in the title “Aware Today, Sustainable Tomorrow: Students' Environmental Awareness at Mindanao State University-Sulu Senior High School.”

Mindanao State University–Sulu Senior High School served students from various backgrounds and academic strands. Thus, there were limited local research studies that determined the students' level of environmental awareness in terms of knowledge, feelings, intention and behaviors. Moreover, only few studies have simultaneously examined the cognitive, affective, and behavioral dimensions of environmental awareness among senior high school students and related them to demographic variables such as gender and academic strand. This gap indicated the need for a contextualized study that will provide data specific to MSU–Sulu Senior High School, which can serve as a basis for strengthening environmental education programs in the institution, in such that can help the school administrators and teachers to design more effective environmental education programs, considering school as one of the most important institutions in shaping students' knowledge, attitudes, and actions toward the environment.

Several studies supported the importance of measuring students' environmental awareness. Baltodano-Nontol et al. (2024) emphasized that environmental awareness includes knowledge about

environmental issues, emotional concern, and willingness to act in favor of environmental protection. Their validated instrument showed that awareness is multidimensional and should be studied in cognitive, affective, and behavioral (conative and active) aspects.

Furthermore, research by Kalinowska, D., et al. (2016) initiated that gender and academic background may affect students' level of environmental awareness, suggesting that personal and educational factors play a vital role in shaping environmental responsibility. These findings supported the need to examine how such variables relate to the environmental awareness of MSU–Sulu Senior High School students.

The main purpose of this study was to determine students' level of environmental awareness across cognitive, affective, conative, and active dimensions. It also aimed to identify which dimension showed the highest and lowest level of awareness in Mindanao State University-Sulu Senior High School, and to examine the difference based on gender and strand, and the relationship among the four dimensions of environmental awareness.

Research Questions

This study aimed to determine the level of environmental awareness among students of Mindanao State University-Sulu Senior High School in terms of affective, cognitive, conative, and active dimensions.

Specifically, this study sought to answer the following questions:

1. What is the level of students' environmental awareness in terms of:
 - 1.1 Affective
 - 1.2 Cognitive
 - 1.3 Conative, and
 - 1.4 Active dimensions?
2. Which dimensions show the highest and lowest level of environmental awareness among students?
3. Are there significant differences in students' environmental awareness (affective, cognitive, conative, and active) when grouped according to gender and strand?
4. Is there a significant relationship among the cognitive, affective, conative, and active dimensions of environmental awareness?

Literature Review

Environmental Awareness

Environmental awareness is a critical factor influencing how individuals perceive and respond to environmental issues. It refers to the level of knowledge, attitudes, and behaviors that individuals possess regarding environmental protection and sustainability. Studies have consistently shown that individuals with higher environmental awareness are more likely to engage in pro-environmental behaviors and support sustainable practices. For instance, Kousar et al. (2022) found that environmental awareness significantly contributes to environmental quality and sustainable development. Similarly, Kaiser et al. (1999) emphasized that environmental knowledge is closely related to ecological behavior, indicating that awareness plays a key role in shaping responsible actions. Furthermore, both personal and social factors significantly influence pro-environmental behavior, highlighting the importance of environmental awareness in shaping sustainable actions (Gifford & Nilsson, 2014; Li et al., 2019). Environmental awareness also plays a significant role in shaping individuals' attitudes and intentions toward sustainable behavior, as it strengthens their sense of responsibility toward environmental protection (Steg & Vlek, 2009; Joshi & Rahman, 2015). In addition, environmental awareness is influenced by education, social environments, and personal experiences. Studies suggested that environmental education programs enhance students' understanding of environmental issues and promote sustainable behaviors (Maurer et al., 2020; Cabral & Dhar, 2021). Social and community influences also contribute to awareness, as individuals are more likely to adopt environmentally responsible behaviors when exposed to supportive environments (Despotović et al., 2021; Jaciow et al., 2022). Furthermore, environmental awareness is widely recognized as a multidimensional construct involving cognitive, affective, and behavioral components. According to Kollmuss and Agyeman (2002), environmental behavior is influenced by a combination of knowledge, values, and situational factors. Similarly, Sánchez and Lafuente (2010) explained that environmental awareness includes attitudes, knowledge, and behavioral intentions, all of which contribute to sustainable practices. Overall, environmental awareness plays a crucial role in promoting sustainable behavior across individuals and communities. It enhances knowledge, attitudes, and actions that support environmental protection and long-term sustainability.

