**UNIVERSITY OF THE PHILIPPINES**
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**MASTER OF ENVIRONMENT AND NATURAL RESOURCES**

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# GENERATION Z'S AWARENESS AND WILLINGNESS TO ENGAGE IN CLIMATE CHANGE ADAPTATION: A CASE STUDY IN KORONADAL CITY, SOUTH COTABATO

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21 November 2025

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## DECLARATION

This is to certify that:

I. The special problem comprises only my original work towards the MENRM except where indicated in the Preface.

II. Due acknowledgement has been made in the text to all other material used.

III. The special problem is fewer than 25,000 words in length, exclusive of tables, maps, bibliographies and appendices.

**MYRE ADRIENNE JADE F. GESULGA**
**Name**

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## TABLE OF CONTENTS

## List of Tables

## List of Figures

## Abstract

Climate change has continued to pose significant risks to communities, making the engagement of younger generations essential in advancing adaptation efforts. This study examined the awareness, attitudes, subjective norms, perceived behavioral control, and willingness of Generation Z college students in Koronadal City to participate in climate change adaptation, guided by the Theory of Planned Behavior (TPB). This study assessed students' climate change knowledge, their behavioral predictors, and their willingness to engage in climate-friendly practices.

A quantitative survey design was used to gather data. The respondents were college students born between 1999 and 2005 enrolled in private universities in Koronadal City. Findings revealed varying levels of climate literacy and concern among students. Attitudes, subjective norms, and perceived behavioral control significantly predicted willingness to engage in climate-friendly behaviors, while knowledge along was not always a strong predictor. This was consistent with trends presented in related literature. Year level differences also showed variations in awareness and behavioral intention.

In conclusion, the Generation Z college students' psychological, social, and contextual factors influenced their willingness to participate in climate change adaptation more strongly than knowledge along. Based on the results, implementation of targeted climate education programs, community outreach activities, and improvements to curriculum content that would strengthen students' climate awareness, adaptive behavior, and long-term environmental engagement are included in the recommendations.



Keywords: Climate change; Theory of Planned Behavior; Generation Z

# I. INTRODUCTION

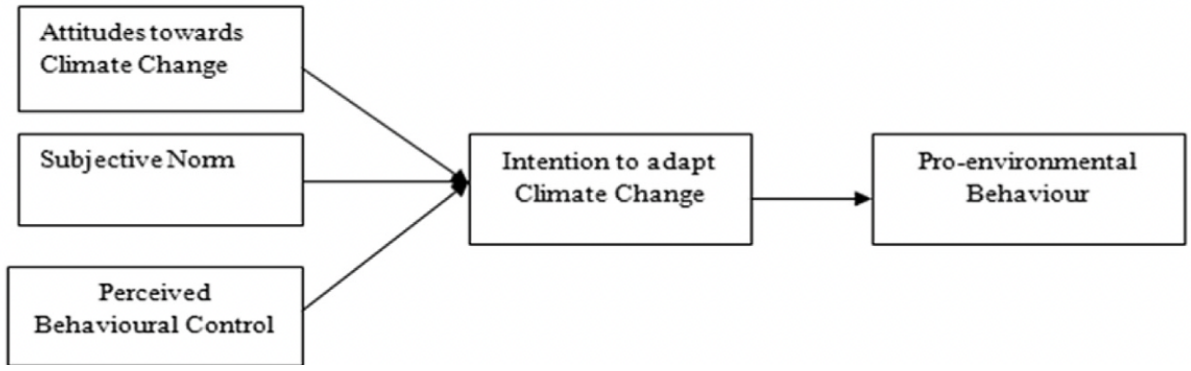
Climate change has emerged as one of the greatest threats to global sustainability, affecting ecosystems, economies, and human societies across the world (Intergovernmental Panel on Climate Change [IPCC], 2023). The younger generation, particularly the Generation Z, is at the forefront of this climate crisis. Generation Z, also referred to as Gen Zs, are the demographic cohort consisting of individuals born between 1995 and 2012 (University of Southern Carolina, 2025). Their beliefs, awareness, and engagement in climate change adaptation and mitigation are vital in driving future solutions and fostering a culture of environmental responsibility (Corner et al., 2015). Also referred to as digital natives, Generation Zs are well-positioned to influence and lead societal shifts toward sustainable living through their access to information and technological literacy (Francis & Hoefel, 2018).

Climate change adaptation has become a critical global imperative, particularly for vulnerable countries like the Philippines, which faces frequent climate-related disasters such as typhoons, floods, and droughts (Lasco et al., 2018). In recent years, the role of education and youth engagement has been increasingly emphasized in national and global adaptation strategies. The Philippines' National Climate Change Action Plan (NCCAP) recognizes youth as key stakeholders in climate action and highlights the need to strengthen climate education, capacity-building, and participation (Climate Change Commission, 2021). Given the significant proportion of the Filipino population made up of youth, understanding how young people perceive, internalize, and respond to climate adaptation is vital.

This study is anchored on the Theory of Planned Behavior (TPB**)** to explain how climate change awareness and willingness to engage in climate adaptation are shaped by individual perceptions and social influences. TPB posits that an individual's intention to perform a behavior is influenced by three main constructs: attitudes, subjective norms, and perceived behavioral control. In the context of this study, attitudes reflect how Generation Z students evaluate climate change adaptation, including their perceived benefits and potential risks associated with taking action. Subjective norms pertain to the social influences that encourage or discourage climate action, such as the opinions of parents, teachers, peers, and influencers in social media. Perceived behavioral control represents the extent to which young individuals feel capable of making a difference in mitigating climate change, influenced by access to knowledge, resources, and supportive structures.

These three factors collectively shape behavioral intentions, ultimately determining whether Generation Z will actively participate in climate adaptation efforts.

Figure 1.1. Theoretical framework of the study based on the Theory of Planned Behavior.



# II. REVIEW OF LITERATURE

## The Theory of Planned Behavior

The Theory of Planned Behavior (TPB), developed by Ajzen (1991), posits that an individual's intention to perform a behavior is the most immediate predictor of that behavior. This intention, in turn, is determined by three key constructs: attitudes toward the behavior, subjective norms, and perceived behavioral control.

