



**STUDENTS' PERCEPTIONS ABOUT CLIMATE
CHANGE AND POLITICS: CASES OF
UNIVERSITIES ACROSS SIX GEOPOLITICAL
ZONES OF NIGERIA**

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THESIS APPROVAL PAGE

I certify that, in my opinion, the thesis submitted by Gbadebo Edward GBADEYANKA titled "STUDENTS' PERCEPTIONS ABOUT CLIMATE CHANGE AND POLITICS: CASES OF UNIVERSITIES ACROSS SIX GEOPOLITICAL ZONES OF NIGERIA" is fully adequate in scope and quality as a thesis for the degree of Doctoral Degree.

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This thesis was accepted by the examining committee with a unanimous vote in the Department of Geography as a doctoral thesis. 22/12/2023

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The Doctoral Degree by the thesis submitted is approved by the Administrative Board of the Institute of Graduate Programs, Karabuk University.

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The Institute of Graduate Programs Instructor

DECLARATION

I hereby declare that this thesis is the result of my own work, and all information included has been obtained and expounded in accordance with the academic rules and ethical policy specified by the institute. Besides, I declare that all the statements, results, and materials not original to this thesis have been cited and referenced literally.

Without being bound by a particular time, I accept all moral and legal consequences of any detection contrary to the aforementioned statement.

Name Surname: Gbadebo Edward GBADEYANKA

Signature:

FOREWORD

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ABSTRACT

In a quest for a sustainable global village – free of climatic crisis, the researcher decided to work on climate change and politics. It happens to be one of the most trending issues across the globe. The study pragmatically sampled six universities across six geopolitical zones of Nigeria. It is model research assumed to represent the climatic perceptions of students in various tertiary institutions worldwide. The research critically examined how different demographic profiles, perceived threats and causes, levels of awareness, collective social responsibility, environmental principles/values, and knowledge could significantly impact students' perception of climate change. The researcher evaluated these factors based on the formulated hypotheses and research questions after carefully studying the results and interpretations of the SPSS analysis. The statistical analysis generally focused on the descriptive and inferential features conclusively, discussing results related to existing studies. The outcomes of the pilot test revealed a significant value of Cronbach Alpha concerning variables. The values vary as thus: Climate change .701, climate change awareness .733, knowledge of environmental value .737, Climate change threat .743, atmospheric issues .744, collective responsibilities .778, Remedies or Proposal for climate change .781, Human activities .788, Remedies or Proposal for climate change .781, as it varies respectively. At the same time, the questionnaire administration applied stratified random selection in the sample areas. This study revealed how demographic factors, perceived environmental principles, awareness, and communal civic responsibilities are crucial in combating climate change and human activities. Thus, the research outcome increases the students' inclination to perceive that man's actions, the possibility of responsibility, awareness assessments, and reception or rejection ratings trigger climate change. Irrespective of the results, the vacuum shall still open for more contributions from scholars in academic environments. These may result in scholars applying similar factors concurrently to evaluate how students think regarding climate change. Although research results continue to vary, most importantly, students' horizons in awareness, responsibility, beliefs, environmental values, and knowledge towards climate change shall continue to broaden and equally improve over time. The

research creates recommendations for community activism, people's eco-friendly engagement, consistent climate teaching, broadening the idea of collective responsibility with social rewards, more open debate on climate change without political prejudice, and triggering more research on environmental values and sustainability.

Key Word: Awareness; Climate Change; Climatic Crisis; Environmental Values; Nigeria; Politics; Threats.

ÖZET

İklim krizlerinden arınmış, sürdürülebilir bir küresel köy arayışında olan araştırmacı, iklim değişikliği ve siyaset üzerinde çalışmaya karar verdi. Dünya çapında en trend konulardan biri haline geliyor. Çalışma, Nijerya'nın altı jeopolitik bölgesindeki altı üniversiteyi pragmatik olarak örnekledi. Dünya çapında çeşitli yükseköğretim kurumlarındaki öğrencilerin iklimsel algılarını temsil ettiği varsayılan model araştırmasıdır. Araştırma, farklı demografik profillerin, algılanan tehditlerin ve nedenlerin, farkındalık düzeylerinin, kolektif sosyal sorumluluğun, çevresel ilkelerin/değerlerin ve bilginin öğrencilerin iklim değişikliği algısını nasıl önemli ölçüde etkileyebileceğini eleştirel bir şekilde inceledi. Araştırmacı, SPSS analizinin sonuçlarını ve yorumlarını dikkatle inceledikten sonra, formüle edilmiş hipotezlere ve araştırma sorularına dayanarak bu faktörleri değerlendirmiştir. İstatistiksel analiz genel olarak tanımlayıcı ve çıkarımsal özelliklere odaklanmış ve mevcut çalışmalarla ilgili sonuçlar tartışılmıştır. Pilot testin sonuçları değişkenlere ilişkin Cronbach Alpha'nın anlamlı bir değere sahip olduğunu ortaya çıkardı. Değerler şu şekilde değişmektedir: İklim değişikliği .701, iklim değişikliği farkındalığı .733, çevresel değer bilgisi .737, İklim değişikliği tehdidi .743, atmosferik sorunlar .744, kolektif sorumluluklar .778, İklim değişikliği için Çözümler veya Öneriler .781, İnsan faaliyetler .788, İklim değişikliğine yönelik Çözümler veya Öneriler .781, sırasıyla değişmektedir. Aynı zamanda anket yönetimi örnek alanlarda tabakalı rastgele seçim uygulamıştır. Bu çalışma, iklim değişikliği ve insan faaliyetleriyle mücadelede demografik faktörlerin, algılanan çevresel ilkelerin, farkındalığın ve toplumsal sivil sorumlulukların ne kadar önemli olduğunu ortaya çıkardı. Böylece araştırma çıktısı, öğrencilerin insanın eylemlerinin, sorumluluk olasılıklarının, farkındalık değerlendirmelerinin ve kabul veya ret oranlarının iklim değişikliğini tetiklediğine dair algılama eğilimlerini artırmaktadır. Sonuçlar ne olursa olsun, akademik ortamlardaki akademisyenlerin daha fazla katkısı için boşluk hala açılacaktır. Bunlar, bilim adamlarının öğrencilerin iklim değişikliği hakkında nasıl düşündüklerini değerlendirmek için benzer faktörleri eş zamanlı olarak uygulamalarına yol açabilir. Araştırma sonuçları değişmeye devam etse de, en önemlisi öğrencilerin iklim değişikliğine yönelik farkındalık, sorumluluk, inanç,

evresel deęerler ve bilgi konusundaki ufukları zaman iinde geniřlemeye ve eřit derecede geliřmeye devam edecektir. Arařtırma, topluluk aktivizmi, insanların evre dostu katılımı, tutarlı iklim ğretimi, sosyal dllerle kolektif sorumluluk fikrinin geniřletilmesi, iklim deęiřiklięi konusunda siyasi nyargı olmadan daha aık tartıřma ve evresel deęerler ve srdrlebilirlik zerine daha fazla arařtırmayı tetikleme iin neriler yaratıyor.

Key Word: Farkındalık; İklım deęiřiklięi; İklımsel Kriz; evresel Deęerler; Nijerya; Siyaset; Tehditler.

ABBREVIATIONS

AI	: Atmospheric Issues
CC	: Climate Change
CCA	: Climate Change Awareness
CH₄	: Methane
CO	: Carbon monoxide
CO₂	: Carbon dioxide
CC	: Climate Change
CR	: Collective Responsibilities
CCT	: Climate Change Threat
ESD	: Environmental Sustainability Development
EV	: Environmental Value
FCT	: Federal Capital Territory
HA	: Human Activities
IPCC	: The Intergovernmental Panel on Climate Change
MDG	: Millennium Development Goals
RCC	: Remedies to Climate Change
UNESCO	: The United Nations Educational, Scientific and Cultural Organization
UNICEF	: United Nations International Children's Emergency Fund
UNSDGs	: The United Nations Sustainable Development Goals
UN	: United Nations
WHO	: World Health Organization

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1. CHAPTER ONE: INTRODUCTION

All environmental hazards resulting from the effects of climate change pose serious rhetoric on human activities and other forces of nature. The consequences of such human and nature-driven activities are befalling the earth today as climate changes, rising sea levels, floods, coastal erosion, drought, desertification, tsunamis, torrential rainfall, hurricanes, typhoons, cyclones, wildfire, water shortage, and famine. Climate change revealed how the weather conditions transformed with various atmospheric sequences over time. It deals with climatic variation over a specific period due to man's multiple operations on the earth's surface. Experts in the climate field indeed revealed the consistent changes in the hotness and coldness visible in the ocean rising, polar melting, wind storms, and the unusual outbreak of wildfire and accumulation of carbon and carbon dioxide vacuum in the atmosphere (Winsberg, 2018; Romm, 2022).

However, citing cases related to this study, fifteen scholars questioned a misunderstanding regarding the depletion of ozone layers. The study revealed wrong perceptions about the menace of ozone. It showed a wide gap of misunderstanding among students of different ages. In contrast, the results of misunderstanding among the targeted students began to change, with an increasing number of students showing distinct understanding as the sampling ascends to higher ages, from five to sixteen years old. The research disclosed that the misunderstanding rate of the students regarding climate change caused by ozone depletion is still high and regular in rating distribution - other studies among university scholars and high school learners. The results depicted the wrong perception among sampled students regarding ozone shrinking, the root cause of climate change. Even among the higher learning students with high exposure to various learning activities, the results still reflect a high misunderstanding level. However, learners' level of understanding of the Greenhouse's influence in the atmosphere rated high among ages of eleven to sixteen; the learners' perception of the advantages of sustainable power sources increases from the secondary institutions to tertiary education level (Shealy et al., 2021; Klapp et al., 2021; Milovanovic et al., 2022). Nevertheless, the following are the related issues of misperception among various categories of students about climatic variation and ozone shrinking, as enumerated below:

- Academic Learners always reason that CO₂ is the root of ozone shrinking (Bell et al., 2016; Mulvey et al., 2017).
- Primary education students misconceived carbon-related substances from industrial emissions blocked the ozone blanket shacks (Hedstrom, 2018; Rainville et al., 2015).
- Students misconceive or wrongly think in relating Greenhouse influence to the shrinking of the ozone blanket (Bell et al., 2011)
- Students in education institutions relate the skin deformity of cancer to climate change, resulting from the shrinking of the ozone blanket (Hestness et al., 2019; Siegner & Stapert, 2020).
- Students wrongly reason that the shrinking of the ozone blanket originated from industrial and motor vehicle pollution. Scholars may misrepresent the origin of climate change, caustic rainfall, and the shrinking of the ozone blanket as the leading cause of ecological problems (Dimakopoulou et al., 2020).
- Students also misconceived the shrinking of the ozone blanket with the extinction of tropical vegetation and caustic rainfall (Hestness et al., 2019; Siegner & Stapert, 2020).

Moreover, the misunderstanding among students that the shacks of the ozone blanket originated in climatic variation augmented with additional erroneous perceptions regarding the ozone blanket shack. An instance of such cases is the questioning conducted among twenty-four nursery school pupils, forty-eight primary school students of level 3, twenty-four primary students of level 5, and tertiary institution students in research regarding shrinking ozone blanket reductions. It revealed that the primary school students reasoned that the open spots in the ozone were somewhere on the land surface. In contrast, the upper-level primary school students perceived the ozone shack as perforated spots. On the other hand, the study indicated that higher institution students understood the meaning of ozone reductions more vividly than primary school learners. Thus, learners' perception of climate change increases as they age and acquire more academic skills (Howard et al., 2013; Cokadar, 2013). Also, among the tertiary institution learners, they wrongly reasoned that ozone-opened spots would result in the breeze's outflow to the open sky. This class's students also lack an understanding of the elements that formed and destroyed the ozone blanket (Hansen, 2010).

Contrary to the above, research in 2001 revealed that the less experienced instructors do not know the perforated ozone spot. This misconception among instructors juxtaposed why students had the wrong conception, making it more challenging to comprehend the ecological effect of the shrinking of the ozone blanket. Most students in recent research misrepresent the terms of global warming and ozone reduction. This misrepresentation runs across all age groups of learners. Many research works mainly focused on incorrectness instead of searching for the reasons behind the erroneous perception. Thus, we want to sample students for further research. There is a need to use other existing works of irrational perception as the principal determinant factor of how students perceive climatic change (Skeeter et al., 2019; Blackmore et al., 2018).

1.1. Background of study

In our presentation of today's world, there is an increasingly alarming rate of carbon discharges from crude oil as an energy source. Majorly centered on the adverse atmospheric conditions of the world as a whole (Stocker, 2014). These have adversely affected the ecological systems and their roles in supporting man socially, economically, physically, and spiritually. The man aspect affecting the weather conditions must be tackled, controlled, and administered locally, nationally, continentally, and globally by various world governments (Pettenger, 2016). People, including students of tertiary institutions, could actively use it as a motivating tool to reform strategy, awareness, belief, knowledge, and even perception toward climate change. It will eventually influence various strategies and programs executed on climate change. Our societies' information industry has misled how they represent climate change issues regarding meaning, human actions, and consequences (Capstick et al., 2015).

Several research works have revealed misdirection on climate change, particularly the ozone reduction and vacuum created by excessive carbon dioxide and carbon discharges in the atmosphere. The research mainly focused on fragment parts of climate change that lacked information and clarity. The case should have been searching for the natural facts and principles causing climatic variation, enhancing human perception and admissibility. Climate change is genuine and not denied. A deep

understanding of climate change's theme would support people's perception correctly. The lack of it has contributed to the denial of the climate change phenomenon. The effects still prevail today (Howe et al., 2019; Rode et al., 2021). Using the academic campus as a case study, evaluating diverse demographic backgrounds with different views about climate change is a vast and open privilege. Thus, an organized academic campus is an excellent ground to explore because it enhances communal education through the unique nature of students' different settings.

On the other hand, let us consider the strong correlation between understanding and conduct or attitude. It will then be possible to study whether people's views changed by reinforcing their understanding level. Other past research works deal with climate change perception based on intuition, views, and attitudes to climate change related to the knowledge of natural sciences among people. Advanced countries have given more support to global communities and academic institutions in climate change research. Modifying academic syllabi, working schemes, and instructional aids toward promoting climate change education influences students' perceptions (Tolppanen & Aksela, 2018).

1.2. Theoretical Framework

This literature review segment shall involve extracting research on learners' perceptions about climate change. Many previous research works aim at learners' erroneous notions from primary to tertiary institutions. In their studies, Karpudewan et al., 2015; exposed the statistical variation among different categories of students who misperceived the opened spots in the ozone blanket as climate change. This misperception runs from various categories of age groups to another. This theoretical evaluation intends to examine the current study critically.

Studying students' perceptions about climate change is crucial to discover what aspects of the climate phenomenon sound confusing among the targeted respondents - primarily centred on the preliminary knowledge appraisal of students across the globe. Misperception brings theoretical reform into practice among students and changes their climate change mentality. Misperceptions connote presumptions, notions, and options of perception, inappropriate perception, and inexperienced or unskillful perception. Also, misunderstandings are very difficult to reform. Students misperceived views or

notions due to organised teachings and erroneous perceptions, termed confusion by scholars (Moloney et al., 2014).