Affective Dimension

The affective dimension refers to emotions, feelings, and attitudes toward the environment, which significantly influence pro-environmental behavior. Emotional engagement is a key factor that motivates

individuals to take environmental action. According to Anja Kollmuss and Julian Agyeman (2002), environmental behavior is shaped not only by knowledge but also by emotional involvement and personal values. Similarly, Kals, Schumacher, and Montada (1999) found that emotional affinity toward nature serves as a strong motivational basis for environmental protection. Individuals who feel emotionally connected to the environment are more likely to engage in pro-environmental behaviors. Research by Schultz et al. (2004) also highlighted those environmental attitudes and emotional connections affected individuals' environmental concerns and actions. These affective responses shaped preferences and commitment to sustainability. In addition, Onel (2017) found that environmental concern significantly affects consumer behavior, further emphasizing the role of emotions in decision-making. Moreover, Trott (2022) demonstrated that both positive and negative emotions, such as hope and concern, influenced climate-related engagement. Emotional experiences in environmental education encouraged participation and long-term behavioral change. Overall, these studies confirmed that the affective dimension plays a vital role in environmental awareness, as emotions strongly influence attitudes and sustainable behavior.

Cognitive Dimension

The cognitive dimension refers to knowledge, understanding, and awareness of environmental issues. It forms the foundation of environmental awareness and is essential for informed decision-making. According to Kaiser et al. (1999), environmental knowledge is closely associated with ecological behavior, indicating that individuals with greater understanding are more likely to act responsibly. Similarly, Frick, Kaiser, and Wilson (2004) explained that environmental knowledge includes different types, such as system knowledge and action-related knowledge, which contribute to pro-environmental behavior. Research also showed that increased environmental knowledge leads to stronger environmental attitudes and behavioral intentions (Kaiser & Fuhrer, 2003; Xu et al., 2020). Education plays a key role in enhancing cognitive awareness, as it develops critical thinking and problem-solving skills necessary for sustainability (Cabral & Dhar, 2021). Furthermore, studies indicated that knowledge alone is not sufficient but serves as a foundation for influencing attitudes and behaviors (Kollmuss & Agyeman, 2002). Thus, cognitive awareness was essential for understanding environmental issues and making informed decisions.

Conative Dimension

The conative dimension refers to individuals' intentions, willingness, and actions toward environmental behavior. It represents the transition from knowledge and emotions to actual behavior. Quoquab and Mohammad (2020) explained that sustainable behavior was influenced by the interaction of cognitive, affective, and conative components, highlighting the importance of intention in driving action. Similarly, Kollmuss and Agyeman (2002) emphasized that behavioral intention was shaped by values, attitudes, and motivation. Ajibade and Boateng (2021) further supported that intention was a strong predictor of pro-environmental behavior. Individuals with stronger intentions were more likely to engage in sustainable practices. In addition, Kautish and Sharma (2020) found that personal norms and motivation significantly influenced environmentally responsible behavior.