Attitudes represent the degree to which a person evaluates a behavior positively or negatively. In the context of climate change adaptation, a Gen Z individual's attitude might reflect their belief that adaptation behaviors are beneficial and necessary, or conversely, inconvenient and ineffective. Subjective norms refer to the perceived social pressure from important referents (family, peers, community) to engage or not engage in a behavior. For Gen Z in Koronadal City, this could involve the influence of local community leaders or the prevailing social norms around environmental practices. Perceived behavioral control (PBC) is the individual's belief in their ability to perform a given behavior, influenced by the perceived presence or absence of necessary resources and opportunities.

The TBP provides a solid framework for the study of factors influencing Gen Z's willingness to engage in climate change adaptation. By examining attitudes, subjective norms, and PBC among Gen Z in Koronadal City, insights can be gained into the specific barriers and facilitators of adaptive behaviors in this population. However, it is important to acknowledge that the TPB has limitations. It primarily focuses on individual decision-making and may not fully capture the influence of broader socio-cultural or other factors that can also shape behavior.

The efficacy of the TPB has been rigorously tested. Armitage & Conner (2001) conducted a meta-analytic review of 185 studies, demonstrating that the TPB explains a significant portion of the variance in both intention (39%) and behavior (27%). The perceived behavioral control (PBC) construct accounted for significant amounts of variance in intention and behavior, independent of theory of reasoned action variables.

The meta-analysis by Armitage & Conner (2001) provides strong empirical support for the TPB. Their findings justify the use of the TPB as a reliable model. However, the meta-analysis also revealed that the subjective norm construct is generally found to be a weak predictor of intentions. This is partly attributable to a combination of poor measurement and the need for expansion of the normative component.

The role of knowledge and awareness in promoting pro-environmental behavior is a subject of ongoing debate. Kaiser (2003) argues that knowledge's influence on ecological behavior is underestimated systematically and emphasizes that it is not simply the *amount* of knowledge, but the *type* of knowledge that is critical. He identifies declarative knowledge (knowledge *about* environmental issues), procedural knowledge (knowledge of *how* to take action), and effectiveness knowledge (knowledge of the *impact* of actions) as distinct but interrelated.

Kaiser (2003) also points out that knowledge's effect remains undetected because certain statistical procedures do not control measurement errors or reveal interfering influences. The impact of knowledge on behavior can be limited by situational factors. However, Kaiser (2003) argues that when an assessment of ecological behavior systematically considers the constraints of the situations, one can assume that knowledge has a significant impact on ecological behavior.

Kollmuss & Agyeman (2002) further complicate the relationship between knowledge and behavior by highlighting the "attitude-behavior gap." They argue that simply having environmental awareness does not guarantee pro-environmental action. Their work emphasizes the importance of considering the various barriers that prevent individuals from translating their environmental concern into action.

Kaiser (2003) and Kollmuss & Agyeman (2002) provide critical insights for research on Gen Z's awareness and willingness to engage in climate change adaptation. They highlight the complexity of studying the relationship between awareness of climate change and willingness to engage in adaptation. Research design should carefully consider how to measure different types of knowledge and account for potential mediating factors and situational constraints that might influence the awareness-willingness link in future studies.

Meta-analyses offer a valuable approach to synthesizing findings across multiple studies, providing a broader understanding of the factors influencing pro-environmental behavior. Bamberg & Möser (2007) conducted a meta-analysis that expanded upon the earlier work of Hines et al. (1986/87). Their results corroborated the significant role of attitudes, subjective norms, and perceived behavioral control in predicting pro-environmental behavior, thus reinforcing the validity of the TPB. Furthermore, their meta-analysis highlighted the indirect influence of problem awareness (akin to knowledge) on pro-environmental intention, mediated by factors such as moral and social norms.

Bamberg & Möser (2007) provide a high-level overview of the relative importance of different psycho-social factors in predicting pro-environmental behavior. Their meta-analysis supports the use of the TPB while also indicating the indirect role

of knowledge and the influence of moral and social norms, which may be particularly relevant in the socio-cultural context of in local studies.

Meinhold & Malkus (2005) investigated the influence of knowledge, attitudes, and self-efficacy on adolescents' environmental behaviors. Their findings underscore the importance of these psychosocial factors in shaping environmental actions within this age group. Notably, self-efficacy, a concept similar to perceived behavioral control, was found to be a significant predictor of behavior. Their focus on adolescents allows for a more direct comparison with the target population of Gen Z in this research. The finding that self-efficacy is a strong predictor of environmental behavior reinforces the importance of perceived behavioral control in the TPB framework.

**Expanding the Theory of Planned Behavior**

Recognizing the limitations of the TPB, researchers have sought to expand the model by incorporating additional constructs. Fielding et al. (2008) integrated identity-related concepts into the TPB to predict intentions to engage in environmental activism. Their findings demonstrated that environmental group membership and self-identity as an environmental activist significantly predicted intentions, suggesting that identity plays a crucial role in motivating pro-environmental actions. Oreg & Katz-Gerro (2006) combined the TPB with the Value-Belief-Norm Theory, highlighting the importance of personal values in predicting pro-environmental behavior across different nations.

Fielding et al. (2008) and Oreg & Katz-Gerro (2006) offer valuable extensions to the TPB. While in this study of Gen Z college students in Koronadal City focuses on adaptation rather than activism, Fielding et al.'s (2008) emphasis on identity could be

relevant, as Gen Z's sense of self as "environmentally conscious" might influence their willingness to adapt. Oreg & Katz-Gerro's (2006) inclusion of values suggests that Gen Z's underlying beliefs about the importance of environmental protection could also play a significant role.

**Climate Change Awareness and Engagement in Youth**

Climate change awareness varies across generations, influencing how individuals respond to environmental challenges. Several studies highlight the psychological impact of climate change, particularly among young people. Prencipe et al. (2023) explored the link between climate change distress and mental health among Tanzanian youth, revealing that climate-related hardships such as food and water insecurity contribute to heightened anxiety and depression. Similarly, Calculli et al. (2021) found that young people are increasingly aware of environmental issues, participating in climate movements and adopting sustainable behaviors. This awareness, however, can also lead to eco-anxiety, where young individuals feel overwhelmed by the perceived severity of climate crises.

Engagement in climate action is shaped by various factors, including education, community participation, and digital influence. Datta et al. (2024) emphasized the role of Indigenous land-based learning camps in educating youth on environmental stewardship, demonstrating how cultural knowledge strengthens climate action. Similarly, Zhou et al. (2025) examined the influence of climate change cognition on sustainable energy consumption, suggesting that early education on biodiversity and sustainability can shape long-term pro-environmental behavior.