1.2.1. Misperception about the Atmospheric Greenhouse Impact

Most studies on global warming misperceptions connect to the impact of Greenhouses, consisting of carbon dioxide and other related carbon substances. This Greenhouse impact is the primary factor that triggers climatic alteration due to the high rate of carbon dioxide and vaporised substances. Several searches categorised learners' inappropriate perceptions regarding the development of greenhouse impact. It includes studies conducted among high school learners, university learners, and instructors of primary and secondary schools using research tools that involved questionnaires and oral questioning. The outcomes were stipulated as follows:

- In most cases, students perceived that the air space obstacle formed the Greenhouse impact (Liarakou et al., 2011).
- Students reason that Greenhouses is never an obstacle to the incoming and outgoing rays from the sun (Liarakou et al., 2011).
- Students also think that vaporised Greenhouse substances are obstacles that reject the returning rays of the sun to the earth instead of giving way to return to the skies (Karpudewan et al., 2015).
- Students reason that the sum of incoming rays returns automatically to the skies. Thus, students lack the basic knowledge that some of the biosphere's rays retain (Tolppanen & Aksela, 2018).
- Students could not distinguish between inward and returning rays (Tolppanen & Aksela, 2018).
- Students think that the depletion of the ozone blanket increases the solar energy from the sun ((Tolppanen & Aksela, 2018).
- Students critically reason those inward solar rays by Greenhouse vaporised substances – while not considering the impact of outward rays (Liarakou et al., 2011).
- Students reason that the impact of Greenhouses is mainly due to the high solar ray level without considering the heat retained and the heat emitted (Liarakou et al., 2011).

- Students reasoned that the Greenhouse impact was due to man factors, not nature's forces (Bell et al., 2011).
- Students misperceived the Greenhouse's impact with the role attributed to the Greenhouse itself. Thus, on average, twenty-five percent of upper college students could sketch the Greenhouse impact diagram; the outcome revealed things regarding the primary institution (Liarakou et al., 2011).
- Students also reasoned that the influence of Greenhouses is a threat related to the rising temperature of the earth (Tolppanen & Aksela, 2018).

1.2.2. Misperception about the Development of Climatic Change

The average students in the academic environment misrepresented their views on climatic alteration induced by the penetration of solar rays across the globe. In this study, thirty-nine students questioned how they viewed climatic alteration, the conducive learning condition created with serious teaching input. It aimed to reform learners' perception of climatic alteration. The aftermath of this study revealed a tremendous development in the level of learners' perception regarding climatic alteration in correspondence with the statistics of students who replied with "I do not have an idea" (Stevenson et al., 2017).

Also, inappropriate perception relates climatic alteration to volcanic activities and planet rotation. It showcased the study conducted among twenty-two students of a level five secondary school of Italian origin. The Authors experimented with a few students using a theoretical reform approach to improve their knowledge about the impact of Greenhouses. Further research showed that some primary school students misrepresented climatic alteration with the spread of chemical substances. It comprises carbons from electronic materials, other ecological hazards, and a shack of wide-open spots in the ozone blanket. Thus, the study finally resolved those students misrepresented ecological matters due to limited understanding regarding the origins of ozone reduction (Mikhaylov et al., 2020).

These identified misconceptions lay foundations that are imminent in understanding how students at various educational levels in Nigeria can also possibly perceive the atmospheric greenhouse effect. Understanding these misconceptions is

vital to addressing gaps in climate change education. Considering the geopolitical landscape and the unique educational landscape in Nigeria, where students across six geopolitical zones will examine these misconceptions about the atmospheric greenhouse effect, it will also provide insight into probable differences or region-specific challenges and opportunities in climate change education.

Thus, policymakers can tailor educational interventions to bridge knowledge gaps among students by addressing these specific misconceptions. The reviewed misconceptions suggest the need for targeted intervention strategies. Hence, there is a need to explore and recommend practical pedagogical approaches to address these misconceptions and facilitate a more accurate understanding of the greenhouse effect. Considering the diverse geopolitical zones in Nigeria, this thesis can further explore whether these misconceptions vary across regions. Understanding regional variations is crucial for tailoring educational strategies that resonate with the specific context of each zone.

This Author suggests a potential link to political perceptions by the greenhouse effect's misattribution to man-driven factors rather than natural forces. Understanding how students associate climate change with human activities contributes to exploring the nexus between climate change and political thought (Gaulin & Le Billon, 2020). By addressing these misconceptions, the research contributes to the broader discourse on climate change awareness and understanding. It sheds light on the role of education in shaping students' perceptions, which, in turn, can influence their engagement with climate-related political issues (Reser & Bradley, 2020). Findings related to misconceptions from the reviewed literature suggested actionable insights for curriculum developers, as integrating corrective measures into the curriculum can help address these specific areas of misunderstanding and enhance climate change education.

Findings from Karpudewan & Mohd Ali Khan, 2017 and Hestness et al. 2019 provide insight into how teaching interventions could inform the design of educational interventions tailored to specific regions within the six geopolitical zones of Nigeria. The study involving Italian students also provides a global perspective on misperceptions related to climatic alteration. The study reflects a comparative of

Nigerian students to identify common challenges and region-specific nuances in understanding climate change and politics.

Watts et al. 2021 findings underscore the importance of early education, having identified misrepresentations related to chemical substances among primary school learners. The relevance of Watts's findings lies in recognizing and addressing these misconceptions in the formative stages of learning, which aligns with the focus on university students as a significant scope in the central thesis. The section becomes more focused and aligned with the broader research goals by explicitly connecting these insights to the main thesis and emphasizing their relevance in shaping the understanding of climate change among university students in Nigeria.

In summary, the reviewed misconceptions provide valuable insights that directly align with the objectives of the present research thesis, offering a foundation for tailored educational interventions and contributing to the understanding of the intersection between students' perceptions about climate change and political perspectives across diverse geopolitical zones in Nigeria.

1.2.3. Misperception Regarding Ozone Reductions

Misperceptions of ozone cover and reductions with climatic alteration are predominant in today's contemporary world, considering the publicity given this issue of urgency. Scholars have conducted several studies in this direction among college learners. It ranges from three hundred and forty-eight, three hundred and fifty-four, and four hundred and forty in 1989, 1993, and 2005. The students who were perceived were rated inappropriate showed that vaporised substances induce the impact of the Greenhouse in the ozone cover. The progressive figures range from 14.9 percent to 27.5 percent from 1989 to 2005, respectively (Mikhaylov et al., 2020; Lee, 2012). Another misunderstanding of solar rays' function affected learners' perception that a large shack opens space in the ozone cover. It allows sun heat to prevail over the Polar regions and increases the melting rate abnormally. This study depicted five hundred and sixty-three primary school students aged eight to eleven as our sample characteristics (Liarakou et al., 2011; Olu et al., 2009).

Mikhaylov et al. (2020) provided insight into a temporal evolution of misperceptions related to ozone reductions among college students in 1989, 1993, and 2005, respectively. This historical context could be valuable for understanding how awareness and misconceptions have evolved, contributing to a nuanced understanding of the contemporary views of Nigerian university students. Similarly, the progression in the percentage of students with inappropriate understanding emphasizes the need for targeted educational strategies. It aligns with the broader objective of the central thesis to explore students' perceptions of climate change and develop effective educational interventions.

1.2.4. Misperception about Ecological Challenges

Limited understanding concerning ecological challenges could result in students trying to simplify ecological menace into two classes. These involve misrepresenting diverse ecological menace origins and effects without addressing climatic alteration issues. The study indicated that the average college learner reasoned that those discarded substances on land trigger climatic alteration. They are aware that discarded materials constitute a significant challenge to the biosphere and the aftermath of the disease outbreak – which experts called the origin of climatic alteration (Stevenson et al., 2017). These views implied severe misperceptions amongst students regarding ecological menace and the application of terminologies as concerns of the study theme. It is possibly due to insufficient knowledge about climate phenomena and wrong perception about the origins, impacts, and controls initiated by a particular ecological challenge. On the other hand, students wrongly use air space pollution to explain the origins of climatic variation, basically due to inadequate knowledge of different ecological conservation challenges (Wang et al., 2020; Whitehouse, 2017)

1.2.5. Misperceptions about Carbon and Carbon Dioxide

There are so many wrong perception misperceptions that vegetation covers build up entirely from minute particles of the earth's surface, which have no link with any air components. This discovery of misperceptions was studied and accepted

generally. This assertion is vital in learning climate alteration due to the constituents of air and its natural CO₂ and CO content. Research revealed that students misperceived the air space's incoming and outgoing carbon processes. Research by Osterlind 2005 revealed that average college students lacked an understanding of the processes involved in photosynthesis and the effects of climatic alteration. Students were unaware that CO₂ from the air space facilitates photosynthesis (Liu et al., 2014).

Furthermore, the wrong perception of the theme stated the concentration of CO₂ in the air space. It often challenges Postgraduate scholars by intuition on balancing a chart of the flow of CO₂ expulsion with the quantity of CO₂ concentration in the air space. Most targeted scholars with technical, machinery, and mathematical science foundations could not offer an authentic solution. Simultaneously, their responses implied that the expulsions must be co-equal with the present rate for carbon dioxide regulation in the air space. Thus, carbon dioxide concentrates more at the air space level due to the increase in the present-day expulsion level than the deduction level. These invariably imply that the scholars' perception rate is time-wasting and inadequate to provide strategies and mitigations toward climate change (Caillol, 2011).

1.2.6. Misperception Regarding the Sun and Seasonal Variations

According to the study survey, several students view seasonal variations like autumn and spring as likened to climate change. It depicted serious misperception regarding the meaning and features of climate change. Some students also misunderstood that the earth's planet is nearer to where the solar radiations are — notably during the midsummer time, making that specific season hotter than the midwinter time. These general misperceptions indicate learners' wrong perception of climate change concerning the sun and seasonal variation (Porter et al., 2012; Siegner & Stapert, 2020).

Adlit & Adlit, 2022 and Siegner and Stapert (2020) revealed that several students mistakenly perceive seasonal variations, such as autumn and spring, as synonymous with climate change. This misperception indicates a severe misunderstanding of the distinct concepts of seasonal variations and climate change. In furtherance, they also revealed another misperception as some students misunderstand the Earth's proximity to solar radiations, believing that the planet is nearer to the sun

during midsummer, leading to a hotter season, and farther during midwinter, resulting in colder. This misconception reflects a fundamental misunderstanding of the factors influencing seasonal temperature variations. Hence, this provides an insight into the foundational misunderstandings of students about climate change. This section becomes more focused and aligned with the broader research objectives by explicitly connecting these insights to the central thesis, emphasizing their impact on political perception, and recognizing their significance in shaping a foundation for climate change education.

1.2.7. Misperception Regarding Weather and Climate

Severe misperceptions regarding weather and climate make students think incorrectly about climate. Students misrepresented atmospheric occurrences as climate change, which worsens the wrong perception of climatic variation. Gowda stipulated in 1997 that the misconstrual of climate and weather may escalate. It implies a false perception that climate change would be apparent within a brief period of atmospheric variations. In the study in 2008, McCaffrey and Burh considered the misperception that climate is an average atmospheric condition observed for a long-standing period without any possibility of forecasting. These misperceptions about climate and weather are prevalent among college students (Hestness et al., 2019; Dupigny-Giroux, 2010; Bhattacharya et al., 2021).

1.2.8. The misperception that Climate Change is Nature-Oriented

Many individuals and students believe nature's forces induce climate change without any inference to man's activities, as studied by McCaffrey in 2008. They categorized this as the discovery of misunderstanding about climate change. Several researchers have been unable to unfold this in their research series. This notion triggered many individuals who believe that man's activities do not affect climatic alteration. It is an increasingly contentious and campaigned notion that confuses people and students. It has been proven and accepted through science-based research that man is a significant origin of global warming. Some government officials and public figures outrightly rejected such notions (Bhattacharya et al., 2021).

1.2.9. Misperceptions among Students of Different Categories of Age

As revealed by the study, age variations, particularly for students, determine global warming levels. The study showed that knowledge varies from primary education, average college, and upper college to tertiary institutions. However, the research outcomes prove that misperception has no limitations. It includes age and levels of education. Even among the instructors, wrong perceptions and misunderstandings about global warming prevail. It is vital to note misperceptions across all ages and educational levels of research. This age factor still prevails in higher educational institutions to broadly determine the levels of knowledge regarding climate change (Daskolia et al., 2006; Hansen, 2010).

1.3. Problem Formulation

Man's existence emerged from the Stone Age to the Industrial Age. Man is not at risk then as in this millennium age, especially climate menace. Big quest for human advancement, food security, advancement in technology, and human population explosion; the entire aforementioned have directly triggered a massive industrial revolution, modern agricultural revolution, city expansion, lumbering activities, mining, land reclamation from water bodies, waste generation, conventional farming with the use of chemicals and heavy pieces of machinery, war and the testing of nuclear weapons. The outcome of these is what resulted in climate change. The consequences include rising temperatures, rising sea levels, floods, coastal erosion, destruction of forest resources, and drought. Others are desert encroachment, water shortage, famine, massive pressure on grass resources, torrential rainfall, hurricanes, typhoons, cyclones, wildfires, pollution, tsunamis, volcanic eruptions, and earthquakes. Thus, the research intends to determine the students' perception of climate change and how critical this perception is toward the risks, causes, obligations, education, values and views about the environment and climate. These issues are what this study considered cases of concern among students who need to look into how they think about climate change critically.

This research shall involve students in how they think about climatic variation based on gender differences, nationality, and field of study. These factors determine

how students perceive climatic change as a global endemic risk and perceive male activities. The reality of climate change prevailing in our world: perception of responsibility, students' perception of awareness, and students' perception of environmental values and knowledge. For instance, the research conducted among students in Denmark revealed views regarding climate change based on the institution, area of study, nationality, and gender variation. These have helped to promote academic syllabi toward ecological teaching in Denmark and across nature-driven countries (Bieler et al., 2017; Laessae & Mochizuki, 2015).

1.4. Objectives of the Study

This thesis intends to evaluate the students of Nigerian universities' perception of climate change and politics, as clearly stated below:

- To analyze whether students' age differences significantly impact their perception of climate change.
- To prove whether students' gender differences significantly impact their perception of climate change.
- To analyze whether significant differences exist in students' perceptions of atmospheric issues toward climate change.
- To ascertain whether there are significant differences in students' perception of climate change threats.
- To assess whether there are significant differences in students' perception of awareness towards climate change.
- To determine whether significant differences exist in students' perceptions of environmental values towards climate change.
- To assess whether there are significant differences in students' perception of human activities towards climate change.
- To determine whether significant differences exist in students' perception of collective responsibility towards climate change.
- To evaluate whether there are significant differences in students' perception of suggestions/proposals towards climate change.

1.5. Research Questions

The erroneous perception persists among students of various categories, from primary institutions to higher learning. It has enormously affected the teaching, education, and understanding of climate change, even among teachers and students. Thus, the research intended to evaluate the university students based on how they think about climate considering the demographic factors, views on the causes, threats, awareness, responsibility, environmental values, and knowledge. Based on the above, this thesis shall focus on the following contextual questions:

- Are there any significant age differences in students' perceptions of climate change?
- Are there significant gender differences in students' perceptions of climate change?
- Are there any significant differences in students' perceptions of atmospheric issues toward climate change?
- Are there significant differences in students' perceptions of climate change threats?
- Are there any significant differences in students' perceptions toward awareness of climate change?
- Are there any significant differences in students' perceptions of environmental values toward climate change?
- Are there any significant differences in students' perceptions of human activities toward climate change?
- Are there any significant differences in students' perceptions of collective responsibility toward climate change?
- Are there any significant differences in students' perceptions of improvement suggestions/proposals toward climate change?

1.6. Research Hypotheses

The hypotheses of this thesis on university students' perception towards climate change shall follow the aims and leading direction of the following postulated statements below, accepted or rejected:

- H1: There are significant age differences in students' perceptions of climate change.
- H0: No significant age differences exist in students' perceptions of climate change.
- H1: There are significant gender differences in students' perceptions of climate change.
- H0: There are no significant gender differences in students' perceptions toward climate change.
- H1: There are significant differences in students' observation of atmospheric issues toward climate change.
- H0: There are no significant differences in students' perception of observation of atmospheric issues toward climate change.
- H1: There are significant differences in students' perceptions of climate change threats.
- H0: There are no significant differences in student perceptions of climate change threats.
- H1: There are significant differences in students' perceptions of awareness towards climate change.
- H0: No significant differences exist in students' perceptions of awareness towards climate change.
- H1: There are significant differences in students' perceptions of environmental values towards climate change.
- H0: No significant differences exist in students' perceptions of environmental values toward climate change.
- H1: There are significant differences in students' perceptions of human activities towards climate change.
- H0: No significant differences exist in students' perceptions of human activities toward climate change.
- H1: There are significant differences in students' perceptions of collective responsibility towards climate change.
- H0: There are no significant differences in students' perceptions of collective responsibility towards climate change.
- H1: There are significant differences in students' perceptions of improvement suggestions/proposals towards climate change.