Active Dimension

The active dimension focused on actual participation and engagement in environmental practices. It represented the behavioral component of environmental awareness. According to Hungerford and Volk (1990), environmental education should promote not only knowledge and attitudes but also participation and action, as these were essential for developing responsible environmental behavior. Similarly, Maurer et al. (2020) found that active engagement in environmental programs enhanced learning outcomes and strengthens pro-environmental behavior. Participation in environmental initiatives has also been shown to improve awareness, attitudes, and behavioral outcomes (Lozano Gómez & Barbarán Mozo, 2021). Moreover, community-based participation played a key role in promoting sustainability, as individuals who actively engaged in environmental activities were more likely to develop long-term sustainable habits (Al-Shidi et al., 2021). Overall, the active dimension highlighted the importance of engagement and participation in accomplishing meaningful and long-term environmental sustainability. Environmental awareness was widely recognized as a multidimensional construct encompassing cognitive, effective, and active components, which collectively influenced individuals' engagement with environmental issues. It significantly shaped individuals' perceptions, attitudes, and their environmentally responsible actions aimed at sustainability and protection (Frick et al., 2004; Kaiser et al., 1999; Kollmuss & Agyeman, 2002; Sánchez & Lafuente, 2010). Higher levels of awareness promoted ecological responsibility because knowledge formed the foundation for making informed decisions (Cabral & Dhar, 2021; Kaiser & Fuhrer, 2003; Xu et al., 2020). Additionally, emotional connection and concern, including feelings of hope, worry, and affinity toward nature, played a critical role in driving pro-environmental behaviors. Emotions such as hope, worry, and a connection to nature drove engagement and influenced consumer decisions (Hayhoe & Trott, 2022; Kals et al., 1999; Onel,

2017; Schultz et al., 2004). Elements of motivation, including intentions and social norms, linked these feelings to actual behaviors (Ajibade & Boateng, 2021; Kautish & Sharma, 2020; Quoquab & Mohammad, 2020). These were further strengthened by personal values, social influences, and education that encouraged active participation (Al-Shidi et al., 2021; Despotović et al., 2021; Gifford & Nilsson, 2014; Hungerford & Volk, 1990; Jaciow et al., 2022; Joshi & Rahman, 2015; Li et al., 2019; Lozano Gómez & Barbarán Mozo, 2021; Maurer et al., 2020; Steg & Vlek, 2009), ultimately promoting environmentally responsible behaviors (Sharma, 2020; Quoquab & Mohammad, 2020), amplified personal values, social influences, and education that promote participation (Al-Shidi et al., 2021; Despotović et al., 2021; Gifford & Nilsson, 2014; Hungerford & Volk, 1990; Jaciow et al., 2022; Joshi & Rahman, 2015; Li et al., 2019; Lozano Gómez & Barbarán Mozo, 2021; Maurer et al., 2020; Steg & Vlek, 2009), ultimately driving environmental quality, sustainable development, and community-level change (Kousar et al., 2022).

Methodology

Research Design

This study used a descriptive-correlational and comparative research design to determine the level of environmental awareness of students, examining the significant relationship and differences between students' environmental awareness among senior high school students of Mindanao State University-Sulu. According to John W. Creswell (2014), descriptive design was used to describe a population, situation, or phenomenon as it exists, while correlational design was used to examine the relationship among dimensions. Similarly, C.R. Kothari (2004) explained that comparative research was concerned with identifying differences between groups, as well as examining associations among variables. These designs were appropriate because it allowed the researchers to describe existing conditions and identify relationships and differences between variables without manipulating them.

Sampling Design

Researchers used a stratified random sampling technique to select the respondents among senior high school students of Mindanao State University-Sulu. Stratified random sampling was a sampling technique in which the population was divided into homogeneous subgroups called strata, and a random sample was drawn from each stratum. This ensured that all subgroups were adequately represented in the sample (Kothari, 2004). The population was divided by academic strand and grade level (STEM 12, STEM 11, GAS 12, GAS 11), and the sample was evenly distributed, then the respondents were randomly selected within each stratum by lottery, ensuring fair representation of all strands and grade levels. This method was appropriate for the study because it provided a practical means of gathering data from a large and various students' population, while allowing the researchers to obtain an inclusive understanding of the students' environmental awareness and sustainability. Additionally, survey monkey was used to determine the sample size of the respondents, as it provided a sample size calculator.

Research Locale

This study was conducted at Mindanao State University-Sulu, located at Capitol Site, Jolo, Sulu. The senior high school was selected as the locale of this study as it offered an appropriate population of students from different strands (GAS and STEM) having a possibility of being aware of the environmental crisis.