## III. STATEMENT OF THE STUDY

Climate change poses a serious threat to environmental sustainability, public health, and economic stability. As its impacts become more visible, the need for public engagement in climate change adaptation and mitigation strategies becomes increasingly urgent especially among the youth and the younger generations who will inherit the long-term consequences. The Generation Z is emerging as a socially aware and technologically adept generation. However, the extent of their awareness, attitudes, and willingness to participate in climate change adaptation remains underexplored at the local level. This study seeks to understand how the awareness, attitudes, social norms, and perceived behavioral control influence the willingness of Generation Z college students in Koronadal City to engage in climate-friendly practices.

The study aims to answer the following research questions:

1. What is the level of awareness of Generation Z students on climate change and its adaptation strategies?
2. What are the students' attitudes, subjective norms, and perceived behavioral control toward climate change behaviors?
3. How willing are students to participate in climate-friendly practices?
4. Is there a significant relationship between awareness on climate change and willingness to engage in climate-friendly practices?
5. Do attitudes, subjective norms, and perceived behavioral control significantly predict willingness to engage in climate change adaptation?
6. Are there significant differences in awareness, attitudes, and willingness to act across students' year levels?

To address these questions, the following null hypotheses will be tested:

- $H_{01}$: There is no significant relationship between awareness on climate change and willingness to participate in climate-friendly practices.
- $H_{02}$: Attitudes, subjective norms, and perceived behavioral control do not significantly predict willingness to participate in climate-friendly practices.
- $H_{03}$: There are no significant differences in awareness, attitudes, or willingness across year levels.
- $H_{04:}$ Perceived behavioral control has no significant effect on students' willingness to engage in climate change adaptation behaviors.

## IV. OBJECTIVES OF THE STUDY

This study aims to assess the awareness and willingness of Generation Z college students in Koronadal City to engage in climate change adaptation based on the Theory of Planned Behavior. Specifically, it aims to:

1. measure the level of awareness of Generation Z students regarding climate change and adaptation strategies;
2. assess the attitudes, subjective norms, and perceived behavioral control of students in relation to climate change behaviors;
3. determine the level of willingness of students to engage in climate-friendly practices;
4. examine the relationship between the students' awareness, attitudes, subjective norms, and perceived behavioral control to their willingness to participate in climate change adaptation;
5. identify any significant differences in awareness, attitudes, or willingness to engage based on the students' year levels; and
6. recommend activities, programs, or curriculum content that would strengthen students' awareness and education on climate change.

## V. RATIONALE

This study will provide valuable insights for educators, policy makers, and environmental organizations in designing effective youth-focused climate education and engagement strategies. It can contribute to the development of curriculum content, institutional policies, and community-based programs that support sustainability. By understanding how Generation Z perceives climate change, stakeholders can develop interventions that resonate with their values and daily lives.

This study will also contribute to the achievement of the United Nations Sustainable Development Goal 13 on Climate Action, which calls for urgent action to combat climate change and its impacts. By examining the preparedness and engagement of youth in climate adaptation efforts, this study aligns with SDG 13's target of improving education, awareness, and human capacity on climate change mitigation, adaptation, and impact reduction.

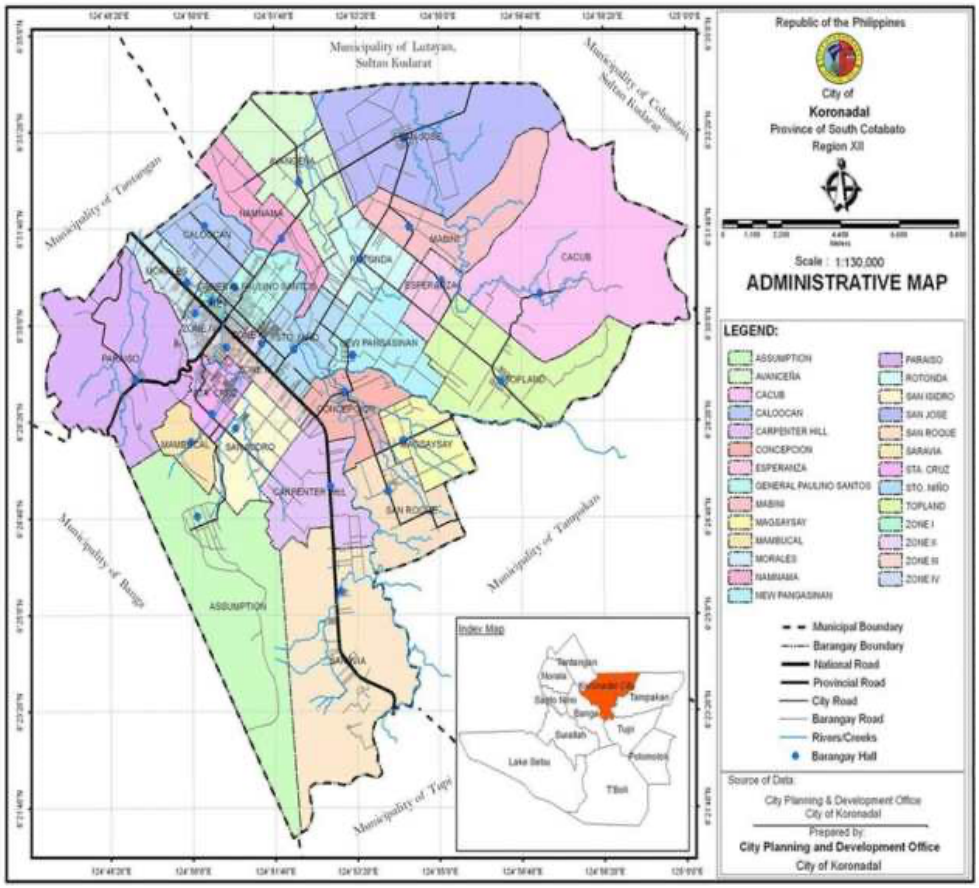
## VI. SCOPE AND LIMITATIONS

This research is limited to college students currently enrolled in public and private colleges or universities within Koronadal City. It focuses on students' self-reported awareness and willingness to engage in climate adaptation activities and does not include direct observation of behavior. Data will be collected through an online survey distributed through institutional channels or social media. The results will reflect the views of participants at the time of the survey and may not represent other regions or demographic groups.