H0: There are no significant differences in students' perceptions of improvement suggestions/proposals towards climate change.

1.7. Significance of the Study

This thesis shall take an evaluation study on the perception of students of Nigerian universities about climate change. However, general public perception is a vital debate issue with diverse scientific references that seem contentious and politicized, particularly on various social media. Despite the high level of social awareness, the general populace, to some extent, still has a wrong perception regarding the threat, cause, and education aspects that are associated with climate change. Thus, university students may be wanting from such erroneous acts. The academic instructors and civil states contributed to these inaccurate acts, misleading them toward the wrong perception of climate change. The drive-in helps determine why students think wrongly or rightly about climate change; this is what the current research intends to find.

This study's relevance is an eye-opener. The outcomes are convincing. Among students, researchers, instructors, environmental activists, environmental policymakers, politicians, and governmental and non-governmental organisations. With more regard to empirical works and ethics of research, this study will add value to the current research while being restricted to literature related to university students' perceptions about climate change, especially in the field of educational sciences. These will support various interest groups, as stipulated above, to comprehend how educated people react to environmental matters regarding climate change. It will also allow tertiary institutions and their management to reform and incorporate academic climate and ecological studies syllabi. The research will determine the students' reactions to climate change based on demographic characteristics, risks, causes, awareness, responsibility, environmental values, and knowledge.

1.8. Limitation of Study

This study creates extensive and innovative roles in disclosing climatic change from the university students' perspective and encounters constraints. The main

challenge comes from pre-existing hypothetical notions and theories to investigate the students' perceptions about climate change and politics, and there was no testing of notional theories. These could constitute a constraint regarding this research; the technique aligns with this empirical study's ethical and theoretical foundations, wherein the preference of technique, tactics, and measures fit all responses regarding the postulated research hypotheses and questions. The students determined the assessment of the study and sample areas according to their statements or independent opinions. They were construed or translated in the framework of pre-existing studies and hypothetical notions in their correlations.

Nevertheless, this research has created fascinating outcomes to transparent responses that more notional-driven methods may have disregarded or ignored. The forthcoming study should work upon the outcomes of this research to expand perceptions in working on climatic change at various tertiary institutions of learning. This research preferred not to apply predetermined perception postulations but to assess students' perceptions about climate change using transparent and unbiased interrogative statements.

Regardless of the constraints of not following the biased, leading questions method, the interrogations applied in the research tool give room for numerical or data assessment initiation. Hence, mixed research methodology offers in-depth information and justification strictly following the research objectives. The study constraint suggests imminent searches applying quantitative and qualitative methods to uncover further measures or scopes regarding students' perceptions of climate change and politics.

Because the research focused on the students' perceptions about climate change and politics in six universities across geo-political zones of Nigeria, it offers the purpose behind the rate of the student's involvement and engagement were significantly very high. One significant constraint of this study is its investigation of students' perceptions, which depend on individual feedback perception. Separate feedback procedures of perception may not correctly depict definite perceptions of respondents (Polit & Beck, 2010).

Notwithstanding irregularities or variations between individual feedback and definite perception, investigating the students' participation in the ongoing research

revealed new perceptions regarding climatic change and politics. The solution to this study constraint is that the upcoming study should integrate more unbiased procedures, such as experimental or data-based techniques, in assessing students' perceptions regarding climate change. The research contributed to the theoretical and literature reviews and procedural or operational methods, enhancing the study scope. Thus, to explore more students' perceptions about climatic change and politics at the various tertiary institutions using diverse hypothetical or notional measures or scopes, researchers who intend to work further on this study may prefer to apply other theoretical contexts and procedural methods (Maxwell, 2021). Further searches may use quantitative or qualitative techniques with a corresponding theoretical model that may utilize diverse procedures to relate study objectives.

1.9. Study Plan

The thesis runs from Chapters one to five; each chapter contains relevant information. According to the researcher's proposed objectives, problem statement, research questions, and significance. The research systematically and objectively assessed students' perceptions among universities in six geopolitical zones of Nigeria according to demographic characteristics, threats, human activities, remedies, collective responsibility, awareness, atmospheric issues, and environmental values regarding climate change. Chapter one consists of the introduction, background of the study, and meaning of the climate change phenomenon. It includes other fundamental issues associated with students' understanding of climate change, problem formulation, the study's objectives, research questions, significance, limitations, study plan, and definition.

The Chapter two centred on literature review which was sub-headed as follows – introduction, wrong understanding about atmospheric Greenhouse impact, development of climatic alteration, ozone reduction, carbon and carbon dioxide, the sun and seasonal variations, weather and climate in context, climate change being nature-oriented and understanding among different categories of age; relationship between notions of education in global warming and theoretical modification of notions with explicit emphasis on vital explanations on misunderstanding in global warming, proving facts of theoretical modification notions and ways of enhancing

theoretic modification among academicians; notional assessment that covered societal ideological view to climatic variation and its importance, adoption, methods and procedure identification; the impact of societal views on the basis of personal rankings, the impact of individuality identification profile and attitude to reactions regarding climate change, the impact of climatic variant communiqué and ecological conduct and perception; perspective, knowledge and responses to climatic variant; pragmatic evaluation of climate change understanding and ideological structure of climate change; people perspectives and facts about climatic change, knowledge of the influence and origin regarding climate change and views regarding the control of climate change; people reactions and attitudes to climatic variant in terms of commitment and readiness to preserve power consumption; and people views and reactions regarding flood threats.

However, Chapter Three focused on research methodology. It covered the introduction, justification for mixed research methods, study areas, interview pattern and assessment, research tool structure, sampling procedures, data entry and assessment procedure, the limitation of the research tool, and reliability of the survey instrument. The survey instrument's validity, management of the research instrument, management of the follow-up, and data analysis procedures in analysing the questionnaire data's follow-up and ethical concerns. Chapter Four aimed at the data analysis, interpretation, and discussion of all the students' opinions based on their demographic profiles, understanding of climate change threats, causes, remedies, collective responsibility, awareness, atmospheric issues, and environmental values. Finally, Chapter Five focused on the research's overall outcome, resulting in this study's conclusion and recommendations.

1.10. Definition of Terms

For a better understanding of this research, some of the critical operational words defined as they apply to this study as follows:

- **Albedo:** It is the reflectivity of sunlight in an area. (Goode et al., 2021).
- **Anthropogenic** is a human cause or happenings in the environment connected to a human (Lynas et al., 2021).

- **Climate Change/Climatic Alteration or Variation:** It denotes not only worldwide temperature changes but also changes in climatic conditions in terms of wind, rainfall, cloud cover, pressure, and length of seasons, which result in extreme weather events like droughts and floods (Swain et al., 2021).
- **CH₄:** It is called methane (Kahle et al., 2013).
- **Carbon dioxide (CO₂):** Carbon dioxide gas is breathed out by man and animals from the lungs or produced by burning carbon (Weaver et al., 2020).
- **Carbon (CO):** Carbon monoxide is a poisonous gas formed when burning carbon (Kar et al., 2019).
- **Deforestation** is haphazard cutting down or burning trees in forest-dominated areas (Gogoi et al., 2021).
- **Fossil Fuel** is fuel such as coal or oil formed over millions of years by animals or plants (Bumham, 2017).
- **Global warming** describes the current increase in the earth's average temperature (Garbyal & Mittal, 2019).
- **Geographical Understanding** is an individual knowledge of the world and its human and environmental intricacies - not simply where materials or immaterial are, but also how they have transformed and their present state.
- **Misunderstanding:** It means inaccurate or incorrect ideas, knowledge, and understanding of the scientific concept (Sadler & Sonnert, 2019).
- **Ozone Hole/Shrink/Depletion:** An area in the ozone layer where the amount of ozone diminishes so that harmful sun radiation can pass through it. (Tolppanen & Aksela, 2018).
- **Ozone Layer/Blanket:** The ozone layer, high above the earth's surface, helps protect the biosphere from harmful radiation from the sun (Abas et al., 2018).
- **Perception** is how individuals or the public consider, evaluate, recollect, and respond to information from the geographical surroundings. It is an individual capability to comprehend matters or issues swiftly (Qiong, 2017).
- **Photosynthesis:** The procedure by which green plants turn carbon dioxide and water into nutrition utilizing energy obtained from the sunlight (Goswami et al., 2020).
- **Student:** A person studying or learning at a university or college. An individual who is schooling at a higher institution or college or secondary or

other tertiary institutions of learning. It also defines an individual officially involved in education, particularly an individual registered in an institution of learning (Definition, 2022; Jang et al., 2016)

2. CHAPTER TWO: LITERATURE REVIEW

2.1. Literature Framework

2.1.1. Meaning of Climate Change Phenomenon

The word climate change is synonymous with global warming because both terminologies carry the same meaning and notion among the general populace and professionals (Peter, 2018). Many natural science experts are used to climate change due to the narrow interpretation of global warming as warm emissions from the earth and related carbon dioxide and carbon elements or vaporized substances generated from the earth's activities. Simultaneously, climate change indicates the usual transformation in rainfall patterns and rising ocean volume (Wang et al., 2020). According to the National Academy of Science, global warming is increasing the earth's mean temperature, originating from the accumulation of carbon dioxide and carbon-related vapors. Climate change is a lengthy period of sudden transformation in the earth's weather conditions. Based on these explanations, global warming or climate change is a man and non-man-related environmental force. It has several ways or meanings of interpretation. It is a conception to consider the man and ecological forces that propelled their occurrences to different degrees worldwide (Canan et al., 2015).

Climatic change can alter natural sequences like water, nitrogen, carbon, and oxygen. These natural phenomena keep weather operations balanced and functional. The alteration of the weather constituent affects the dynamic function and balance of these natural cycles. It could humanly or naturally induce and illustrate as the study proceeds. The carbon and carbon dioxide vacuum are the major atmospheric constituents that trigger climate change. Human-kind and other natural occurrences are significant catalysts that alter the earth's weather conditions. This vacuum intensifies the earth's temperature and increases the gaseous accumulation in the atmosphere, resulting from heavy rainfall. Storms increase in gaseous water in the air space, and shrinks of ozone cover mostly accompany it. All these adverse effects result from carbon expulsions from every aspect of work life (Melillo et al., 2014).

2.1.2. The Notions and Modification of Education in Global Warming

Universally, learners/students usually create renowned notions based on pre-existing facts. Theoretical modification happens as students move from old ideas of wrong perception to diverse concepts of correct perception (Bardsley & Bardsley, 2007; Jacobson et al., 2009; Rochovska, 2015). The explicit explanations below reveal the relationship between notions of global warming and theoretical modification:

2.1.2.1. Vital Explanations for Misperception in Global Warming

These are the explanations behind the misperception of global warming or climatic change as follows:

- The climatic variation of operations involves greenhouse gas and carbon rotation; these atmospheric phenomena are ambiguous and complex to understand. The two atmospheric occurrences functioned in double ways in diverse methods (Rye & Rubba, 1998). Solar rays are vital for the Greenhouse to be functional and influential. The vaporised substances that form the Greenhouse receive highly intense solar rays called electromagnetic energies from the sun. This absorption by an atmospheric blanket termed ozone cover shields the living things globally, mainly plants, animals, and man. Thus, students may misconceive this phenomenon and relate it wrongly.
- Interchanging notions between Greenhouse, carbon rotation, and global warming or climate change may create confusion in understanding that entirely shifts from scientific perspectives. Creating an option for better illustration may be convenient for students to comprehend easily (Rye & Rubba, 1998). It could lead to the loss of valuation facts about global warming. It may work, provided no controversial fact is embedded in the learners' memory (Osterlind 2005). This change should not affect the learners' perception, limiting the teaching and learning of other aspects of climate change.
- Lastly, teachers with facts and science-oriented articles provide mental or intellectually debated facts for students to reason genuine notions about climate change correctly. Students may lack the basic information necessary to comprehend the impact of Greenhouses and reduce ozone cover. Students may

also find it challenging to understand the concept of Greenhouse influence, probably due to learners' shortcomings in different solar rays, including their patterns and origin (Osterlind, 2005). Thus, if it is permitted to do away with mental or perception confrontation, students may seek the option of describing the Greenhouse and solar rays (Duit, 2005; Scott et al., 2013).

2.1.2.2. Proving Facts of Theoretical Modification Notions

Existing empirical studies on global warming revealed convincing facts that students create different levels of understanding. Some cases accept the theoretical modification of notions, such as creating an option for notions and a diverse representation of ideas. The fact remains that students create or develop notions from their learning environment and everyday activities. Students choose descriptions that go along with their capabilities and understandings. As revealed by the study, students between the ages of twelve and eighteen create notions relating to natural sciences as comprehended with brains without considering appropriate terminologies taught in their classes. Students always put their notions on through social broadcasting mediums (Trenbath, 2012; Shepardson et al., 2012; Blackmore et al., 2018).

Scholars created descriptions and occasionally deviated from current natural science knowledge of climatic alteration, regarded as misunderstanding options for notions. Most of the time, facts provided by social broadcasting means and learners' mental capabilities could lead to a wrong idea. The study showed how age determines learners' notion of natural science descriptions. Thus, fresher students discovered a correct perception in most research compared to elderly learners. Also, learners' creation of options for notions significantly improves learning, according to the research conducted among four hundred twenty primary education learners. It comprises a broadcasting script on climate change and its effects on the "existing earth." Henceforth, learners' correct notions improved by learning the option for notions likewise - while ambiguity advanced learners' wrong perception when the learning process ended (Shepardson et al., 2012; Blackmore et al., 2018).

Contrastingly, the absence of research shows climate change evidence concerning students reaching mixed notions and finding samples that covered pre-primary pupils, three-level primary learners, and five-level primary and secondary

school learners. The research themes centred on reducing ozone cover; the students marked for mixed representations knowledge. The study revealed that learners' notions seem to develop; misunderstanding forms a substantial portion of the teaching method. Thus, theoretical knowledge in the intellectual environment may run categorically through the mixed channel into segments with first understanding, particularly among pupils (Daskolia et al., 2006). Also, students find it challenging to comprehend global warming topics such as nature and man-induced forces. These triggers climate change, the Greenhouse's impact, the importance of vaporised substances of the Greenhouse, and the splitting of open spots of ozone away from Greenhouse influence. In this regard, students indicated wide lapses in the intellectual perception of natural sciences and steps to cover these lapses through teaching aid materials and seminars. The research questionnaire was the primary tool to register responses from respondents regarding climate change misconceptions, probably due to irrational perceptions and mixed notions that follow the theoretical modification methods (Shepardson et al., 2012; Blackmore et al., 2018; Jacobson, 2009).

2.1.2.3. Ways of Enhancing Theoretical Modification among Academicians

Scholars working on global warming knowledge will foster theoretical modification by boosting intellectual debate and enhancing interactive discussion across learners. Possibly attained through different levels of education and gives students more room to acquire knowledge (Aguirre-Bielschowsky et al., 2012). The above resolution serves as a guideline to actualise the theoretical modification; such procedures require a slow, steady development. The moment students attain that level of academic modification by striving with notions and creating mixed notions. Thus, students incorporate their capabilities and philosophies and the teaching notions acquired in their school environments. With time, the students would gradually make notions by adding knowledge upon knowledge – slowly and steadily- to the correct perception level (Shepardson et al., 2012; Blackmore et al., 2018).