Research Participants

This study involved 228 senior high school students from Mindanao State University-Sulu Senior High School, selected from a total population of 558 students. The respondents were composed of students from both the Science, Technology, Engineering, and Mathematics (STEM) strand and the General Academic Strand (GAS), covering Grade 11 and Grade 12 levels. Specifically, the study included 51 respondents from STEM 11, 60 from STEM 12, 56 from GAS 11, and 61 from GAS 12. In terms of gender distribution, the respondents consisted of 114 male students and 114 female students, ensuring equal representation of both genders in the study. This distribution allowed the researchers to obtain balanced and reliable data regarding the environmental awareness of senior high school students across different strands and grade levels.

Research Instrument

This study's questionnaire was adapted from the study of Baltodano-Nontol et al. (2024) titled: "Measuring Urban Environmental Awareness: Instrument Validation and Analysis in Urban Contexts". The instrument was modified to suit the local context of senior high school students at Mindanao State University-Sulu, while maintaining the core constructs of environmental awareness presented in the original study. Additionally, four items from the original questionnaire were removed to better align with research locale and to improve the internal consistency of the instrument, resulting in a Cronbach's alpha being above

0.70. The questionnaire was designed to comprehensively measure the students' environmental awareness in terms of affective, cognitive, conative and active that were observed within the school setting. Prior to its administration, the instrument underwent validity and reliability testing to ensure its suitability for the respondents. The questionnaire was reviewed by experts, specifically by the three panelists to establish content validity, and its reliability was determined through the use of Cronbach's alpha, confirming that the items were consistent and appropriate for measuring students' environmental awareness. The research instrument employed a Likert-type rating scale to assess the respondents' level of awareness, attitudes, and behaviors related to environmental issues. The instrument consisted of four major sections. Part I gathered the demographic profile of the respondents, including their gender and strand. Part II measured the level of students' environmental awareness in terms of Affective, the respondents were asked to rate their awareness using a five-point Likert scale: 5 – *Always (A)*, 4 – *Almost Aware (AA)*, 3 – *I Don't Know (IDK)*, 2 – *Almost Never (AL)*, and 1 – *Never (N)*. Part III measured the level of students' environmental awareness in terms of Cognitive, it also used a five-point Likert along with the other parts. Part IV measured the level of students' environmental awareness in terms of Conative and Part V measured the level of students' environmental awareness in terms Active.

Data Gathering Procedure

The data-gathering procedure started by seeking approval from the office of the Director and from GAS and STEM coordinators to conduct the study. After the approval was granted, the researchers also requested permission from all class advisers, then asked permission to all the respondents and explained the purpose of the study to avoid any misunderstanding. Data was collected during the respondents' free time to ensure their comfort and availability. The survey questionnaire was distributed through printed copies. Once the respondents had finished answering, the researchers retrieved, evaluated, and tallied the data acquired. Lastly, the researchers organized and analyzed the collected data according to the finalized research variables for proper interpretation and presentation of results.

Results and Discussions

Research Question 1: What is the level of students' environmental awareness in terms of affective, Cognitive, Conative, and, Active dimensions?

Table 1. Level of Students' Environmental Awareness in terms of Affective

	Statement	Mean	SD	Descriptor
1.	I am concerned that in a few years we won't have a healthy environment to live in due to human actions.	4.35	0.790	Very High
2.	It really bothers me to see people throwing their waste on the streets.	4.32	0.874	Very High
3.	You like it when environmental education is promoted in schools, institutions, and society in general.	4.30	0.828	Very High
4.	When you observe the reduction of green areas in your community, you feel sad and concern.	4.27	0.783	Very High
5.	I feel enthusiastic about carrying out environmental care activities in my community.	3.99	0.863	High
6.	Environmental pollution is a topic of your interest.	3.90	0.934	High
7.	There are more important things to do than taking care of the environment.	2.62	1.281	High
	Grand Mean	3.96	0.904	High

Table 1 showed that students generally have a strong emotional connection towards the environment, the results showed a total mean of 3.96. This suggested that students were concerned about the planet's future, particularly regarding environmental health and education. As Krathwohl et al. (1964) stated that these feelings are the source for building real concern for nature. However, an item that stated that "There are more important things to do than taking care of the environment," scored the lowest among the seven items, with a mean of 2.62. This showed that though students cared about the environment, they sometimes struggled to balance it with their busy schedules. Overall, the results suggested that students cared about environmental issues and the future of the planet. However, the relatively lower score of the statement about "There are more important things to do than taking care of the environment," implied that, despite their concern, students may struggle to consistently prioritize environmental actions due to competing responsibilities such as schoolwork and personal commitments.