## VII. DESCRIPTION OF THE STUDY AREA

Koronadal City is located in the province of South Cotabato and serves as the regional center of Region XII SOCCSSKSARGEN. It is a 3rd income class city composed of 27 barangays and has a total population of 195,398 according to the 2020 census of Philippine Statistics Authority. It is situated on a gently sloping terrain surrounded by mountain ranges of Roxas and Quezon (City Government of Koronadal, 2021).

Figure 7.1. Administrative Map of Koronadal City (Koronadal City Planning Development Office, 2021).



## VIII. METHODOLOGY

The study employed convenience sampling to select participants from the target population of currently enrolled college students in colleges or universities in Koronadal City who belong to Generation Z. All colleges in the city are private schools, except for University of the Philippines Manila – Koronadal School of Health Sciences. For convenience and due to time and budget constraints, only schools at or near the city center were selected for the study.

There were no data available on the total number of currently enrolled students in higher educational institutions (HEI) within the city thus the sample size was calculated through the formula by Cochran (1977) for an unknown population:

$$n = \frac{Z^2 \cdot p \cdot (1 - p)}{e^2}$$

where the confidence level was set to 90%, a margin of error of 7%, an estimated proportion of 0.5 for maximum variability, and a Z-score of 1.645. The minimum sample size required for these parameters was calculated to be 138.

### Research Instrument

The study employed a mixed-methods research design where the quantitative component is primary and the qualitative component is used to add a deeper context to the results. A survey questionnaire, administered online through Google Forms and by handing out physical copies personally to the respondents**,** was used as the primary data collection tool. Informed consent forms containing the purpose, benefits, risks, and confidentiality and data privacy guidelines of the study were also given to the

respondents before they were allowed to participate in the survey. The structured questionnaire was based on the Theory of Planned Behavior and consisted statements which were answered through a 5-point Likert scale. It consists of five sections. The first section gathered demographic information, including year level, school type, and estimated monthly household income of the respondents. The second section assessed awareness of climate change, covering students' knowledge about climate change, its causes, and its effects. The third section focused on TPB constructs, measuring attitudes, subjective norms, and perceived behavioral control using a 5-point Likert scale. The fourth section evaluated the willingness to mitigate climate change, exploring students' intentions to engage in climate-friendly behaviors. Finally, the fifth section contained open-ended questions on the respondents' knowledge on climate change and the actions they are willing to do to address it. The survey also included open-ended questions to elicit qualitative insights which were analyzed only by summarization of themes.

Cronbach's alpha was computed first before the conduct of the survey to test the reliability and internal consistency of Likert items for each variable using this formula,

$$\propto = \frac{k \times \bar{c}}{\bar{v} + (k-1)\bar{c}} \quad ---$$

where *k* refers to the number of scale items, $\bar{c}$ refers to the average of all covariances between items, and $\bar{v}$ refers to the average variance of each item.

**Table 8.1**

*Interpretation of the computed values for Cronbach's alpha*

| CRONBACH'S ALPHA | INTERPRETATION OF INTERNAL CONSISTENCY |
|---|---|
| $\propto \geq 0.9$ | Excellent |
| $0.9 \geq \propto \geq 0.8$ | Good |
| $0.8 \geq \propto \geq 0.7$ | Acceptable |
| $0.7 \geq \propto \geq 0.6$ | Questionable |
| $0.6 \geq \propto \geq 0.5$ | Poor |
| $0.5 > \propto$ | Unacceptable |

Table 8.1 shows the computed values of Cronbach's alpha for the following variables: (1) Awareness, (2) Attitudes, (3) Subjective Norms, (4) Perceived Behavioral Control, and (5) Willingness.

**Table 8.2**

*Computed Cronbach's alpha and reliability level of each variable*

| VARIABLE | COMPUTED CRONBACH'S ALPHA | INTERPRETATION |
|---|---|---|
| Awareness | 0.878 | Good |
| Attitudes | 0.786 | Acceptable |
| Subjective Norms | 0.823 | Good |
| Perceived Behavioral Control | 0.851 | Good |
| Willingness | 0.921 | Excellent |

A 5-point Likert scale was used in gathering self-reported assessments of the respondents to the five variables.

**Table 8.3**

*5-Point Likert Scale for Level of Agreement for Awareness, Attitudes, Subjective Norms, and Perceived Behavioral Control*

| LIKERT SCALE | INTERVAL | DESCRIPTION |
|---|---|---|
| 1 | 1.00 – 1.79 | Strongly Disagree |
| 2 | 1.80 – 2.59 | Disagree |
| 3 | 2.60 – 3.39 | Neutral |
| 4 | 3.40 – 4.19 | Agree |
| 5 | 4.20 – 5.00 | Strongly Agree |

**Table 8.4**

*5-Point Likert Scale for Level of Willingness to Engage in Climate Change Adaptation*

| LIKERT SCALE | INTERVAL | DESCRIPTION |
|---|---|---|
| 1 | 1.00 – 1.79 | Very Unwilling |
| 2 | 1.80 – 2.59 | Unwilling |
| 3 | 2.60 – 3.39 | Neutral |
| 4 | 3.40 – 4.19 | Willing |
| 5 | 4.20 – 5.00 | Very Willing |

**Data Treatment**

The following statistical techniques were conducted using the Jamovi, and all the tests were interpreted with a level of significance of $p = 0.05$ – (1) Descriptive statistics was done to calculate the mean, standard deviation, and frequency distribution was used to describe the respondents' demographic characteristics and responses to items measuring knowledge, attitudes, subjective norms, perceived behavioral control, and willingness. (2) Multiple Linear Regression Analysis was conducted to test $H_{02}$, regression analysis was used to examine the predictive power of attitudes, subjective norms, and perceived behavioral control on willingness to

participate in climate-friendly practices. (3) One-way Analysis of Variance (ANOVA**)** was conducted to test $H_{03}$, ANOVA was used to determine if there are significant differences in knowledge, attitudes, and willingness among students across different year levels. (4) Pearson's Correlation was conducted to test $H_{01}$ and $H_{04}$, to measure the strength and direction of a linear relationship between two continuous variables.

**Data Handling and Storage**

All responses collected were stored digitally using secure, password-protected folders accessible only to the research proponent. All raw data will be permanently deleted six (6) months after submission of final paper to ensure confidentiality and compliance with the Data Privacy Act of 2012.

## IX. RESULTS

A total of 139 responses were recorded with Table 1 summarizing the basic sociodemographic profile of the respondents.