2.1.2.4. The Concept of Perception Toward Climate Change

These concepts focused on the multilayered, dimension, and uncertain features of climate change (Min et al., 2017). It necessitates students to develop skills in complex perception to understand the crucial matter of climate change. Intricacy perception capability significantly describes sustainable development skills (Bhattacharya et al., 2021). The capability connotes a part of particular and combined natures, including information, capacities, purposes, and behaviours, enabling self-oriented activity in the direction of criteria of positive presentation and constructive results in multi-dimensional circumstances.

In this case, intricacy perception capability is not commonly known in literal studies but is essential in climate change education. Thus, the notion of intricacy perception emerged from intricacy ideology and drives many features of complication structures to demonstrate education structures, including biological teaching, non-conventional, interactive, and all-inclusive characters (Cassey et al., 2018).

Applying the perception terminology depicts peoples' capabilities to handle complex circumstances and unforeseen events. The application of the terminology relatively entails acknowledging the relationships betwixt diverse views, and it vividly goes contrary to rigidity, radicalism, conventional, detrimental rational, and basic patterns of perception. Thus, perception complications connote a nature of reasoning based on observations and activities of personal reasoning (Jemnstal, 2019; Podschuweit et al., 2016).

The broad reasoning model is vital to comprehending significant issues, including climatic variation, and creating a solid choice concerning every individual activity. Reasoning complication acknowledgment is critical for sustainable development and skills (Brundiers et al. 2021). It defines the ability to acknowledge and comprehend relationships, assess multifaceted structures within diverse fields and dimensions, and work on ambiguity, essentially in line with the notion of intricacy perception revealed above (Mindt et al., 2017).

Research unifies the two methods to a capacity to recognise, comprehend, understand, and work on ambiguous facts and contending perceptions within multifaceted structures on several dimensions. The writers afterward utilize the terminology of intricacy reasoning skill, a skill on climate change education

enhancement. Over vast years, researchers in teaching and perception capacity have examined ambiguous reasoning procedures and discovered the systems of personal viewpoints. It centred on perceptions, behaviors, and intentions on a reasoning concept of people's fact-dealing, mental capabilities, and policymaking (Podschuweit et al., 2016; Jennstål, 2019).

For induction of students to speak out – which includes conversation of facts and conversation classification commonly developed suitable course works from teaching background. The classification revealed six patterns of reasoning; each one is very ambiguous in comparison – such as information/recollection, conception/assimilation, application, explanation, assessment, and interpolation. Utilizing the concept of multifaceted reasoning skills, every variable member needs a greater rate than any other members involved, including various reasoning procedures and concepts. Logical measures are the rational perception patterns that may affect multifaceted reasoning skills and the capability to disseminate knowledge from familiar frameworks to renovative entities (Roelle et al., 2022; Vorholzer et al., 2020).

Thus, there is a vital institution of teaching study regarding multifaceted reasoning skills and the methods used to assess them. Based on the research limitation, multifaceted reasoning skills are significantly related to significant supportability skills, including structures and in-depth reasoning on climate change (Rieckmann 2017). It is also essential to advance study on multifaceted reasoning skills based on the background of climate change education (Oberauer et al., 2022).

2.1.2.5. People's Peculiarity and Perception of Climatic Change

As in other areas of science, people consistently misunderstand key concepts about climate change. For example, grown-up people misunderstand the role of man in triggering climate change. They are unsure how humans could be an object of influence by global climate change (Capstick et al., 2015). These uncertainties might impede understanding how to mitigate global climate change or whether it is essential. Although climate literacy is improving, children and adults continue to misunderstand climate science and climate change (Ballew et al., 2019). For example, even educators conflate the greenhouse effect with ozone layer depletion.

Given that climate literacy relates to climate change concerns, which, in turn, may bolster pro-environmental behaviours, it is vital to comprehend the issues that may pose a hurdle to the knowledge of climate change. Identifying and predicting the counterintuitive information could provide educators insight into the concepts students might struggle to comprehend. Some researchers have posited that global climate change is integrally challenging to understand due to its intricacy and unpredictable effects (Klapp & Bouvier-Brown, 2021). Others have argued that the difficulty in comprehending climate change does not stem solely from the phenomenon's complexity but instead traced partly. This conflict is between climate change and the basic construction of the intellectual structures of the natural world. In other words, global climate change might contradict informal intuitions about how the world works. We admit that instinctive reasoning cannot fully explain individuals' difficulties when understanding global climate change. This complex issue could be circumstantial by myriad factors, including societal influence, i.e., political influences, for a review, cognitive biases, and motivational factors (Stevenson et al., 2018). However, intuitive thought patterns may be critical to this intricate puzzle. Indeed, reliance on intuitive perception influences our understanding of several scientific domains, including physics, chemistry, and biology. In the current paper, we focus on one type of intuitive perception—human dynamic—and explore the implications of human peculiarity perception for understanding climate change. Human dynamic involves seeing humans as ontologically exceptional and ecologically irregular with the rest of the living world, as "apart from" rather than "a part of" nature. It can result in the erroneous belief that natural laws do not, or no longer, apply to humans (Kopnina et al., 2018). For example, human exceptionalism could manifest as the belief that humans are immune from extinction, are the "most highly evolved species," or are the inevitable result of evolutionary success.

In this environmental ethic, exceptional humanist reasoning can create unique moral considerations for humans over nonhuman animals. Human exceptionalist perception of global climate change may sometimes lead to correct interpretations and incorrect inferences. On the one hand, human exceptionalist perception may align with beliefs consistent with scientific evidence, such as believing that contemporary global climate change happens because of human behaviour (Masson-Delmotte et al., 2021). On the other hand, exceptionalist perception may also align with beliefs correlated

with science-based evidence, such as the misapprehension that humans may suffer most due to climate change compared to other species, perhaps because of our intellect or skills. In line with such a unique perception about the effects of climate change on humanity, grown people rarely feel impulsive to discuss human-relevant impacts of climate change (Kopnina et al., 2018). Thus, human uniqueness could shape people's comprehension of climate change in complex ways. Human uniqueness focuses broadly on how individuals consider the connection between humankind and the rest of the natural world. The perception about the Sustainability relationships at this higher level of concept (i.e., the people instead of the individual), the construct of human exceptionalism may provide insight into how people generalise from individual experiences and observations of nature to determine the broader place of the man species in the natural world. It reflects the context of climate change, as this problem will likely impact people and places far beyond eco-community (Betz & Coley, 2022).

2.1.2.6. Instinctive Rational: A Tool for Climate Change Perception

From early development, young kids actively seek to comprehend, explain, and predict the world around them. To do so, they create implicit or explicit instinctive concepts known as traditional philosophies, rational philosophies, and intellectual representations that serve as comprehensible information structures about psychological, social, physical, and biological phenomena. These intuitive conceptual systems help us understand, explain, and predict the complex world. However, they can also offer potential roadblocks to attaining more formal scientific understandings (Coley & Tanner, 2015). Indeed, contradictions between intuitive and conventional understandings are common and faulty overextensions of otherwise adaptive theories (Shtulman, 2017).

Industrialised nations are seeing record-high rates of belief in global climate change from their citizens. Nevertheless, significant gaps in understanding persist between the people and the scientific community (Hamilton et al., 2015). The persistence and ubiquity of erroneous views suggest that they may be shaped partly by our underlying conceptual structures—how we spontaneously organise our facts about the world. In the current study, we examined how much the younger generation's perception of climate change aligns with a typical pattern of intuitive perception:

human exceptionalism. We discussed the accuracy of different types of human exceptionalist reasoning about climate change and the significance of such perception on downstream beliefs and engagement with the philosophy (Fleming et al., 2021).

2.1.2.7. Fundamental Issues Associated with Students Perception About Climate Change

The study disclosed some crucial environmental happenings that students might be eager to question and think critically about their perception of climate change. It indicated the threat, consequences, and causes of climate change (which could be humanly and naturally induced). It includes the destruction of forest resources, pollution, fossil fuel consumption, urban expansion, excessive grazing of land, the conventional and inadequate system of farming, a shift in the orbit position of the earth, volcanic explosions, changes in radiation of the sun, tectonic movement and changes in the velocity of planetary. It is pertinent that students should be able to distinguish between man and nature-induced climate change (Carleton & Hsiang, 2016).

Students should know about forest resource depletion, pollution, overgrazing, and decreased and increased carbon dioxide emissions. As the rate of plant cover decreases, it also shrinks the population of living that utilizes carbon dioxide; the implication is that the air rate will increase. It will form Greenhouse effects that severely affect temperature and rainfall patterns. Thus, the vegetation covers, such as crop production and animal rearing, are primarily clear for agricultural purposes. At the same time, the land eventually becomes bare, and the albedo will be high. It implies that more solar rays would be scattered, making the atmospheric conditions experience a reduced temperature range because the carbon substances return to the soil. To some extent, climatologists regard the clearing of forests as advantageous. However, this notion is highly controversial in plant conservation (Toensmeier, 2016; Searchinger et al., 2020).

Students comprehend that carbon substances lay under the earth's crust before discovering fossil oil. The air space was then completely safe from carbon discharges. Later, with man's advancement and the quest for high industrial output with the growing demand of man's needs and expectations, man began to utilize fossil energy

for industrialization, power generation, agriculture, technology, transportation, and scientific exploration. Burning these fossil oils resulted in carbon accumulation and other toxic chemical substances. The next is creating a vacuum space of carbon and carbon dioxide that eventually emerges as a Greenhouse to climatic change. To avoid these adverse effects on the atmosphere, plant population and activities toward plant sustainability must increase to utilize these excess carbons. It neutralizes carbon vacuum formation in the air space and converts such carbons in the soil into organically formed rocks. As man's activities are increasing, fossil oil consumption is growing tremendously. It affects the air space, vegetation cover, and other living things in the biosphere (Venkatramanan et al., 2020; Fahad et al., 2021)

2.2. Pre-existing Case Study on Climate Change

2.2.1 Global Perceptions of Climate Change and Politics

The past few years have witnessed many historic weather-related disasters, including devastating wildfires in Australia, apocalyptic flooding in Germany, and deadly heat waves across Europe. As these catastrophes increase, a systematic agreement has merged around the decision that the rise in risky climate events is a direct consequence of human-induced climate change. The growing visibility of the effects of climate change offers politicians what seems to be an opportunity. Climate change has often been portrayed as an international problem with future ramifications, attributing local disasters to climate change. It has the potential to make climate change feel more temporally pressing and geographically immediate, two characteristics that ought to bolster support for action on mitigation (Abatzoglou & Williams, 2016). In addition, even for politicians who may be less interested in mitigation efforts, blaming wildfires or floods on a phenomenon that predominantly represents an international failure might help divert attention away from local shortcomings, such as insufficient forest management (a Republican talking point following the 2020 California wildfires) or poorly maintained infrastructure (Kim & Urpelainen, 2017)

Nevertheless, many politicians have shown a continued unwillingness to link severe weather events to climate change, with such reticence emerging as a point of contention during the 2019–2020 Australian bushfires. During those fires, the Australian Prime Minister could not debate his refusal to discuss climate change as a factor in the fires' severity. One junior lawmaker went so far as to explicitly deny any connection between the ongoing conflagration and global warming (Zhou, 2016). Even some policymakers whom one might expect to embrace the opportunity to highlight the consequences of climate change have, at times, shown an unexpected hesitancy to do so. For example, in a press release, California, as the Democratic Governor of California, had secured federal funding for its wildfire response and recovery effort. Notably absent from this statement was any acknowledgement of climate change or the fact that it has been a central factor in exacerbating the wildfires that Newsom's administration has ostensibly prioritised addressing (Hai & Perlman, 2022).

Many politicians avoid making the connection between extreme weather events and climate change. As we will show through observational data on U.S. Congressional press releases, there has been some increase in politicians' tendency to reference climate change in connection with severe weather events. While politicians like Newsom sometimes deliberately avoid mentioning climate change in connection with extreme weather events, they are more forthcoming at other times. Nevertheless, there remains a degree of wariness in many political quarters when connecting these two phenomena. We seek to understand whether climate change attribution can help politicians increase support for their response to extreme weather events and the policies necessary to address an increase in weather-related disasters in the future (Hai & Perlman, 2022).

To answer these questions, we implemented a survey experiment, which we fielded in two waves to nationally representative samples of eligible American voters. The distribution of the first wave was in July 2021 to 3103 respondents. The second distribution was in October 2021, with 6,071 respondents. Across both waves of the survey, it exposes the respondents to a short vignette about the 2020 wildfires in the Western United States, followed by a statement, which we directly modelled on a factual statement issued by a politician from one impacted state. In the control version, the politician discussed the effect of the wildfires and the need for action without mentioning the role of climate change; in the treatment version, the politician offered

the same statement but additionally noted the role that climate change had played in contributing to the severity of the wildfires (Capstick et al., 2015).

Our results suggest that politicians' frequent hesitance to link natural disasters to climate change may be a prudent political choice, at least in the United States. Specifically, we find that among Republican respondents, those who saw the version of the politician's statement that mentioned climate change viewed that politician as less capable of addressing future wildfires and less sympathetic toward wildfire victims relative to those who saw the control version. The most notable result is that Republicans who saw the reference to climate change also became less likely to support an energy tax intended to protect against future wildfires. The other natural disasters connected to climate change attribution may undermine climate change adaptation. While these adverse effects trigger massive concentration among conservative respondents, the weaker and generally nonsignificant effects among Democrats and Independents suggest that, on the margin, attributing weather-related natural disasters to climate change may be a losing political proposition with voters (Hai & Perlman, 2022).

2.2.2 Climate Change Education in Nigeria: An Anticipated Overview

Nigeria experiences dry and rainy seasons; these two seasons have terrible heat and horrible rainfall, obstructing people's activities. It caused severe agricultural loss and forest ecosystem and was accompanied by persistent floods, severely affecting people. Climate crises have persisted among the people and environment – while preventive measures signified no improvement. Empirical studies showed that this climate crisis would drastically affect communities and environments. It would accelerate severe temperature increases, massive flooding, shortage of rainfall, and massive rainfall patterns that would trigger outbreaks of borne diseases and parasitic insect-related epidemics. Overflow of excess rainwater and ocean will continue to cause severe damage physically, mentally, psychologically, financially, and socially among people living in riverine areas (Amanchukwu et al., 2015; Nwankwoala, 2015). In Nigeria, few areas are free from flooding, which destroys human property; marooned people with canoes occasionally move to transfer the public to more suitable residences. In previous years, some communities across the Delta appeared to be heavy

with floods. At the same time, areas of the North are inclusive as well. For example, severe floods run across FCT, Lokoja, and Anambra, which disrupt formal activities in the above cities. These massive floods result in heavy soil erosion, loss of agricultural produce, disruption of major socio-economic activities, and loss of valuable properties. Thus, no areas in Nigeria are accessible from the threat of climate change (Ayanlade & Jegede, 2016).

Based on the current UNICEF new brief, although children suffered greatly, they should not be well thought-out, inactive, or feeble. Youngsters can be influential representatives of transformation. Research has revealed that many youngsters can be surprisingly strong in the appearance of remarkable trials when they emerge. UNICEF activists empower children through proper education on climate change and disaster management, which can reduce their susceptibility to risk for the sustainable development of their communities. Educating students on climate change issues is one of the most fantastic means of promoting societies on the difficulties of adjustment to climate change (World Health Organization. (2015). Based on the impact of climatic variation on the environment, UNICEF aims to grade up and clamour environmental adjustment, catastrophe, and threat minimization policies in education structures internationally. The work focuses on the values of child-friendly tutoring meant to collaborate climate change, catastrophe, threat administration, and ecological alarms all over the schooling structure. They comprise schooling segment tactics, guidelines, regulations, school finances, educator teaching, syllabi and appraisals, school amenities, education communities, administration, and governance. An Inclusive climate change, environmental education, and education on disaster-risk management in school curricula guarantee the realisation of scholars' and youngsters' ecological civil liberties as conserved in papers of the Agreement on the Civil Liberties of the Youngster (World Health Organization). (2015).