Table 2. Level of Students Environmental Awareness in terms of Cognitive

	Statement	Mean	SD	Descriptor
1.	Know strategies aimed at environmental protection, such as recycling, using eco-friendly transportation, among others.	4.14	0.797	High
2.	Knows the main problems contributing to environmental pollution associated with human activity.	4.04	0.833	High
3.	Has knowledge about local, national, and global environmental problems.	3.92	0.859	High
4.	Knows about the use of chemicals in agriculture and additives like preservatives in food, and their harmful effects on health.	3.91	0.969	High
5.	Is knowledgeable about campaigns in favor of environmental protection.	3.89	0.886	High
	Grand Mean	3.98	0.869	High

Table 2 showed the level of students' environmental awareness in terms of cognitive aspect, which focused on their knowledge or comprehension towards the environment. The results showed a grand mean of 3.98 which was clarified as "high". This showed that students were knowledgeable about environmental issues and how to protect the environment. Among the items, the statement "Knows strategies aimed at environmental protection such as recycling and using eco-friendly transportation," obtained the highest mean of 4.14. This showed that many students were knowledgeable about strategies on how to protect the environment. These findings indicated that the respondents have a good level of environmental knowledge. According to UNESCO (2017), Environmental education helped develop awareness, knowledge, and understanding of environmental issues so that individuals can make responsible decisions for the environment. It showed that educational institutions have an important role in building students' knowledge about caring for the environment. Overall, the results showed that students possessed a high level of environmental knowledge, with a grand mean of 3.98. This indicated that they were well informed about environmental issues and understood strategies for protecting the environment, such as recycling and eco-friendly practices. The findings suggested that educational efforts were effective in building students' awareness and understanding of environmental concerns.

Table 3. Level of Students' Environmental Awareness in terms of Conative

	Statement	Mean	SD	Descriptor
1.	I save water by properly turning off the faucet when it is not in use.	4.27	0.963	Very High
2.	It is important for the population to organize and be proactive in response to environmental disasters like oil spills.	4.14	0.904	High
3.	Reducing the use of polluting products such as petroleum derivatives would decrease environmental pollution.	4.00	0.953	High
4.	I am interested in informing my community about the importance and consequences of not taking care of the environment.	3.99	0.973	High
5.	I have time for environmental activities involving family groups, neighbors, etc.	3.93	0.910	High
6.	I would support anyone who sanctions individuals or organizations that harm the environment.	3.66	1.265	High
	Grand Mean	3.99	0.995	High

Table 3 showed the conative aspect of students' environmental awareness, which focused on their willingness to take action to help protect the environment. The grand mean of 3.99, interpreted as "high", suggested that students were generally willing to participate in environmental activities and reduce the use of products that may harm the environment. This implied that students were not only aware of environmental problems but were also willing to be involved in efforts to address them. According to the Theory of Reasoned Action by Martin Fishbein and Icek Ajzen (1975), a person's intention to act plays an important role in determining whether they will perform a behavior. However, Sebastian Bamberg and Günter Möser (2007) explained that intentions alone may not always lead to consistent action unless individuals are given proper support and opportunities. Therefore, while students showed willingness to care for the environment, guidance and environmental programs were important to help them turn these intentions into regular practices. This means that students were not only aware of environmental issues but also motivated to participate in activities that promoted sustainability. However, while their intentions were strong, regular action may still depend on external support, opportunities, and guidance.