**Table 9.1**

*The Sociodemographic Profile of the Sample Population*

| | |
|---|---|
| Year Level | **First Year:** 10.1% **Second Year:** 25.2%<br>**Third Year:** 57.6% **Fourth Year:** 7.2% |
| School or University | **Green Valley College Foundation Inc.:** 42.4%<br>**Notre Dame of Marbel University:** 26.6%<br>**St. Alexius College:** 12.2%<br>**Ramon Magsaysay Memorial Colleges:** 9.4%<br>**Golden State College:** 5.8%<br>**Marvelous College of Technology, Inc.:** 3.6% |
| Degree Program | **Bachelor of Elementary Education:** 30.2%<br>**Bachelor of Science in Nursing:** 20.9%<br>**Bachelor of Science in Business Administration:** 17.3%<br>**BS/BA Psychology:** 13.0%<br>**Bachelor of Science in Hospitality Management:** 7.91%<br>**Bachelor of Arts in Communication:** 6.47%<br>**Bachelor of Science in Financial Management:** 4.31% |
| Estimated Monthly Family Income | **Below ₱21,193:** 35.3%<br>**₱21,194 to ₱43,828:** 41.7%<br>**₱43,829 to ₱76,669:** 15.1%<br>**₱76,670 to ₱131,484:** 3.6%<br>**₱131,285 to ₱219,140:** 2.9%<br>**Above ₱219,141:** 1.4% |

In the Awareness section of the survey, the weighted mean score across the 139 respondents is 4.34, indicating the participants generally exhibit a high level of awareness to climate change, with most means above 4.20. The item "*I believe climate change is a serious issue.*" had the highest mean (M = 4.71, SD = 0.607), suggesting that students strongly recognize the severity of climate change. This is followed by "*I*

*understand what climate change is*." (M = 4.67, SD = 0.530), showing clear conceptual understanding among most respondents. Participants also reported being aware of the major causes (M = 4.47) and effects (M=4.49) of climate change, and how it affects specific sectors like agriculture and health (M=4.56), indicating a well-rounded grasp of this global issue.

However, the lowest mean score was on the item "*I am familiar with the national or local programs addressing climate change*" (M = 3.90, SD = 0.819), followed closely by "*I follow news or updates about climate change through various media or through classes taught in school*" (M = 4.01), and "*I believe my generation is more aware of climate change than previous generations*". This suggests the participants less exposure to institutional initiatives and less certainty about differences in awareness among different generations.

**Table 9.2**

*Results on the Level of Awareness*

| STATEMENTS | MINIMUM | MAXIMUM | MEAN | STANDARD DEVIATION |
|---|---|---|---|---|
| I understand what climate change is. | 2 | 5 | 4.67 | 0.530 |
| I am aware of the major causes of climate change. | 2 | 5 | 4.47 | 0.629 |
| I am aware of the environmental and social effects of climate change. | 3 | 5 | 4.49 | 0.618 |
| I believe climate change is a serious issue. | 1 | 5 | 4.71 | 0.607 |
| I follow news or updates about climate change through various media or through | 1 | 5 | 4.01 | 0.812 |

| | | | | |
|---|---|---|---|---|
| classes taught in school. | | | | |
| I can explain how human actions contribute to climate change. | 2 | 5 | 4.27 | 0.728 |
| I know how climate change affects different sectors such as agriculture and health. | 2 | 5 | 4.56 | 0.627 |
| I am familiar with the national or local programs addressing climate change. | 2 | 5 | 3.90 | 0.819 |
| I believe that my generation is more aware of climate change than previous generations. | 2 | 5 | 4.01 | 0.843 |
| I can recognize climate change impacts in my local community. | 2 | 5 | 4.28 | 0.681 |

In the Attitudes section, the weighted mean score was computed to be 4.64, indicating a strong positive attitude among participants toward climate change adaptation. All mean scores are above 4.4, suggesting that most respondents strongly agree with the importance of individual action and responsibility in combating climate change. The highest mean score is on the item "*I believe that small actions, like conserving energy or reducing waste, can help the planet*" indicating a strong belief in the effectiveness of individual behavior in contributing to environmental change.

**Table 9.3**

*Results of the Attitudes Toward Climate Change Adaptation*

| STATEMENTS | MINIMUM | MAXIMUM | MEAN | STANDARD DEVIATION |
|---|---|---|---|---|
| I believe individual efforts can help fight climate change. | 3 | 5 | 4.67 | 0.516 |
| Making environmentally friendly choices is important to me. | 3 | 5 | 4.59 | 0.549 |
| Participating in climate-friendly activities is worthwhile | 3 | 5 | 4.65 | 0.561 |
| I believe that small actions, like conserving energy or reducing waste, can help the planet. | 3 | 5 | 4.78 | 0.467 |
| I feel responsible for helping to address climate change. | 3 | 5 | 4.49 | 0.641 |

In the Subjective Norms section of the survey, the computed weighted mean score is 4.24, indicating a generally positive social influence toward climate conscious behavior. This suggests that the participants feel social encouragement from friends, family, and authority figures regarding environmental regard and climate-friendly actions. The highest mean score is the item "*My professors or teachers encourage us to practice sustainability*" (M = 4.44, SD = 0.672) indicating that authority figures in school play a strong role in promoting sustainable practices among students. The item "*My friends or peers influence me to care about environmental issues*" (M = 4.08, SD = 0.808) suggesting that peer influence is present but weaker compared to educational authority or family influence.

**Table 9.4**

*Results of the Subjective Norms*

| STATEMENTS | MINIMUM | MAXIMUM | MEAN | STANDARD DEVIATION |
|---|---|---|---|---|
| My friends or peers influence me to care about environmental issues. | 2 | 5 | 4.08 | 0.808 |
| My professors or teachers encourage us to practice sustainability. | 2 | 5 | 4.44 | 0.672 |
| I feel encouraged by people around me to engage in climate-friendly activities. | 2 | 5 | 4.24 | 0.769 |
| My family practices habits that help protect the environment. | 2 | 5 | 4.24 | 0.711 |
| People important to me think I should care about the environment. | 2 | 5 | 4.27 | 0.767 |

In the Perceived Behavioral Control section of the survey, the computed weighted mean score is 4.05, indicating that the participants generally feel capable of engaging in climate-friendly behaviors, their sense of control is more moderate compared to the other constructs of TPB. The highest mean score is on the item "*I feel confident that I can make a positive impact in addressing climate change*" (M = 4.28, SD = 0.742), suggesting that many participants believe in their personal effectiveness. However, the lowest mean score is on the item "*I feel like I have control over whether I can reduce my carbon footprint*" (M = 3.75, SD = 0.869), which indicate that some respondents feel limited by external factors or possible personal constraints. The standard deviation for this section indicates a greater variability to other constructs which suggests that some students feel very empowered, while other less so.