According to UNESCO, teaching alone cannot help us attain a more sustainable future; nevertheless, without schooling and knowledge for workable growth, we will not reach that objective. Remarkably, UNICEF has extensively educated people on sustainable development (Hung, 2014; Benavot, 2014). It promotes the role of ESD (Environmental Sustainability Development) and its implications for all international initiatives, such as the Millennium Development Goals (MDG). The ESD, therefore, aims to achieve the following goals:

- It shared a joint idea, philosophies, and ethics on ESD and enhanced clarity as a common aim and plan for the organization;
- It shared strategies and diplomacies to boost joint support and evade replication within the UN structure;
- It shared proper practices and teachings, cultured and harmonized continuing actions toward advocacy over the years;
- Harmonise approaches to ESD and sustainable development practices within each organisation;
- It offers an opportunity for activities to collaborate the visions and views of other global players in their ESD program;
- It offers a global podium to ensure the high prominence of the contests, the improvement of Environmental Sustainability Development (ESD), and the increased effect of ESD plans.

2.2.3 Tertiary Communities – Their Impacts on the Teaching of Climatic Change

Considering the wide range variety of organisms across the globe, cold-friendly animals are seriously facing a climatic threat in their living habitats. As rising temperatures generate ice loss, the bears lose the platforms they use to hunt seals. Climatic change has transformed the habitat of polar bears on the list of species at risk of extinction in the wild. The bear floating on a melting ice displacement has become an icon of the potentially devastating consequence of climate change to life on the planet (Descamps et al., 2017; Hamilton et al., 2019).

Such bears and wildlife in tropical regions, humankind also encounter risks to their habitat and survival resulting from climate change, such as the spiraling of the wildfire season ravaging the Coastal parts of the world and all across the globe, including intense storms, droughts, and floods, rising sea levels or temperatures rising. Unlike bears, however, humans have invented a society to help us quickly adapt to and alleviate changing trends. Moreover, because climate change is essentially the result of human-environmental interactions, schools can do more than help us comprehend these changes to our habitat or help us adapt to those fluctuations. They could help us slow down those changes and lessen their impact as we adopt more workable practices

and perhaps even revert them as we devise technologies that transform the drivers of climate change (Allen et al., 2019).

These climate changes threaten well-being, incomes, food safety, water supply, social safety, and financial development. They will increase as temperatures reach 1.5 °C and increase further as temperatures increase to 2 °C above preindustrial levels. The significant effect of a temperature rise of 1.5 °C and above will be more effective on disadvantaged and susceptible populations, native peoples, and the public whose livelihood depends on agricultural or seaside activities. Global heating will also add to upsurges in impoverishment. It will have an unequal impact on women who are poor and from other deprived peoples and whose income depends principally on farming (Sutton, 2018; Allen et al., 2019).

Variances in susceptibility and impact arise from non-climatic factors and many related inequality factors often caused by uneven growth progressions. These variances shape disparity threats from climatic crises. Individuals on a social, financial, traditional, political, managerial basis or otherwise susceptible to climatic change and some variation and alleviation comebacks. It raised susceptibility – which is not often due to a sole source. Relatively, the service of interconnecting societal progressions leads to socio-financial class, income, and education disparities. Such societal progressions include, for instance, segregation based on sex, status, origin, age, and debility (Gouldson et al., 2016; Fuhr et al., 2018).

Educating people about more supportable means to relate to our environment involves preparing us to adopt workable practices that minimise our impact on climate change and the consequence of climate change in our lives. Government policies such as caps on emissions are essential to slow worldwide temperature rise. People believe and view that systematic consent on climatic change can affect people's level of understanding. Collective responses may also include shaping how we live and our habitats, for instance, the value we allot to nature as we plan and build the homes and cities where we live and work (Reimers, 2021).

In addition to personal responsibility's impact on climate change, it involves unified progressions that enhance systemic changes in norms and institutions. It undergirds climate change by slowing down, and perhaps reverting climate change also requires advancing knowledge over time. Thus, inventing technologies can help

us transform our interactions with the environment, allowing us to reinvent our way of life. Educating for sustainability involves equipping people with the ethical frameworks, the imagination, and the necessary skills to advance knowledge and invention. Examples of such design and invention and transformations to our way of life include developing a circular economy with the production of goods next to cities to reduce transportation costs, as well as urban expansion with populations concentrated in sustainable cities that partially block the sun's rays (Reimer, 2021; Hays & Reinders, 2020).

For instance, the discipline of hygiene and environment is the high-tech discovery's significance in addressing climatic change. It improves health and sanitation in the developing world. It revealed that the toilets and water treatment systems developed and used in the early industrialized world were inadequate for improving public health in developing countries because they were resource-intensive, generated undue waste, and required intricate and expensive sewer systems. These developments inspire innovation in next-generation toilets that could operate without drain systems and extend to humanity relatively quickly (D'Agostino & Parker, 2018; D'Agostino et al., 2022). Similar high-tech breakthroughs could change our dependence on petroleum energies, help us produce much safer nuclear energy, and increase the efficiency of fossil fuels and clean energies. However, it is not just technological progressions that can help us reinvent our way of life; developments in how we organize our lives and work and how we organize our communities can benefit us to alleviate and adjust to climate change. For instance, constructing some workplaces in ways that allow working from home can reduce our consumption of fuel. Moral and spiritual development stimulates social innovation that results in different choices and values on individual consumption relative to the protection of the environment and other forms of life or causes us to seek more outstanding balance across a range of objectives in the societies in which we are a part. The agenda of UNSDGs', for instance, is a framework of seventeen interdependent goals that aim to produce a more inclusive and sustainable world. They can provide a regulating framework to guide the growth of communities, cities, or other jurisdictions (Bastos et al., 2017; Kanie & Biermann, 2017; Breuer et al., 2019).

The drive to invent more sustainable ways of life necessitates more than an understanding of the scientific basis of climate change, the capacity to design high-

tech innovations, or an ethical framework that helps us aspire to live in more inclusive and supportable communities. It requires an understanding of societal structures and the growth of ethical reasoning that can help us collaborate critical reasoning about the current influence of climate change, our moral mind, the personal drive to act, and our competency to function effectively. An example of integrating complex societal structures with ethical reasoning would be appealing to students in schemes that helped them become aware of the gendered experience of climate change (Oberman & Sainz, 2021; Lehtonen et al., 2018).

Several reports revealed that the dependence of women in emerging nations on natural resources makes them particularly vulnerable to climate change. The challenges are for women who pursue safe portable water, foodstuff, and firewood for domestic cookery and warming and whose means of support hinge on farming. Numerous studies of the gendered nature of climate change argue that these differences. The results emerged from various intersectionalities that place certain sets of women (poor, lower cast) at greater risk (Jerneck, 2018; Buckingham & Le Masson, 2017). Therefore, understanding intersectionality is necessary to understand climate change's gendered impact. The drivers of these gender differences include disparities in education, use of time, an opportunity to credit and markets, acknowledgement of rights within legal frameworks, and resulting disproportions in earnings, so understanding these forces requires understanding systems and complex causality. Recognising the gendered impact of climate change is the foundation for recognizing the co-benefits between gender equality and climate action (Women U.N, 2022). It allows students to comprehend social action's complexity deeply and how “equity, sustainable development. Scholars understand poverty eradication as mutually supportive and co-achievable within climate action and other international hard and soft law instruments (Tollefson, 2018; Beck & Mahony, 2018; Tanner et al., 2022).

Through Human Rights education for social justice, students cultivate their capability to recognize how the effect of climatic change differs for different people (women, minorities, and people with low incomes). It is an obligatory step of involvement with the subject at greater levels of complexity and imagination (Haslip & Penn, 2019; Ossiannilsson, 2021).

The previous discussion of the complementarities between gender equity and climate change underscored the IPCC reports. These effective collective responses require addressing the systems that undergird such diverse processes. This understanding has led to a growing realization that climate action integrates with the context of poverty reduction and sustainability efforts, such as those echoed in the growth compact adopted at the UN 2015 General Assembly. Thus, advancing such systemic multidimensional efforts requires educating students to understand systemic complexity and develop their capability to work together with others to influence societal structures (Henderson, 2019; Hobson, 2020; Reimers, 2020).

This potential of teaching to affect human-environmental connections has given rise to a new informative domain: climate change education, a subfield for sustainable development. Previous studies reinforced the need to educate students to understand, adapt to, and mitigate climate change. Governments worldwide, in partnership with civil society organisations and other institutions, have developed climate change curricula and adopted policies to address this severe risk humanity faces. Global establishments, UNESCO in particular, have promoted climate change teaching and provided and distributed funds to support it. Despite these efforts, education has not yet sufficiently curbed the impact of our species on climate change, nor have we adapted to these climatic changes. As a result, like polar bears, we are witnessing the devastation of our environment, much of such ruin of our own doing, and wondering whether we will survive such changes along with other species (Xiang & Meadows, 2020; Paci-Green et al., 2020; D’Ayala et al., 2020).

2.3. People's Perception of Climate Change in Turkey

Based on the empirical investigation of elementary education tutors who wrongly preferred applying little body makeup, the study of people's behaviour regarding climate change rightly found – that the public administration decision on climatic change alleviation indicated a low preference for combating or minimizing the usage of refined petroleum energy. People faultily understand the imminent heating of oceanic water by Akkuyu Nuclear Energy Station to be vital to climatic change. A few people rarely consider or perceive that Earth-heat energy generation in Turkey could

discharge large volumes of carbon (Yalcin & Yalcin, 2017; Akın & Fridriksson, 2020).)

İklim Haber discovered an astonishing result in 2018 that over seventy percent of people's view regarding climatic change perceived that severe atmospheric conditions have drastically changed tremendously [161]. Based on a recent study in alliance with İklim Haber and Konda Research (2020), approximately fifty-two percent of people believe that climatic change is riskier or more dangerous than the COVID-19 pandemic [162]. Likewise, about seventy-five percent of the people perceived that recent climatic change is due to various operations of man on the biosphere or environment (Yasemin, 2018; Demircan et al., 2016). For instance, some building industries have been alleged of falsely promoting sustainability, portraying houses to be eco-responsive with no sustainability certifications [163]

According to the 2019 polling report, sunlight was the leading electricity supply, followed by coal energy. Approximately 24 urban centres were devoted to Paris's climate change treaty. Also, the United Nations Chapter for Development, in alliance with the Confederation of the Türkiye, created a community campaign to combat climate change.[166]. Thus, the research conducted in 2020 revealed that the rate of people backing accountable carbon has no significant impact on climate change alleviation and sustainability (Kardos, 2012; Uyduranoglu & Ozturk, 2020).

In addition, a short period of rainfall and frequent rises in temperature are significant threats in Turkey, with temperature increases to 1.5 °C and severe atmospheric conditions. The recent Greenhouse gaseous discharges grew to more than one percent of worldwide summation. The Department was responsible for the environment-initiated climate change alleviation plan to manage water supply from stream catchment areas for farming and domestic purposes. While still clamouring for climate change teaching in all institutions of learning (Turkes et al., 2020; Erlat et al., 2021; Bulut, 2023; Kovanci, 2023).

2.3.1. Greenhouse Effects

Most significantly, Charcoal and moto vehicles Coal accrued more than seventy percent of Turkiye's 600 million tons of yearly carbon discharges from the

accumulated Greenhouse – mainly CO₂- which trigger climate change in Türkiye. Char coal of energy is a vital source of CO₂, followed by automobiles working on petroleum energies, which also combust in gas-generated energy plants, residences, offices, restaurants, and various farmlands in Türkiye (Özuyar et al., 2021).

Türkiye retakes approximately ten percent of its carbon discharges, majorly by its vegetation. The public administration reinforces the quest for planting trees, electrical automobile production, and zero-carbon electrical energy production; these aim to minimise C₂ discharges by 2053. Nevertheless, it has no agenda for Char-coal minimisation. It is a nationwide commitment to contribute to the Paris Treaty on alleviating climate change, minimizing carbon discharges up to thirty percent of the projection till 2030, and achieving null carbon emissions in 2053. Thus, the public administration projected taxes on the environment according to the emission of carbon by various households and industries (Erat et al., 2021; Roelfsema et al., 2020; Tastan, 2022).

2.3.2. Overview of the Effects of Climate Change in Turkey

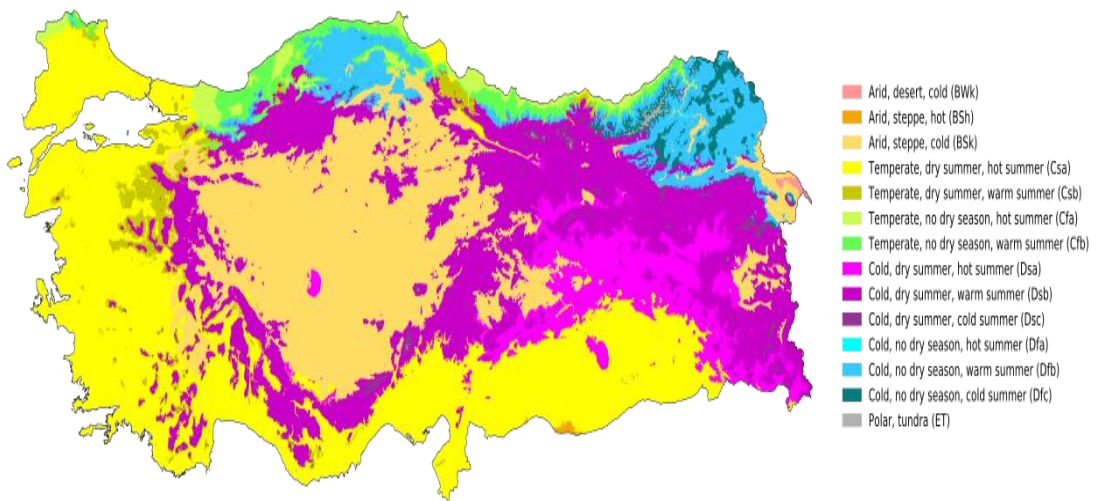
2.3.2.1. The Environmental Effects

Significant cases of climate change effect are visible in the patterns of precipitation across Turkey, the plunging control of the Hadley cubicle in the region of movement close to the centre of the earth – which could drift towards the Northern part of Turkey, it positioned south boundary about 36 degrees, and it results to low precipitation toward the southern of Türkiye (Bağçaci et al., 2021; Revelli & Rasul, 2022). The environmental effects of climate change are below:

- **Weather Variations:** As of 2020, the highest temperature was in 2010, the second highest temperature was in 2018, and the third highest was in 2020. Turkey faced an estimation of a drastic increase that could spread rapidly across the globe. However, impacts differ significantly all over the world. Torrential precipitation has risen. The atmospheric condition is rising to a severe level. In 2021, there were widespread remote outbreak fires in the southern and floods in the northern regions of Turkey, respectively. Remote