Table 4. Level of Students' Environmental Awareness in terms of Active

	Statement	Mean	SD	Descriptor
1.	I usually use reusable or eco-friendly products instead of disposable items.	4.09	0.856	High
2.	I disconnect appliances to save energy.	3.92	1.124	High
3.	I implement the 3 Rs in my daily life (reduce, reuse, and recycle).	3.92	1.055	High
4.	As a citizen, I inform people about the benefits of preserving green areas.	3.90	0.902	High
5.	I avoid consuming industrialized food products or those with chemicals.	3.79	0.923	High
6.	I prefer walking or cycling and limiting the use of cars.	3.71	1.050	High
7.	I plant trees to create green spaces in my locality.	3.69	1.135	High
8.	I spread or report behaviors against environmental care.	3.56	1.180	High
9.	I participate in beach clean-up activities or reforestation.	3.33	1.260	Moderate
10.	I avoid buying or using air fresheners, deodorants, or other products in aerosol cans (spray).	3.32	1.237	Moderate
	Grand Mean	3.72	0.967	High

Table 4 showed that active dimension of environmental awareness, which referred to the actual environmental behaviors of the students have an overall mean of 3.72, interpreted as "high". Showing that students commonly engaged in environmentally responsible actions and commonly adopted eco-friendly behaviors in their everyday lives. The statement "I usually use reusable or eco-friendly products instead of disposable items," scored the highest mean of 4.09, indicating that many students made an effort to reduce waste by choosing environmentally friendly products. This may reflect the growing awareness of the importance of reducing plastic and other disposable materials. However, the statements "I avoid buying or using aerosol products" and "I participate in beach clean-up activities or reforestation" were interpreted as "moderate", indicating that students may not consistently participate in these activities. This could be due to limited opportunities, lack of organized environmental programs, or busy schedule. Steg and Vlek (2009) noted that although individuals may have positive environmental attitudes, their actual behavior is often influenced by factors such as convenience, available resources, and social support. Overall, the results showed that students demonstrated high level of active environmental awareness, meaning they often practiced eco-friendly behavior in their everyday life. The action with the highest-rated statement was "I usually use reusable or eco-friendly products instead of disposable items" showing the strong effort to reduce waste. However, participation in activities like joining environmental programs and using aerosol products was only moderate, suggesting that while students were generally responsible, their involvement in more demanding environmental action was less constant.

Research Question 2: Which dimensions show the highest and lowest level of environmental awareness among students?

Table 5. Highest and Lowest Environmental Awareness among Students

Dimensions	Grand Means	SD	Descriptor
Conative	3.99	0.995	High
Cognitive	3.98	0.869	High
Affective	3.96	0.833	High
Active	3.72	0.967	High

Table 5 showed that all four dimensions of students' environmental awareness acquired a "high" descriptor. This generally means that students have a good level of awareness across four dimensions, though there were differences in how strong each dimension was. Conative dimension scored the highest mean among the four dimensions having a 3.99 overall grand mean, which means students were motivated and prepared to engage in pro-environmental behaviors. While the Active dimension scored the lowest mean score of 3.72, however still fell within the "high" descriptor, which means that student was less involved in actual environmental actions even though they expressed concerns, intentions and knowledge. Kollmuss and Agyeman (2002) highlighted that conative awareness has a strong predictor of actual environmental engagement activities, while the individuals may have concerns and knowledge for the environment, it still faces barriers that avoid consistent actions.

Research Question 3: Are there significant differences in students' environmental awareness (affective, cognitive, conative, and active) when grouped according to gender and strand?

Table 6. Result of Mann-Whitney U Test in Comparing the Differences of Students' Environmental awareness when grouped according to Gender

Variables	Males		Females		U	P-value
	N	Mean Rank	N	Mean Rank		
Affective	114	128	114	101	3.267	0.001
Cognitive	114	123	114	106	2.431	0.016
Conative	114	111	114	118	0.888	0.376
Active	114	111	114	118	-0.244	0.508