**Table 9.5**

*Results on the Perceived Behavioral Control*

| STATEMENTS | MINIMUM | MAXIMUM | MEAN | STANDARD DEVIATION |
|---|---|---|---|---|
| I have access to resources that help me live sustainably. | 2 | 5 | 4.09 | 0.701 |
| I feel confident in my ability to make environment-friendly choices. | 1 | 5 | 4.20 | 0.734 |
| I feel confident that I can make a positive impact in addressing climate change. | 2 | 5 | 4.28 | 0.742 |
| I find it easy to incorporate sustainability into my daily routine. | 2 | 5 | 4.05 | 0.674 |
| I believe it is easy to live sustainably in my current environment. | 2 | 5 | 3.93 | 0.840 |
| I feel like I have control over whether I can reduce my carbon footprint. | 1 | 5 | 3.75 | 0.869 |

Lastly, in the Willingness section, the computed mean score is 4.45, which indicates that the overall willingness of respondents to engage in climate change adaptation is very high, with all means higher than 4.20. This suggests a strong behavioral intention to act sustainably and support climate-related initiatives. The items with the highest mean score are "*I am willing to reduce, reuse, and recycle regularly*" (M = 4.65, SD = 0.586), "*I am willing to vote for school leaders who include climate actions in their* platforms" (M = 4.63, SD = 0.515), and "*I am willing to follow government policies that protect the* environment" (M = 4.58, SD = 0.509), which shows strong civic, consumer, and lifestyle engagement, with students expressing a clear willingness to take individual and collection action.

The items with the lowest mean scores are "*I am willing to reduce my personal energy and water consumption"* (M = 4.22, SD = 0.834), "*I am willing to volunteer for climate action projects*" (M = 4.34, SD = 0.728), and "*I am willing to change my lifestyle to lessen my carbon footprint*" (M = 4.32, SD = 0.702), which suggest that some respondents are less ready for behavior change that requires personal sacrifice or effort.

**Table 9.6**

*Results on the Willingness to Engage to Climate Change Adaptation*

| STATEMENTS | MINIMUM | MAXIMUM | MEAN | STANDARD DEVIATION |
|---|---|---|---|---|
| I am willing to reduce my personal energy and water consumption. | 1 | 5 | 4.22 | 0.834 |
| I am willing to support and use eco-friendly products. | 3 | 5 | 4.57 | 0.578 |
| I am willing to reduce, reuse, and recycle regularly. | 2 | 5 | 4.65 | 0.586 |
| I am willing to limit my use of single-use plastics. | 2 | 5 | 4.43 | 0.702 |
| I am willing to participate in environmental programs and campaigns. | 2 | 5 | 4.47 | 0.705 |
| I am willing to discuss environmental issues with friends and family. | 2 | 5 | 4.45 | 0.693 |
| I am willing to change my lifestyle to lessen my carbon footprint. | 3 | 5 | 4.32 | 0.702 |
| I am willing to advocate for environmental policies or initiatives. | 2 | 5 | 4.42 | 0.690 |

| | | | | |
|---|---|---|---|---|
| I am willing to volunteer for climate action projects. | 2 | 5 | 4.34 | 0.728 |
| I am willing to use public transportation or alternative means to reduce emissions. | 2 | 5 | 4.38 | 0.716 |
| I am willing to follow government policies that protect the environment. | 3 | 5 | 4.58 | 0.509 |
| I am willing to vote for school leaders who include climate actions in their platforms. | 3 | 5 | 4.63 | 0.515 |

**Testing Hypotheses**

To test $H_{01}$: *There is no significant relationship between awareness on climate change and willingness to participate in climate-friendly practices*, a Pearson correlation analysis was conducted. The results revealed a moderate positive correlation between the two variables, $r = 0.496$, $p < 0.001$. This correlation is statistically significant, indicating that higher levels of awareness are associated with higher willingness to engage in climate-friendly actions.

To test $H_{02}$: *Attitudes, subjective norms, and perceived behavioral control do not significantly predict willingness to participate in climate-friendly practices*, a multiple linear regression analysis was performed using the three constructs of TPB as predictors: Attitudes, Subjective Norms, and Perceived Behavioral Control. The overall regression model was statistically significant, R = 0.612, R2 = 0.374, indicating that 37.4% of the variance in willingness can be explained by the three predictors.

**Table 9.7**

*Results of the Multiple Linear Regression Analysis*

| PREDICTOR | ESTIMATE | SE | T | p-value | INTERPRETATION |
|---|---|---|---|---|---|
| Attitudes | 0.396 | 0.0893 | 4.44 | <0.001 | Statistically significant |
| Subjective Norms | 0.175 | 0.0717 | 2.44 | 0.016 | Statistically significant |
| Perceived Behavioral Control | 0.114 | 0.0671 | 1.70 | 0.091 | Not statistically significant |

To test H03: *There are no significant differences in awareness, attitudes, and wiliness across year levels*, Welch's One-Way ANOVA was conducted for each variable. The results showed that none of the three variables differed significantly by year level.

**Table 9.8**

*Results of the One-Way ANOVA*

| VARIABLE | F | $df_1$ | $df_2$ | p-value |
|---|---|---|---|---|
| Awareness | 1.18 | 3 | 28.3 | 0.334 |
| Attitudes | 0.014 | 3 | 26.8 | 0.998 |
| Willingness | 1.94 | 3 | 28.5 | 0.146 |

Finally, to test $H_{04}$: *Perceived behavioral control has no significant effect on students' willingness to engage in climate change adaptation behaviors*, a Pearson's correlation analysis was conducted to examine the relationship between the two variables. The analysis revealed a moderate positive correlation between perceived behavioral control and willingness, which was statistically significant ($r = 0.442$, $p < 0.001$).