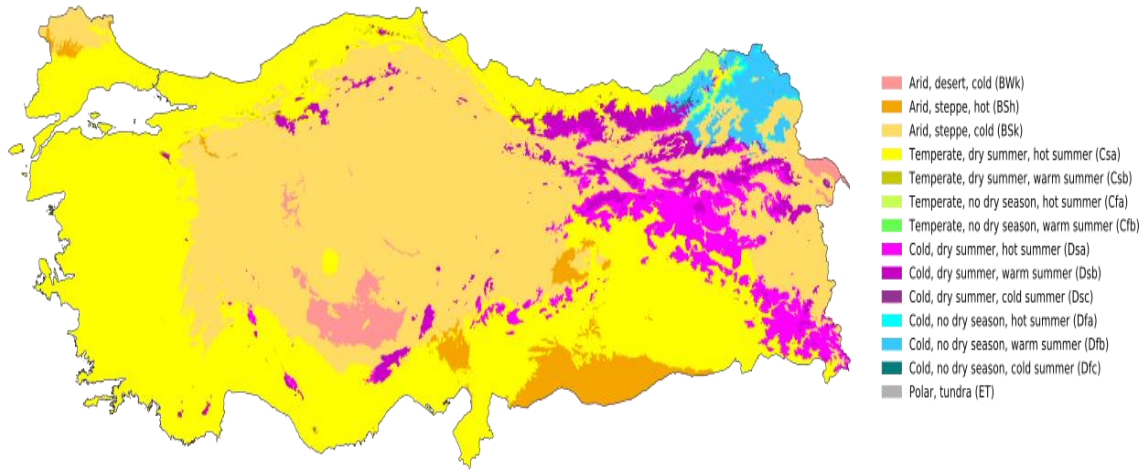
outbreaks of fires in Turkey have risen because of climatic change, and wild-wind pressure is growing across the Marmara area. Thus, rainfall could surge in the northern part (Şahin, 2016; Connelly, 2021; Albayrak et al., 2022; Demirtaş, 2023), and severe floods because of precipitation substituting snowflakes. Based on seasonal variation, there could be torrential rainfall in winter, hence lower than fifty percent in the rainy and fall seasons. Hot spells and lack of rain are swelling extensively in all parts of Turkey (Bağdatlı & Can, 2020; Erlat et al., 2022; Yogun et al., 2022). Find details in Figures 2.1 and 2.2 (Showing Drastic Changes in Köppen-Geiger Climate Classification Map for Turkey 1980 – 2016 Versus Köppen-Geiger Climate Classification Map for Turkey 2071 – 2100) below:

Köppen-Geiger climate classification map for Turkey (1980-2016)



Source: Beck et al.: Present and future Köppen-Geiger climate classification maps at 1-km resolution, *Scientific Data* 5:180214, doi:10.1038/sdata.2018.214 (2018)

Figure 1: Showing Köppen-Geiger Climate Classification Map for Turkey 1980 – 2016



Source: Beck et al.: Present and future Köppen-Geiger climate classification maps at 1-km resolution, *Scientific Data* 5:180214, doi:10.1038/sdata.2018.214 (2018)

Figure 2: Showing Köppen-Geiger Climate Classification Map for Turkey 2071 – 2100

- **Rising in the Sea Level:** Over Two Hundred Thousand people live in areas at risk of a 1-meter rise in the sea level. Tectonic uplift has decreased sea level rise between Samsun and Alanya, whereas several large river deltas have subsided. Istanbul is at risk from sea level rise; for example, the Kadıkoy metro station was flooded by water (Karaca & Nicholls, 2008; KURT¹ & Xingong, 2020).
- **Effect on Hydro-electric Power:** Climate change has minimised precipitation in some provinces and is more frequent as it occurs, affecting water energy-sourced stations. This season, yearly rainfall varied from above sixty to below forty-five centimetres. The annual mean coldness and hotness changed by four degrees. Türkiye is usually a drought-prone nation due to the low precipitation rate, rapid population growth, high rate of urbanization, and severe changes in weather conditions. Currently, the precipitation level is one thousand

millimeters annually, while by 2070s – it will significantly reduce to one thousand annually. Turkey's central part is severely drought-prone due to the high demand for water in the farming sector (Afshar et al., 2020; SARIŞ & Gedik, 2021; Santos et al., 2017; Baldasso et al., 2019).

- **Ecological Effect:** In the seashore regions of Turkey, the most prone areas are fixed swamplands, crop farming, and grass-dominated regions. Weather concepts forecast that severe threatening climatic occurrences have seriously expanded around the Mediterranean. Ices in Turkey are retreating: the biggest residual is the ice on Ararat Mountain, which is predicted to melt down by 2065 and is melting at a very alarming rate across the globe in the Mediterranean, temperate, and polar regions. Thus, it caused massive changes in hotness and dryness, affecting southern Turkey's vegetation. The drastic changes in the climatic conditions also result in ocean stickiness in the region of Marmara offshore, and like in the offshore of the Black-sea, the temperature is rising drastically – which makes it unfavourable for the winter season (Bulut & Sakalli, 2021; Baldasso et al., 2019; Yalcin, 2020; Berberoglu et al., 2020).

2.3.2.2. The Socio-economic Effects

- **Financial effects:** Flood disasters in Turkey cost several millions of dollars in environmental deterioration triggered by climate change, significantly affecting Turkish finances as reflected in the financial meltdown. The eight percent surge in the rate of carbon emissions has a connection to Greenhouse gaseous discharges – which solution calls for accountable carbon print both domestically and industrially in collaboration with the European Unifications for carbon boundary calculation (Kahn et al., 2021; Bütün, 2022; Ustaoglu et al., 2023).
- **Effect on Farming:** The farming sector accrued for a high percentage of carbon discharges in Türkiye – the agricultural products of high carbon discharges are cereal crops and animal rearing. These make the farming sector prone to the threats of desert encroaching and drought in the dry region and southeast part of Anatolia region, and too much reliance on importations of agricultural products Rojas et al., 2019; Rojas et al., 2018; Türkeş et al., 2020).

- **Effect on Electricity Generation:** Turkey faces a low amount of rainfall – which in turn affects hydro-power generation as predicted by the fall in the water level of dams and the shrinking of River Euphrates and Tigris. All these affect the river basin through its drainage patterns, reduce the hydro-power generation capacity, and accelerate the severe shortage of rainwater and loss of aquatic habitats (Turkes et al., 2020; Kurnaz, 2014; Topcu et al., 2010).
- **Effect on Tourism Industry:** The vacation industry in Turkey may turn out to be too warm for people in the Sunshine season. For instance, Antalya could also turn out to be too warm for people visitors throughout the institutions of learning in the Sunshine period. If the weather conditions are too severe, it reduces tourism activities (Demiroglu et al., 2021).
- **Effect on People's Wellbeing:** Over one thousand three hundred fifty populaces perished due to severe flooding between 1970 and 2014, while over two million populaces suffered due to climate change. Thus, climate change affects the total well-being of the people in Turkey due to the extreme weather conditions, chronic sickness affecting people across various age categories, frequent remote outbreaks of fire affecting people's health and farmland, and severe pandemic (Bayram & Öztürk 2021; Polat et al., 2017).

3. CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Methodological Procedures

In this thesis, the researcher shall investigate 720 students based on how they perceive climatic change as a global endemic risk towards human activities. The reality of climate change prevailing in our world with emphasis on age, gender, environmental threat, collective responsibilities, and awareness towards climate change. In this session, the research deals with the design and methods that apply to this study. Thus, the methodology of this research work will consist of the following:

3.1.1. Population and Sample Distribution

The researcher has the opportunity to work with several students in six universities across the six geopolitical zones in Nigeria (Southwest, South-South, Southeast, Northcentral, Northwest, and Northeast). The researcher shall also randomly sample all students, regardless of their academic status, in every faculty within the selected universities in Nigeria.

However, the researcher accessed the geographical location of these Universities. The sites of these Universities highlight an implication or a great challenging situation for the researcher. Nigeria has Thirty-six states and one Federal Capital Territory - Abuja. These states are also further classified into six geopolitical zones (see details in Figure 3.1). There are six zones: South-West, South-South, North-Central, South East, North-West, and North-East. The North-West Zone (Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, and Zamfara States), with ten Universities, has the highest number of Federal universities. South-West (Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo States) has the highest number of State and Private Universities. This Zone has 11 state Universities and 36 Private Universities. The researcher summarized these university types across the six geological regions based on equal representation on the part of private, state, and federal universities.

On an individual state level, all the states in Nigeria, including the FCT, have a Federal University. Likewise, all the state has their funded Universities. FCT does not have a state University. Twenty-six states have one state University each, and seven

have two state Universities; Bayelsa and Ondo have three state Universities, respectively, while Imo state has the highest with six. Eleven states in Nigeria (Niger, Plateau, Bauchi, Borno, Gombe, Yobe, Jigawa, Kebbi, Sokoto Zamfara, and Bayelsa) do not have a Private University.

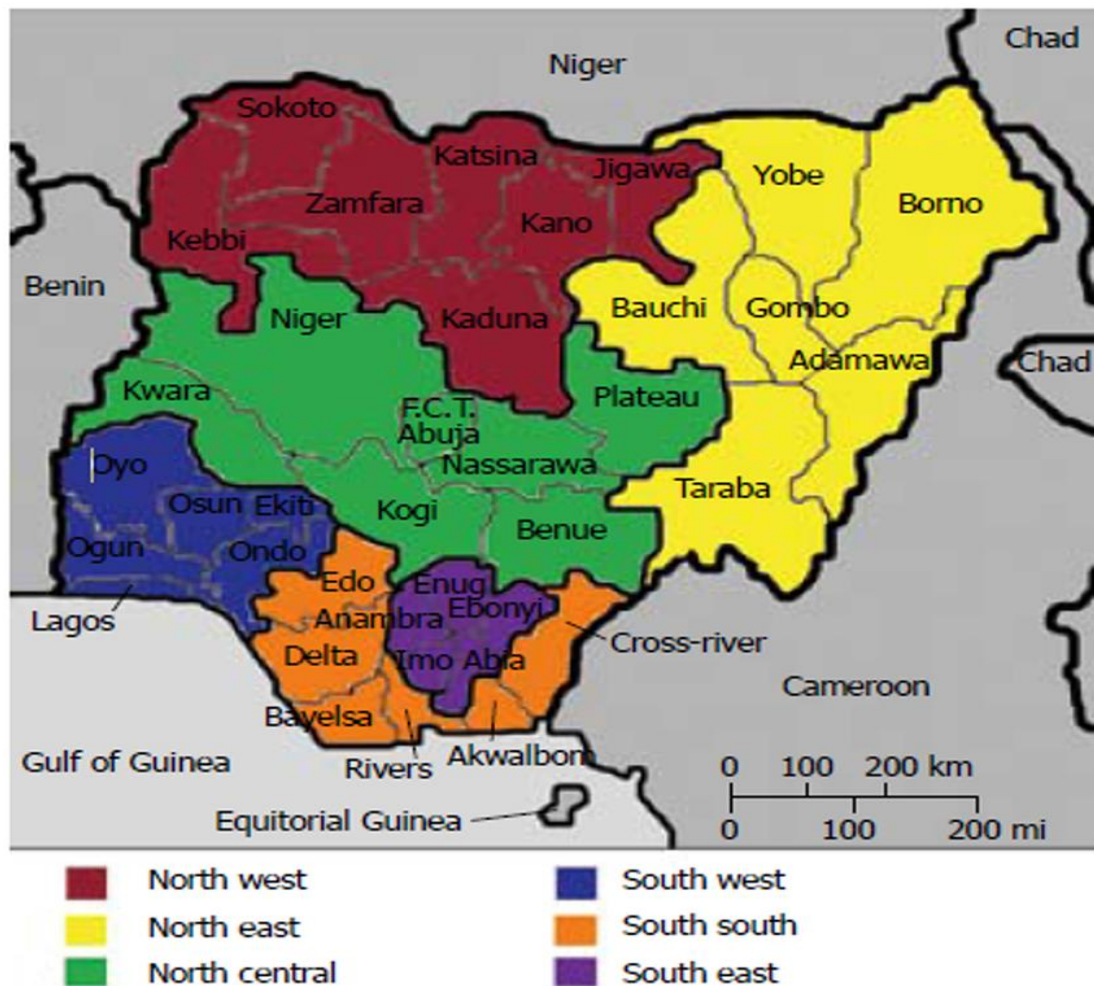


Figure 3: The Breakdown of States across the Six Geopolitical Zones (Akinlua et al., 2015)

In comparison, 12 states have only one private University. Abuja, the FCT has four private Universities. Oyo State has seven private Universities, Osun State has eight private Universities, and Ogun State has the highest number with 12 private Universities.

Figure 3.1 presents the breakdown of each state in the geopolitical zones and the number of universities available in each state.

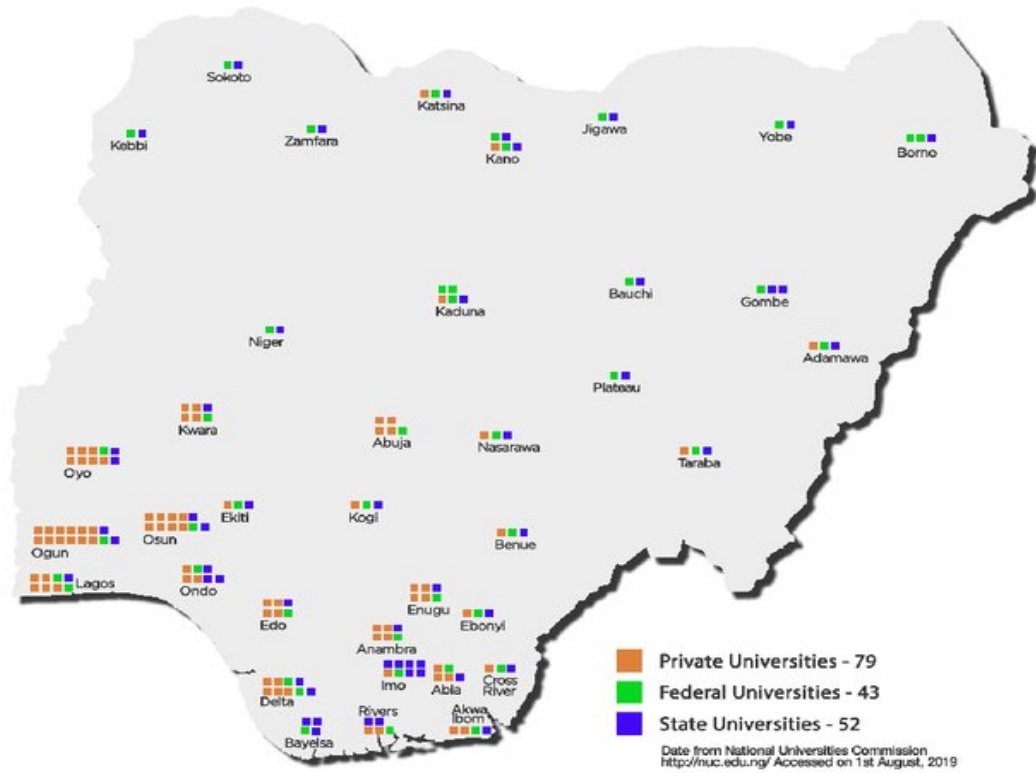


Figure 4: The Breakdown of Universities in each State of the Geopolitical Zones (Mogaji, 2019)

3.1.2. Research Design

The research incorporates both quantitative and qualitative methods, thus making it a mixed-methods design.

At first, the research uses these approaches to comprehensively investigate multifaceted students' perceptions of climate change and its associated factors across six universities in Nigeria. This hybrid research design allows for a holistic and comprehensive exploration of the complex interplay between demographic variables, awareness, attitudes, and proposed solutions concerning climate change among the student population. The quantitative phase involves structured surveys to gather numerical data or insight. At the same time, the qualitative phase utilizes open-ended questions and follow-up interviews to capture in-depth understandings using the quantitative method and contextual nuances, enriching the overall knowledge of students' perceptions of climate change and politics.

Second, choosing the hybrid method conveys or leverages the strengths of each approach and provides a more comprehensive understanding of the research questions. While quantitative data provides numerical insights into broad trends, qualitative data adds depth and context, capturing the diverse perspectives and narratives that may not be captured by quantitative measures alone. Data from the integrated approaches also aids in validating findings from the other, thus contributing to the robustness of the study.

3.1.2.1. Quantitative Method

The quantitative approach to the study involves the distribution of structured surveys among 720 students across the six geopolitical zones of Nigeria. This phase aims to gather numerical data, employing statistical analyses to examine patterns, correlations, and trends related to demographic profiles, attitudes toward climate change, and awareness levels. It involves surveys with closed-ended questions prepared to facilitate a broad understanding of the prevalence of particular beliefs or opinions among the student population. The large sample size enhances the generalizability of findings to the wide-ranging student population. The researcher applied Standard Version 20.0 of the SPSS to analyze the data collected under the quantitative approach. It helps to facilitate the computation of descriptive statistics, inferential statistics, and reliability assessments for the study.