Table 6 found that gender has significant differences of internal environmental perspectives but not of outward behavior. There were significant differences observed in the affective ($p=0.001$, $U=3.267$) and cognitive ($p=0.016$, $U=2.431$) domains, indicating that male and female students differed in their emotional concern and levels of environmental awareness. However, there were no significant differences in the conative ($p=0.376$, $U=-0.888$) and active ($p=0.508$, $U=-0.244$) dimensions. This suggested that while gender shaped by how students feel and think about the environment, it does not dictate their willingness to act or their actual frequency of participation, as both genders at Mindanao State University-Sulu performed environmental practices at a statistically similar level. Furthermore, Zelezny et al. (2000) argued that females were often socialized toward more nurturing and protective values regarding the ecosystem. Overall, the results indicate that students have a high level of environmental awareness across the four dimensions. The conative dimension scored the highest mean, demonstrating a strong willingness to act, while the active dimension scored the lowest among the four-dimensions suggesting that students were less active in actual participation in an environmental activity. This means that although students were aware and motivated, their real environmental actions were not consistent.

Table 7. Result of Mann-Whitney U Test in Comparing the Differences of Students' Environmental Awareness when Grouped according to Strand

Variables	STEM		GAS		U	P-value
	N	Mean Rank	N	Mean Rank		
Affective	111	122	117	108	5689	0.105
Cognitive	111	112	117	117	6223	0.585
Conative	111	110	117	119	5951	0.274
Active	111	102	117	127	5061	0.004

Table 7 revealed that academic strands do not have significant differences in the internal dimensions of environmental awareness among the students at Mindanao State University-Sulu. Specifically, no significant differences were found in the affective ($p=0.105$, $U=5689$), cognitive ($p=0.585$, $U=6223$), and conative ($p=0.274$, $U=5951$) domains, suggesting that STEM and GAS students shared a comparable foundation of emotional values, factual knowledge, and behavioral intentions. In contrast, a highly significant difference emerged in the active domain ($p=0.004$, $U=5061$), where STEM students demonstrated a higher frequency of actual environmental participation. This disparity illustrated the "Value-Action Gap" (Blake, 1999), which Kollmuss and Agyeman (2002) attributed it to institutional factors; in this context, the STEM curriculum likely provided more specialized, hands-on opportunities for environmental engagement that were not as readily available in the GAS track. Overall, the findings indicated that academic strand does not affect the students' environmental awareness and intentions and does not significantly affect their internal dimensions (affective, cognitive and conative), suggesting that students from different strands (e.g., STEM and GAS) shared a similar level of environmental awareness. However, a significant difference was found in the active dimension.

Research Question 4: Is there a significant relationship among the cognitive, affective, conative, and active dimensions of environmental awareness?

Table 8. Result of Pearson Product-Moment Correlation in Determining the Relationships of Students' Environmental Awareness (Affective, Cognitive, Conative and Active Dimensions)

Variables	N	M	SD	1	2	3	4
Affective	228	3.96	0.904	-			
Cognitive	228	3.98	0.869	0.448***	-		
Conative	228	3.99	0.995	0.389***	0.453***	-	
Active	228	3.33	0.967	0.349***	0.531***	0.518***	-

Table 8 used a Pearson r correlation analysis, this was used to determine the significant relationship among the affective, cognitive, conative, and active dimensions of environmental awareness. This statistical tool helped to measure the strength of the linear relationship between two variables. The descriptive results showed that students have high levels of awareness in the affective ($M = 3.96$, $SD = 0.904$), cognitive ($M = 3.98$, $SD = 0.869$), and conative ($M = 3.99$, $SD = 0.995$) dimensions, while the active dimension obtained a lower mean score ($M = 3.33$, $SD = 0.967$). This indicated that although students possessed strong knowledge, emotions, and intentions regarding environmental issues, their actual participation in environmental activities was relatively lower. The correlation results revealed that all dimensions were positively and significantly related at 0.01 level ($p < .01$). Affective and cognitive dimensions showed a moderate relationship ($r = 0.448$), suggesting that emotional concern was associated with higher environmental knowledge. Affective was also moderately correlated with conative ($r = 0.389$), indicating that emotions influenced intentions. Meanwhile, cognitive showed stronger relationships with conative ($r = 0.453$) and active ($r = 0.531$), implying that knowledge played an important role in shaping both intention and action. The strongest relationship was found between conative and active dimensions ($r = 0.518$), indicating that intention significantly led to actual environmental behavior. Jacob Cohen (1988) discussed how correlation coefficients (r) measured relationship strength and significance. Lee J. Cronbach (1951) indicated that psychological and behavioral variables were often significantly correlated, and Norman Blaikie (2003) emphasized that significant correlations implied a meaningful relationship between variables. Overall, these findings confirmed that all variables have a positive significant relationship. It also indicated that being aware and informed was not enough to guarantee action. Meaning they were consistently associated with one another, even though students understood and cared about the environmental issues, there were still factors that prevented them from actively participating. These reasons may include limited opportunities, lack of time, or limited support from their surroundings.