**Table 9.9**

*Acceptance and Rejection Results of the Null Hypotheses*

| HYPOTHESIS | STATISTICAL TEST | DECISION |
|---|---|---|
| $H_{01}$ | Pearson's Correlation | Reject $H_{01}$ – significant moderate positive relationship |
| $H_{02}$ | Multiple Linear Regression | Partially Reject $H_{02}$ – attitudes and subjective norms are significant predictors; PBC is not |
| $H_{03}$ | One-way ANOVA | Accept $H_{03}$ – No significant differences found across year levels |
| $H_{04}$ | Pearson's Correlation | Reject $H_{04}$ – significant moderate positive relationship |

**Summary of the Responses to the Open-ended Questions**

The responses to the open-ended questions from 139 participants were studied and manually tallied based on the dominant idea in each response. To ensure clarity and consistency, each response was assigned to only one "main idea" or "theme", allowing the resulting percentages to sum to 100%.

For the question "*What does climate change mean to you?*", 47 responses described climate change as associated with intense heat, stronger typhoons, flooding, and erratic weather. This suggests that many students conceptualize climate change primarily through its observable, local impacts. The second most common theme was the causes of climate change, where students pointed to human activities such as pollution, deforestation, and improper waste disposal as contributors. A smaller proportion of responses expressed feelings toward climate change such as fear, sadness, or anxiety about the future. Responses that referenced environmental impact focused on consequences to wildlife, biodiversity loss, and environmental degradation. Additionally, 12 responses contained misconceptions or confusion, including vague, incorrect, or uncertain answers. Lastly, 18 of the students left the

question blank, which could reflect uncertainty, a lack of interest, or any other challenges in expressing thoughts on the question.

**Table 9.10**

*Summary of the Responses to "What does climate change mean to you?"*

| Main Idea | Description | Frequency | Percentage |
|---|---|---|---|
| Effects of climate change | Focuses on worsening heat, typhoons, floods, and weather changes | 47 | 33.8% |
| Causes of climate change | Mentions anthropogenic causes such as pollution and deforestation | 36 | 25.9% |
| Emotional responses | Expresses fear, worry, sadness, or helplessness | 15 | 10.8% |
| Environmental impact | Talks about animal extinction and habitat degradation (melting ice sheets) | 11 | 7.9% |
| Misconceptions or confusion | "I don't know", vague, or incorrect responses | 12 | 8.6% |
| Blank or no answer | No response at all | 18 | 12.9% |

For the question "*What changes in the environment or weather have you personally observed in the recent years?*", the most commonly observed environmental change was the increase in temperatures, reported by 55 respondents. This was followed by observations of unpredictable or extreme weather patterns (35 responses) and increased heavy rains or flooding (23 responses). A smaller proportion of respondents noted issues related to pollution (12 responses), while others pointed to a decrease in tree cover or deforestation (9 responses). Only 5 students left the question blank.

**Table 9.11**

*Summary of the Responses to "What changes in the environment or weather have you personally observed in recent years?"*

| Main Idea | Frequency | Percentage |
|---|---|---|
| Hotter temperatures | 55 | 39.6% |
| Unpredictable or extreme weather patterns | 35 | 25.2% |
| Heavy rains or flooding | 23 | 16.5% |
| Pollution | 12 | 8.6% |
| Fewer trees or deforestation | 9 | 6.5% |
| Blank or no answer | 5 | 3.6% |

Based on the responses to the third question *"What specific actions do you think young people like you can take to help fight climate change?"*, young people believe they can help fight climate change through a variety of meaningful actions. One of the most frequently mentioned initiatives is tree planting (42 responses), which they recognize as vital for reducing carbon dioxide and promoting a healthier environment. They also emphasize the importance of practicing proper waste management (34 responses), particularly the 3Rs—reduce, reuse, and recycle—as well as avoiding the burning of plastics and improper disposal of garbage. A significant number of students recognized the importance of educating others and spreading awareness (20 responses), which shows that students are thinking beyond personal action and toward influencing others. There are also 15 responses which suggested adopting an eco-friendly lifestyle or practicing sustainable habits like conserving electricity, walking instead of riding vehicles, and using sustainable products. Some students expressed willingness to participate in collective action (11 responses) such as joining clean-up drives, while others suggested doing environmental advocacies

via social media (6 responses). Few students mentioned supporting laws, joining community planning, or influencing policy (4 responses). Only 7 students left the question blank. Overall, their responses show that they are aware, willing, and capable of making positive changes both personally and in their communities to address climate change.

**Table 9.12**

*Summary of the Responses to "What specific actions do you think young people like you can take to help fight climate change?"*

| Main Idea | Frequency | Percentage |
|---|---|---|
| Tree planting | 42 | 30.2% |
| Reduce, Reuse, Recycle / Proper Waste Management | 34 | 24.5% |
| Environmental awareness or education | 20 | 14.4% |
| Eco-friendly lifestyle or sustainable habits | 15 | 10.8% |
| Participation in environmental activities such as clean-up drives | 11 | 7.9% |
| Advocacy via social media | 6 | 4.3% |
| Policy support | 4 | 2.9% |
| Blank or no answer | 7 | 5.0% |

For the fourth question "*What challenges do you face when trying to live an environmentally friendly lifestyle?*", the responses generally show that living an environmentally friendly lifestyle poses several challenges for many individuals, especially among students and young people. The most frequently cited challenges are the cost, access, and convenience (59 responses), which indicates that a large

portion of students find it difficult to live an environmentally friendly lifestyle because of higher prices of eco-friendly products, lack of availability of such products or recycling facilities within Koronadal City, and the extra effort or time required for these sustainable practices. Some students highlighted the impact of social environment on individuals' efforts to be environmentally conscious. There were 14 responses stating that the challenges arise from a lack of cooperation or awareness among members of the wider community, as well as feeling judged for trying to adopt a greener lifestyle. Some students cited challenges related to tangible environmental issues, particularly the prevalence and difficulty in avoiding single-use plastics and the problems associated with waste management (8 responses) and some students answered that they lack personal discipline, or have existing habits that are hard to break (8 responses). Few students answered that broader, systemic problems make it challenging to live sustainably. These include issues with the country's infrastructure or policies related to environmental protection. There were 44 students who left the question blank, which constitutes a large portion of the respondents. This could be due to a variety of reasons, such as not actively engaging in environmentally friendly practices, not perceiving any significant challenges, or simply choosing not to respond.