3.1.2.2. Qualitative Method

For the qualitative approach, the researcher applied Open-Ended Questions and Interviews. The qualitative approach involves incorporating open-ended questions within the survey instrument, allowing respondents to express their perspectives in greater detail. The qualitative approach employs open-ended questions and interviews to add depth to the investigation. It will enable students to express their views in their own words, capturing the richness of their perspectives and the underlying reasons for their opinions. Subsequently, after administering the questions, follow-up interviews with a subset of participants provide an in-depth exploration of themes emerging from the quantitative data.

To analyze the data collated qualitatively, the data were subjected to thematic investigation to identify recurring patterns, narratives, and themes showing an understanding of the student's perceptions of climate change and its politics.

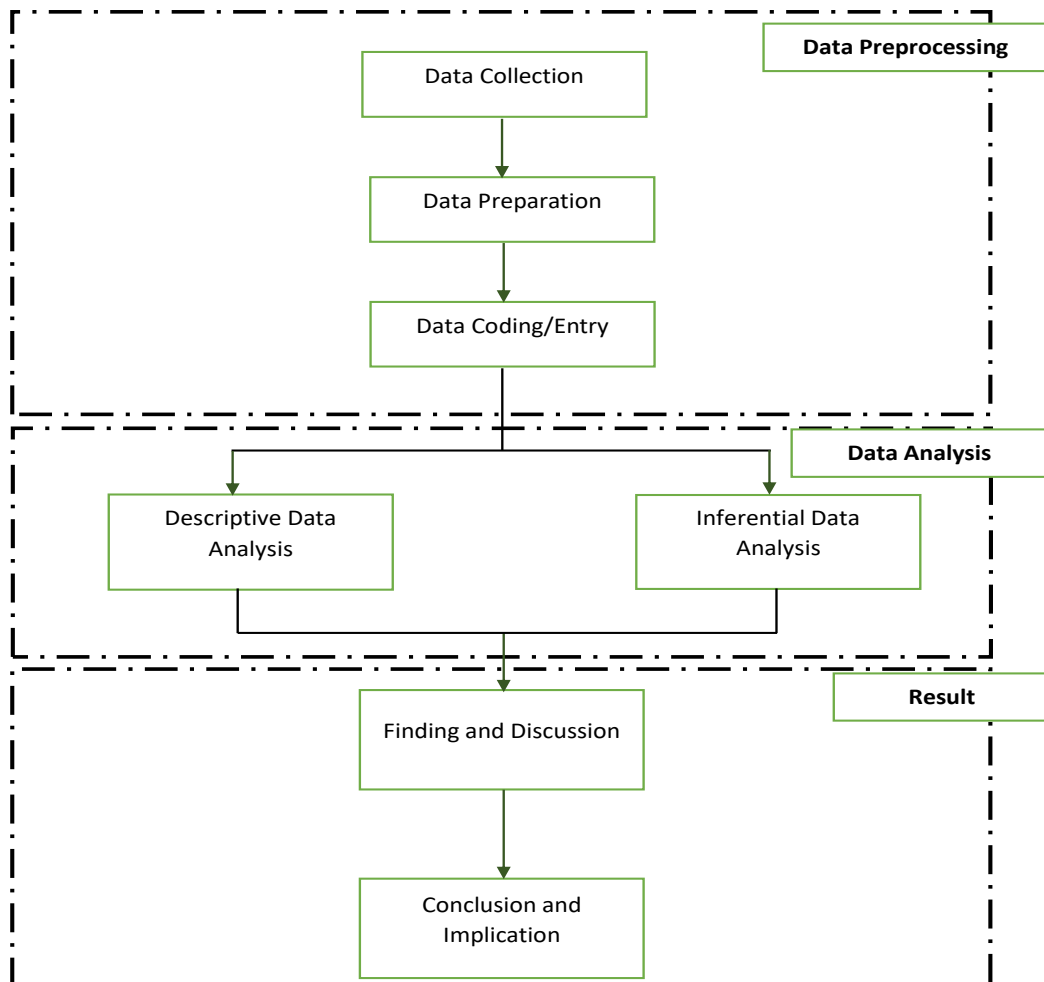


Figure 5: Showing research processes (Author)

3.1.3. Development of a Follow-Up Questionnaire

The researcher conducted interviews using the questions from the survey. These questions allowed more in-depth answers from the students. The interview used open-ended questions that followed along with the survey/questionnaire. The development process of the questionnaire first involves an extensive review of relevant literature on climate change perceptions among university students. Insights from these

existing studies informed the identification of critical variables and constructs to be measured.

After the reviews of the literature and the research objectives, the researcher identified eight primary constructs: Climate Change (CC), Climate Change Threat (CCT), Human Activities (HA), Remedies to Climate Change (RCC), Collective Responsibilities (CR), Climate Change Awareness (CCA), Atmospheric Issues (AI), and Environmental Value (EV) as primary constructs.

The researcher further conducted a pilot test involving 33 participants, aiming to assess the clarity, relevance, and comprehensibility of the research tool by respondents. At the end of this pilot test, confusing or ambiguous contents or questions were identified and revised based on responses from the pilot study - the questionnaire comprised mixed closed-ended and Likert scale items to facilitate quantitative analysis. Alternatively, open-ended questions enable gathering qualitative insights and in-depth knowledge.

3.1.4. Data Collection

The researcher collected data via a questionnaire administered to 720 students in six selected universities across Nigeria's six geopolitical zones. The survey questionnaire comprehensively captured students' perceptions and attitudes toward climate change and politics. The development process involved several vital steps to ensure the instrument's validity, reliability, and alignment with the research questions and objectives.

3.1.5. Validity of Constructs

All the survey instruments used in the present study contain several impact statements in the questionnaire. The researcher ensured that the study tools were valid for the content and procedures. The thesis supervisor appraised and reviewed the validity of every item in the survey instrument. Requests for changes were incorporated or inputted at the final stage. Thus, it invariably indicated that there would be no adverse effects on the participants participating in the surveys and interviews.

This study examined eight constructs on “investigating the student perception about climate change and politics: the case of six universities across the geo-political zones of Nigeria. The constructs are Climate Change (CC), Climate Change Threat (CCT), Human Activities (HA), Remedies to Climate Change (RCC), Collective Responsibilities (CR), Climate Change Awareness (CCA), Atmospheric Issues (AI), and Environmental Value (EV). Statistical Package for Social Science (SPSS) Standard 20.0 (Staggs, 2019; Pallant, 2020) applied to compute the descriptive and inferential statistics and to perform reliability. However, content validity follows with the supervisor's permission at Karabuk University in Turkey. Besides that, I consulted with experts in the environmental science field to validate the instrument/items before using Pearson Product Moment Correlation (PPMC), proving the validity and relationship among the constructs used. Table 3.1 illustrates the correlation relationship:

Table 1: Illustrates the correlation relationship (Author)

		CC	CCT	HA	RIP for climate change	CR	CCA	AI	EV
CC	Pearson Correlation	1	.700**	.679**	.390**	-.152**	.064	.248* *	.453* *
	Sig. (2-tailed)		.000	.000	.000	.000	.089	.000	.000
	N		696	696	696	696	696	696	696
CCT	Pearson Correlation		1	.486**	.294**	-.176**	.061	.209* *	.359* *
	Sig. (2-tailed)			.000	.000	.000	.108	.000	.000
	N			696	696	696	696	696	696
HA	Pearson Correlation			1	.377**	-.245**	-.058	.368* *	.357* *
	Sig. (2-tailed)				.000	.000	.125	.000	.000
	N				696	696	696	696	696
RIP for climate	Pearson Correlation				1	-.142**	.082* *	.198* *	.305* *

change	Sig. (2-tailed)	.000	.030	.000	.000
	N	696	696	696	696
CR	Pearson Correlation	1	-.031	.164*	-.063
	Sig. (2-tailed)		.417	.000	.095
	N		696	696	696
	Pearson Correlation		1	.055	.191*
CCA	Sig. (2-tailed)			.148	.000
	N			696	696
	Pearson Correlation			1	.273*
AI	Sig. (2-tailed)				.000
	N				696
	Pearson Correlation				1
EV	Sig. (2-tailed)				
	N				

****.** The relationship is significant at the 0.01 level (2-tailed). *****. The relationship is significant at the 0.05 level (2-tailed). CC (Climate Change), CCT (Climate Change Threat), HA (Human Activities), RIP (Remedie/Improvement Proposals), CR (Collective Responsibilities), CCA (Climate Change Awareness), AI (Atmospheric Issues), EV (Environmental Values)

3.1.6. Reliability Analysis

The coordination of the survey instrument worked within the study's scope – because the researcher shall administer the questionnaire to the targeted students. The measurement shall be consistent throughout the study without deviation from the study's scope and the questionnaire.

To ensure reliable constructs, eight construes on Cronbach's Alpha reliability tests focused strictly on Climate Change (CC), Climate Change Threat (CCT), Human Activities (HA), Remedies to Climate Change (RCC), Collective Responsibilities (CR), Climate Change Awareness (CCA), Atmospheric Issues (AI), and Environmental Value (EV) to determine consistency across the variables. The pilot test results, with 108 items and 120 questionnaires administered in selected sample areas in

six universities across the geopolitical zones of Nigeria, accordingly revealed a significant value of Cronbach Alpha, as depicted in the next paragraph below regarding the pilot reliability test.

The instrument's content validity and the test pre-test enabled the researcher to identify ambiguous words and set Cronbach's alpha at .6 during the pilot reliability with 108 items per variable. These include Climate Change (CC) $\alpha=.701$, Climate Change Threat (CCT) $\alpha=.743$, Human Activities (HA) $\alpha=.788$, and Remedies to Climate Change (RCC) $\alpha=.781$, Collective Responsibilities (CR) $\alpha=.778$, Climate Change Awareness (CCA) $\alpha=.733$, Atmospheric Issues (AI) $\alpha=.744$, and Environmental Values (EV) $\alpha=.737$ Cronbach alpha for further analysis.

The researcher used 696 respondents for the actual research size. Concerning 108 items used in the questionnaire as reliable items in the pilot study, the researcher employed them and computed the same variables based on 696 usable responses received for the survey for reliability analysis after the pilot study. The total items used (117) and the result of the present research reliability illustrated in Table 3.2 based on Climate Change (CC), Climate Change Threat (CCT), Human Activities (HA), Remedies to Climate Change (RCC), Collective Responsibilities (CR), Climate Change Awareness (CCA), Atmospheric Issues (AI), and Environmental Value (EV) below:

Table 2: Reliability of constructs (Author)

VARIABLES	RELIABLE ITEMS USED	α =CRONBACH ALPHA
VARIABLES		
Climate Change (CC)	Climate C1, CC2, CC3, CC4, Climate C5, CC6, CC7, CC8, CC9, CC10, CC11, CC12, CC13, CC14, CC15, CC16, CC17	.693
Climate Change Threat (CCT)	Climate CT4, CCT8, CCT9, CCT10, CCT11, Climate CT12, CCT14, CCT15, CCT16, CCT17	.606
Human Activities (HA)	HA1, Human A2, HA3, HA4, HA5, HA6, HA7, HA8, HA9, Human A10, HA11, HA12, HA13, HA14, HA15, HA16, HA17, HA18	.767
Remedies to Climate Change (RCC)	RCC1, RCC2, RCC3, RCC4, RCC5, RCC6, RCC7, RCC8	.639
Collective Responsibilities (CR)	CR2, CR3, CR4, CR6, CR7, CR8	.677
Atmospheric Issues (AI)	Atmospheric Issues (AI) AI2, AI3, AI4, AI5, AI6, AI9, AI10, AI12, AI13, AI14, AI17	.616
Environmental Value (EV)	EV1, EV2, EV3, EV4, EV5, EV6, EV8, EV9	.658

N=696

Several studies asserted that ideally, the Cronbach alpha factor of scale should be more significant than .7. Further, Cronbach alpha values are significantly sensitive to the number of items in the scale. With short measures (e.g., dimensions with smaller than ten variables), it is general to discover relatively low Cronbach values” p9, 6 accepted for educational purposes (Ravinder & Saraswathi, 2020). Thus, the computation of the reliable items followed the order to answer the research questions and hypothesis below:

- Are there any significant age differences in students' perceptions of climate change?
- Are there significant gender differences in students' perceptions of climate change?
- Are there any significant differences in students' perceptions of atmospheric issues toward climate change?

- Are there significant differences in students' perceptions of climate change threats?
- Are there any significant differences in students' perceptions toward awareness of climate change?
- Are there any significant differences in students' perceptions of environmental values toward climate change?
- Are there any significant differences in students' perceptions of human activities toward climate change?
- Are there any significant differences in students' perceptions of collective responsibility toward climate change?
- Are there any significant differences in students' perceptions of improvement suggestions/proposals toward climate change?

While the hypotheses followed thus:

- H1: There are significant age differences in students' perceptions of climate change.
H0: No significant age differences exist in students' perceptions of climate change.
- H1: There are significant gender differences in students' perceptions of climate change.
H0: There are no significant gender differences in students' perceptions toward climate change.
- H1: There are significant differences in students' observation of atmospheric issues toward climate change.
H0: There are no significant differences in students' perception of observation of atmospheric issues toward climate change.
- H1: There are significant differences in students' perceptions of climate change threats.
H0: There are no significant differences in student perceptions of climate change threats.
- H1: There are significant differences in students' perceptions of awareness towards climate change.
H0: No significant differences exist in students' perceptions of awareness towards climate change.

- H1: There are significant differences in students' perceptions of environmental values towards climate change.

H0: No significant differences exist in students' perceptions of environmental values toward climate change.

- H1: There are significant differences in students' perceptions of human activities towards climate change.

H0: No significant differences exist in students' perceptions of human activities toward climate change.

- H1: There are significant differences in students' perceptions of collective responsibility towards climate change.

H0: There are no significant differences in students' perceptions of collective responsibility towards climate change.

- H1: There are significant differences in students' perceptions of improvement suggestions/proposals towards climate change.

H0: There are no significant differences in students' perceptions of improvement suggestions/proposals towards climate change.

3.1.7. Questionnaire Administration and Return Rate Reliability

Analysis

The researcher took decisive steps after the thesis supervisor approved further study on this thesis. Students to determine consent for participation in the survey. The researcher is optimistic about 100% of responses from the respondents in the survey field. The outcome of the study showed 696 participants across six universities in Nigeria. Each survey shall last approximately 18 minutes. Before the survey, the researcher shall brief the study and survey activities quickly and provide each participant with a consent form to read and sign.

The researcher administered 720 copies of the questionnaire to the undergraduate and postgraduate students of selected universities across the six geopolitical zones in Nigeria. Out of the distributed questionnaire, the researcher recovered 696 and found it helpful for analysis, giving a response rate of 96.7%. Find the details of the administered questionnaire in

Table 3: Response rate of asked questions (Author)

Name of Institution	Frequency	Percentage (%)
Federal University of Kashere-Gombe	120	115(95.8%)
Imo State University	120	116(96.7%)
Kwara State University	120	115(95.8%)
University of Ibadan	120	118(97.5%)
University Of Port-Harcourt	120	115(95.8%)
Uthman Dan Fodio University	120	117(98.3%)
Total	720	696 (96.7%)

Thus, all the responses jotted represent the main points regarding students' perception of climate change, as depicted in the above table. Thus, the questionnaire goes around to the respondents by random systematic technique.

3.1.8. Administration of the Follow-Up and Sample Size

All the jotted responses shall emphasize the main points regarding students' perceptions of climate change and politics. Thus, questionnaires and paper materials are fundamental tools for interviewing respondents in the study area. The study encompasses students from six geopolitical zones in Nigeria: Southwest, South-south, Southeast, Northcentral, Northwest, and Northeast (Table 3.4). Each geopolitical zone represents a distinct socio-cultural and environmental context within the country. Universities understudy include federal universities, state universities, and private universities. While the central federal government owns national universities, state universities are owned and funded by the state government, and private universities are, on the other hand, funded by private individuals.