Ethical Considerations

Before taking part in the study, each participant was given a short explanation of the research purpose and what they would be asked to do. They were also informed that participation was completely voluntary and that they can stop anytime if they felt uncomfortable. All information shared by the participants was treated with strict confidentiality. Names and other identifying details did not appear in the research report. Instead, participants were assigned with codes or numbers. The data were stored securely and can only be accessed by the researchers. This study does not pose any physical or emotional risks to participants. The main benefit was that the results may help in improving environmental awareness and promoting sustainability within communities. The gathered data were stored in a secure folder that only the research team can access. It was used for academic purposes only.

Conclusion

Examining awareness among the students of Mindanao State University-Sulu Senior High School aimed to assess the level, differences, and relationships among the affective, cognitive, conative, and active dimensions of environmental awareness. The findings revealed that students generally demonstrated a high level of environmental awareness in all four dimensions. This suggested that students possessed positive feelings (affective), sufficient knowledge and understanding (cognitive), willingness to act pro-environmentally (conative), and actual behaviors (active) towards the sustainability of the environment, in addition, conative dimension was found to have the highest level indicating that students showed a strong intention and willingness to engage in an environmental activities. In contrast, the active dimension obtained the lowest level, indicating that while students were willing to engage in environmental activity, this does not always translate into consistent real-life environmental actions. In terms of differences, the study found that when grouped according to strand (GAS and STEM), there were no significant differences in the affective, cognitive, and conative dimensions. However, a significant difference was observed in the active dimension, suggesting that students' actual environmental practices may vary depending on their academic strand. When grouped according to gender, there were no significant differences in conative, and active dimensions. However, the affective and cognitive dimension showed a significant difference, indicating that male and female students differed in their environmental attitudes and emotional responses toward the environment. Furthermore, the results showed that all four dimensions have significant relationships with one another, reflecting that students' knowledge, feelings, intentions, and actions toward the environment were interconnected. This implied that improving one dimension may positively influence the others. Overall, the results highlighted that while students demonstrated a strong foundation in environmental awareness, there was a gap between intention and actual behavior. Therefore, reinforcing the goal of developing environmentally responsible individuals for a sustainable future and more efforts were needed to transform students' willingness into consistent environmental practices.

Recommendations

Based on the findings of the study, it is recommended that students of Mindanao State University-Sulu Senior High School further strengthen their environmental awareness by actively participating in environmental programs and activities such as tree planting, waste management campaigns, recycling initiatives, and other sustainability-related practices. Parents are also encouraged to promote environmental responsibility at home by educating and motivating their children to engage in environmentally responsible behaviors and community-based environmental activities. Teachers and educational institutions should integrate environmental education into classroom instruction through interactive, experiential, and student-centered learning activities that enhance students' understanding of ecological issues and sustainable practices. Moreover, community leaders and local stakeholders are encouraged to organize environmental awareness campaigns, outreach programs, and seminars that foster community participation and collective responsibility toward environmental protection and sustainability. Future researchers may further expand this study by employing mixed method approaches to gain deeper insights into students' environmental attitudes and behaviors. They may also conduct comparative or collaborative studies across different schools and educational settings to improve the generalizability of findings. Additionally, future investigations may explore the influence of parental practices, household environmental behaviors, age, and grade level on students' environmental awareness. Researchers are likewise encouraged to examine the factors that limit students' active participation in environmental practices, particularly why the active dimension remains lower compared to the affective, cognitive, and conative dimensions of environmental awareness.

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