**Table 9.13**

*Summary of the Responses to "What challenges do you face when trying to live an environmentally friendly lifestyle?"*

| Main Idea | Frequency | Percentage |
|---|---|---|
| Cost, access, and convenience | 59 | 42.5% |
| Social influence | 14 | 10.1% |
| Environmental focus | 8 | 5.76% |

| | | |
|---|---|---|
| Personal attitude and behavior | 8 | 5.76% |
| Systemic issues | 4 | 2.88% |
| Blank or no answer | 44 | 33.1% |

Lastly, for the question, "*How can schools, universities, or communities better support youth participation in climate change adaptation?*", the most common suggestion accounting to 42 responses was to integrated climate change education into the curriculum. This indicates that many students believe that raising awareness through formal instruction is essential. There were 36 responses citing the need for hands-on activities like tree planting, clean-up drives, and recycling. These shows that students are eager to take action and engage in practices that allow them to feel directly involved in environmental protection. A significant number of students recommended that schools support youth-led efforts such as environmental clubs, leadership training, or student-organizes environmental campaigns (22 responses). Some students emphasized the need for institutional policies like banning plastic, promoting use of water tumblers, or adopting sustainable school practices (17 responses). Students also proposed collaborating with local communities or involving them in barangay or city environmental efforts (14 responses) and recommendation for awareness campaigns, posters, and contests to spread information about climate change (8 responses). There were 15 students who left the question blank.

**Table 9.14**

*Summary of the Responses to "How can schools, universities, or communities better support youth participation in climate change adaptation?"*

| Main Idea | Frequency | Percentage |
|---|---|---|
| Climate education integration | 42 | 30.2% |
| Hands-on environmental activities | 36 | 25.9% |
| Youth-led initiatives | 22 | 15.8% |
| School policies and rules | 17 | 12.2% |
| Community engagement and partnerships | 14 | 10.1% |
| Campaigns and awareness drives | 8 | 5.8% |
| Blank or no answer | 15 | 10.8% |

## X. ANALYSIS AND DISCUSSION

The results indicate that the majority of Gen Z respondents in Koronadal City are aware of the causes and consequences of climate change, recognize its urgency, and express a willingness to participate in adaptive efforts. This awareness reflects the increasingly prominent role that climate education, school-based activities, and online information play in shaping young people's environmental perspectives. However, willingness to act was shaped not solely by awareness but also by social influences, perceived capability, and external support mechanisms.

Students' moderate to high awareness of climate change may, in part, be attributed to the integration of environmental topics in the K–12 Science curriculum. According to the Department of Education (DepEd, 2023), climate change, environmental protection, and disaster risk reduction are embedded as key concepts from elementary to senior high school, particularly in Earth and Environmental Science, Earth Life Science, and Disaster Readiness and Risk Reduction (DRRR) subjects. This early exposure may have built a foundational understanding of climate-related issues, as reflected in the students' ability to articulate various causes, impacts, and adaptation strategies during the survey.

The TPB framework (Ajzen, 1991) posits that intention is the strongest predictor of behavior. This framework was affirmed through the findings. Respondents with more favorable attitudes toward climate adaptation, such as those who viewed it as important or beneficial, were more willing to engage in practices such as tree planting, reducing plastic use, and participating in clean-up drives. This aligns with Armitage

and Conner's (2001) meta-analysis, which demonstrated that attitudes are among the strongest predictors of intention and behavior.

Subjective norms also influenced willingness, though inconsistently. Many students noted encouragement from parents, teachers, and peers as motivating factors for pro-environmental behavior. However, some reported limited family or community support, reflecting Armitage and Conner's (2001) critique that subjective norms often serve as weaker predictors, partly due to measurement limitations and the diffuse nature of social influence. Nevertheless, moral norms were notable in many responses. Several students linked climate action with responsibility and stewardship, echoing Bamberg and Möser's (2007) findings that moral norms, along with problem awareness, indirectly shape pro-environmental intentions.

Perceived behavioral control emerged as a significant factor. Many respondents expressed willingness to adapt to climate change but cited barriers such as lack of time, resources, or institutional support. This resonates with the findings of Meinhold and Malkus (2005), who emphasized the importance of self-efficacy in predicting environmental behavior among adolescents. Similarly, Kaiser (2003) argued that behavioral capacity is affected not just by knowledge but by the opportunity and confidence to apply it, an idea supported by students who were aware of what to do but felt limited in their ability to act independently.

Moreover, the results illustrate what Kollmuss and Agyeman (2002) describe as the "attitude-behavior gap." While many respondents demonstrated strong awareness and positive attitudes, these did not always translate to concrete actions due to systemic and personal constraints. This suggests that improving willingness to

engage in adaptation must go beyond raising awareness; it requires removing practical and social barriers and enhancing enabling conditions.

Furthermore, the importance of climate change education and community-based exposure is reflected in the responses of students who had engaged in school activities or local initiatives. This supports Datta et al. (2024), who found that land-based learning and culturally rooted ecological education deepen youth engagement.

## XI. CONCLUSION AND RECOMMENDATIONS

This study successfully assessed the awareness and willingness of Generation Z college students in Koronadal City to engage in climate change adaptation through the lens of the Theory of Planned Behavior. Findings revealed that students possessed a moderate to high level of awareness of climate change and its adaptation strategies, fulfilling the first objective. Their responses reflected predominantly positive attitudes, supportive subjective norms, and moderate levels of perceived behavioral control, addressing the second objective. The third objective was met, as most participants expressed a strong willingness to engage in climate-friendly behaviors such as tree planting, proper waste segregation, and energy conservation. Correlational analysis confirmed that higher awareness, favorable attitudes, and strong perceived behavioral control were significantly associated with greater willingness to engage in adaptive behaviors, thus achieving the fourth objective and validating the applicability of TPB in this context. Moreover, the study found no statistically significant differences in awareness or willingness across year levels, partially addressing the fifth objective. Lastly, the study identified the need for community-based programs, integrated environmental education, and mental health support to empower and sustain youth engagement in climate action, contributing to the sixth objective of recommending actionable strategies.

It is recommended that educational institutions continue strengthening climate change education, particularly in ways that reinforce not only knowledge but also perceived behavioral control and self-efficacy. Given that awareness levels were already moderately high, likely due to the inclusion of climate change-related lessons in the DepEd K–12 curriculum, college-level programs should build on this foundation

by providing practical engagement opportunities such as campus sustainability initiatives and student-led adaptation projects. Universities should also integrate in their curriculum a standard number of general education subjects that would give opportunities for students to be exposed to environmental initiatives and programs within Koronadal City. This can be done through conduct of immersion classes, seminars, and workshops. Furthermore, future research should increase the sample size and include respondents from all colleges within Koronadal City to enhance generalizability and allow for comparative analysis across year levels.

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