Table 4: Nigeria states' distribution according to geopolitical zone (Author).

Geopolitical Zone	States
Northwest	Jigawa Kaduna Kano Katsina Kebbi Sokoto Zamfara.
Southwest	Ekiti Lagos Ogun Ondo Osun Oyo
South-south	Bayelsa Delta Edo Rivers
Northcentral	Benue Kogi Kwara Nasarawa Niger Plateau
Southeast	Abia Anambra Ebonyi Enugu Imo
Northeast	Adamawa Bauchi Borno Gombe Taraba Yobe

The study administration includes various federal, state, and private university students to capture diverse perspectives. It ensures representation from different educational institutions, each with its unique academic culture. The study considers the diverse nature of states, considering both urban and rural settings. For instance, urbanized states may have different perspectives on climate change than those with predominantly rural populations.

The choice of the sample location hinges on several reasons. The first was on Fair geopolitical representation. Since Nigeria is sub-divided into six geopolitical

regions, selecting universities across all six geopolitical zones ensures a comprehensive representation of Nigeria's diverse socio-cultural and environmental landscape. Thus, each zone brings unique perspectives shaped by regional characteristics, providing a holistic view of students' attitudes toward climate change.

Secondly, based on demographic variability, the six geopolitical zones exhibit noticeable variations in demographic factors, gender norms, and cultural influences. By including universities from each zone, the study can explore how these demographic variables intersect with students' perceptions of climate change.

Similarly, based on the environmental context, especially ecological and climate diversity, Nigeria's geopolitical zones experience diverse ecological and climatic conditions. The study considers how these environmental factors influence students' awareness and attitudes toward climate change. Other rationales include economic disparities, i.e., different zones are affected by resource availability and environmental policies and ethnic and cultural diversity, among others.

3.1.9. Stratified Random Sampling

Stratified random sampling is a kind of possibility technique in which a study group can divide based on the entire populace into several non-overlying, similar groups (divisions) and arbitrarily select ultimate respondents from the several divisions for study, which minimises expenses and facilitates effectiveness. Participants in each cluster or set should be dissimilar so that every respondent of all sets has an equivalent chance of selection by applying the ordinary possibility concept (Fleetwood, 2023). This selection technique is also called random quota sampling.

Stratified random selection is a general data application method for the selection of a populace or respondents in various subdivisions based on some shared features. Group categorization aims to guarantee each division or group in the sample areas and to create extrapolations about particular populace subdivisions. Subdivision study is vital for channeling actions to separate selected clusters or sets. This method is helpful in situations where the populace is diverse, and a modest random selection may not offer precise outcomes (Fleetwood, 2023). By separating the populace into divisions or clusters, scholars can guarantee that their clusters are representative of the

entire populace and do away with selection prejudices. The following are the stages of a stratified random selection as applied by the researcher:

- State the aim of the respondent.
- Identify the social groups and design the sum of divisions or clusters required. These social groups should be in connection with the aims of the study.
- Apply an existing selection framework or structure.
- Develop variations after assessing the selection structure or framework based on sample areas and selection of clusters.
- Given the total populace, every group or cluster should be exceptional, and every cluster should have equal representation.
- Allocate an equal selection to every cluster.
- Create the number of respondents for every cluster or set based on the researcher's prerequisite.
- The scholar can select the respondents from every cluster or set.

3.2. Data Analysis and Procedures

3.2.1. Data Entry and Analysis

Survey responses are coded and transferred into SPSS software. The data analysis uses both descriptive and inferential data analysis. The descriptive data analysis involves the use of Computed central tendencies (mean, median, mode) for constructs like Climate Change (CC) and Climate Change Threat (CCT); generation of frequency distributions for categorical variables (age groups, gender); and cross-tabulation to explore relationships between variables (Table 3.5).

The inferential data analysis, on the other side, utilized T-tests to assess differences in means, e.g., age and gender differences in perception toward climate change; Applied Analysis of Variance (ANOVA) to examine variations in means across groups, e.g., universities or geopolitical zones; Employed regression analysis to explore relationships between independent variables (age, gender) and dependent variables (perception of climate change) and; Chi-Square tests to analyze associations

between categorical variables (e.g., gender and awareness toward climate change) (Table 3.6).

Table 5: Showing descriptive data analysis (Author)

Descriptive Data Analysis		
Central Tendencies	Mean	<ul style="list-style-type: none"> • Calculate variables like CC, CCT, and HA, • To understand the average response
	Media	To gauge the distribution of response
	Mode	To identify the most frequent response
Frequency Distributions		To create categorical variables like age, gender To understand the distribution of respondents across different categories
Cross Tabulation		To assess relationships/associations between two categorical variables

Table 6: Showing inferential data analysis (Author)

Inferential Data Analysis		
	T-Test	To assess significant differences between means, e.g., testing for age and gender differences in students' perception toward climate change.
	Analysis of Variance (ANOVA)	It applied to examine variations in means across more than two groups, facilitating the investigation of differences in perceptions among students from different universities or geopolitical zones.
	Regression Analysis	It explored the relationship between independent variables (e.g., age, gender) and dependent variables (e.g., perception of climate change). The Multivariate regression allowed for the assessment of the collective impact of multiple variables on perceptions.
	Chi-Square	It applied for categorical variables, such as assessing the association between gender and awareness toward climate change.

It helped identify if there was a significant relationship between two categorical variables.

The statistical method determined the nature of the data collected and the research questions posed in the study. The researcher selected T-tests, ANOVA, regression analysis, and Chi-Square tests to address various aspects of the research, offering a comprehensive and nuanced analysis of students' perceptions of climate change. Collectively, these methods provided a robust framework for deriving meaningful insights from the survey data.

3.2.2. Analysis of the Survey Data

This research distributed and collected questionnaires from 720 students across six universities (namely the University of Ibadan, Kwara State University, University of Port-Harcourt, Usmanu Danfodio University, Federal University of Kashere, and Imo State University) in the geopolitical zones of Nigeria. This study shall be mixed research, quantitative and qualitative, with the principal objective to focus on students' perceptions of climate change. After administering the questionnaire and retrieving the survey exercise's feedback, the survey applied the Statistical Package for the Social Sciences (SPSS). Thus, the outcome of the results shall measure central tendencies such as the mean and standard deviation of each variable relating to the attributes of study on university students' perception of climate change.

3.2.3. Analysis of the Follow-Up Questionnaire Data

The research applied the step-by-step method to analyze the data as follows:

- It involved processing of collated data by transcribing the interviews from respondents.
- It involves reading over the interview notes and categorizing the information into possible themes.
- It categorized information on themes for coding responses to differentiate similar reactions from the students.

3.2.4. Ethical Issues

In compliance with ethical standards on research involving subjects, this thesis shall uphold the principles of protecting every student's dignity and privacy. The research aimed to provide valuable information, appropriate support, and cooperation from the respondents in the study area. Data collected for the study shall be kept strictly confidential.

The research investigator's comportment is crucial in positioning an empirical study (Adu-Ampong & Adams, 2020). Thus, in accompanying this people involvement and practical study, matters of outlook, dressing, and communication modality to the respondents are fundamental issues of consideration, mainly at the six universities located in the six geopolitical zones of Nigeria – in which there are diverse ethnic groups and being an academic community. The researcher seeks the service of research supporters while training them briefly to attend to the respondents. The research supporters are fellow students with deep knowledge of the university campus, students, and lecture schedules. They helped a lot in approaching the Dean of student affairs, university ethical committee, lecturers in charge of general compulsory courses, and the chief security officers, namely the University of Ibadan, Kwara State University, University of Port-Harcourt, Usmanu Danfodio University, Federal University of Kashere, and Imo State University, respectively. The circumstantial and social contacts between the research investigator and research supporters with the university communities enabled accessibility. They developed a favorable environment for responsive interactions and transparency in answering the questionnaires (Berger, 2015). Considering the impact and power of the university campus's Dean of Student Affairs, lecturers, and Chief Security Officer, they acknowledged respectfully by giving us their full support and reception.

Because this study requires primarily students' involvement, ethical approval passed through the six universities' ethical departments before the investigations, interactions with the students, and the randomly selected participants on the university campus, the researcher seeks proper consent from the university Authority and other concerned departments to clarify the justification behind the research for their permission. Correspondingly, the researcher also seeks Authorization from the participants for their permission to be involved in the study. A thorough enlightenment

and clarification about the study's objectives with the students actualized it. The respondents offer a significant volume of time to contemplate their involvement in the research. Participants guarantee their privacy and secrecy regarding their identities and the answers they provide in the questionnaires, and to ensure the concealment of respondents for the investigation, discussions assumed names applied to some respondents or students, mainly in the significant interactions involving opinion expression. Later, the researcher administered interrogating forms to every respondent to enable the chance to answer the written interrogations openly. The researcher further exposed the respondents' liberties to disengage from the statistics-gathering procedure when they created unanticipated difficulties in the research path.

3.3. Previous Studies

Coskun (2010) revealed climate as an ambiguous and complex term. It applied symbolic description to teach pupils, including females and males. The study represents climate as humankind, butterfly, lifespan, existing, atmospheric conditions, and affection. At the same time, rainfall connotes visitors, life, breeze, respiration, weather period, fresh air, hues, earth ground, brightness, and daddy. The study depicted that weather constitutes various notions and is complex to describe using a single symbolic description called metaphor. The uniqueness of Coskun's analysis reflects the figurative description of female and male pupils; the research outcomes revealed that male pupils formed more symbolic descriptions than their female counterparts. Coskun concluded that metaphors are durable or practical tools for understanding and describing ambiguity and conceptual events regarding climate variation.

Coskun & Aydin (2022) embarked on the empirical survey of one hundred sixty-one university scholars from one year, 2010 to 2011/161, in the Geography Section of Gazi University. The outcomes indicated that the geography instructor correctly responded to the vivid interrogations regarding the atmospheric glass-house impacts. In contrast, the respondents were resolute with misunderstandings concerning the explanations, costs, and reactions of rising atmospheric glass-house impact due to critical assessment – the outcomes do not have any remarkable implications for gender and educational status.

Coşkun et al. (2022) conducted research that reveals the course and harshness of the drifts in the various humid and sunshine periods in the Susurluk Water Shed – because of the severity of temperature rising and climatic variation in Türkiye. The study projected severe weather conditions from 1970 to 2060. The researcher did a critical assessment by applying the highest heat records sourced from weather sites over a long period or decades, using the CMIP5 RCP 8.5 situational model and provincial weather statistics lessening procedures. The study also revealed the extreme weather inclinations that run throughout the weather sites during the spring of sunshine, implying remarkable extreme climatic conditions.

Coskun and Edward (2022) have a diverse and prudent empirical solution or remedy as climatic change proposals by fundamentally assessing associated searches on tropical rainforests, seaside/riverine areas, and sparse and densely populated ecosystems. These areas significantly showed severe effects of climate change – which also remarkably influence how people think about climate change. The research also applied that people or policymakers in remote and densely populated areas may probably reflect differently about climate change policies.

Coskun and Edward's (2022) empirical research focused on bridging this void vacuum and contributing to the academic community regarding climate change teaching programs, information, and understanding. The study reveals climate change as a severe contentious matter that triggers above the space of ecological reasoning and ideologies that environmental specialists and scientists frequently showcase. People representatives, Legislators, public administrators, business establishments, profit-minded establishments, media, learning institutions, and the Public, both rural and city, showed active involvement in the climatic variation saga. Notwithstanding the vast actions taken by the Kyoto Protocol and other global climatic change activists, private multinationals refused to comply. They mostly played politics to the detriment of environmental and climatic values.

Dilek, Atalay, and Coskun (2022) on the practical investigation of climate change severities - the outcomes disclose vital statistics concerning the climate change drifts. Their studies indicate that the fluctuations in the heating or sunshine period are highly severe compared to the winter season. Based on the Mann-Kendall inclination assessment, the data collected provide more than ninety-five percent significance

throughout the selected weather sites: Mediterranean Sea shore areas, Kara-Deniz areas, and Aegean Sea shores. These areas are known for high humidity levels. The study's outcomes reflect a high level of atmospheric humidity due to worldwide climatic variation.

Levrini et al. (2021) utilized the ideologies of imminent orientation actions and imminent rationale, which pragmatically apply science-based teaching about climate change. They projected integrating coming-day rationale abilities into college learning, such as simulation rationale, structural reasoning, reasoning above the level of realities, operational capabilities, and capabilities to coordinate unforeseen circumstances and ambiguities. The study disclosed youngsters' conception of the imminent days - which is fundamental to this research. The youngsters understand the coming days to be far, closer, and unrealistic and how they could connect with our current world and climatic crises.

Liu (2022) revealed a broader understanding of learners' capabilities or perception of discourse climatic crises from systematic views. However, the general perception of skills was uniformly at a lower rate. The researchers noted constructive transformations in skill and science-based activities after an extended range of diverse teachings on climatic change. These transformations depicted comprehensive awareness and advancement in various factors promoting the rationale behind climate change. The study concluded that most school students decided concurrently based on circumstantial, technicality, and time-based perceptions when pronouncing necessary objectives and prospective trials to execute an anticipated climate change remedy.

Mansuroğlu et al., 2021 the study exposed many adverse ecological impacts, including climate change that minuses life-driven climatic relief, particularly in municipal zones, with serious socio-financial in the metropolitan urban centers of Antalya. The study is crucial because it depicts life-driven climate relief and the behaviours of individuals in the direction of climatic change, the vacation industry, and city management.

Romero Ariza et al.'s (2021) research outcome disclosed that most scholars at the University of Jaen (Spain) denied that humankind is responsible for the menace of climate change. The study applied statistical and science-based facts to substantiate the stance of their argument regarding climate change rhetoric. Based on the constructive

discussion capabilities and concrete rationale, the outcomes of the empirical survey allied with present informative values associated with the Science, Technology, Engineering, and Mathematics teaching to enhance science-based actions and learning regarding climate change.

Yazici (2020) explained how climate teaching in scientific studies and especially in graduate studies, through the link of climate issues with the present world and the severe impacts of climate change globally. Therefore, the study reflects an origin and offers a perception for imminent studies on climate and climatic teaching. It has attained a high force in current ages. From a conceptual perspective, numerous searches surveyed the graduate thesis in diverse fields or topics in Turkey. Examples are music, hi-tech, chemistry, geography, social studies, online environmental studies, handwriting practices, and mathematics.

Yilmaz et al., 2023 the research revealed the impacts of university scholars' data ratings on global warming and climatic change based on their knowledge of social obligation and ecological attitude by the understanding of the threat involvement. Thus, the researcher aimed to elaborate on the associations between related climatic matters and human actions that apply to Partial Least Squares Structural Equation Modeling (PLS-SEM).

In addition, this section reviewed or appraised eight research papers on climate-related issues based on the Authorship, theme, year of publication, method, study area, and study content/scope. The description regarding this categorization emerged from the abstract, theoretical concept, research method, content of study, and concluding part – which serves as a framework for developing Table 3.7.

Table 7: Showing categorization of studies on climate change (Author)

Authors	Topic	Year	Method	Study Area	Study Content/Scope Of Study
Ahmed et al.,	Understanding climate change perception of teachers and students: an overview.	2021	Qualitative Method	General overview of existing studies	The study initialed an in-depth assessment of inquiries regarding views on climate change that differ between instructors and learners.
Betz & Coley	Human exceptionalist perception of climate change	2023	Mixed-Method	Northeastern University, Boston, USA	The article surveyed climatic change knowledge and involvement by the tools of an instinctive form of reasoning and social specialists.
Hestness et al.	Examining the relationship between middle school students' sociocultural participation and their ideas about climate change	2019	Qualitative Method	USA	The research pragmatically used the social and cultural concepts to observe the climate change notions messaged by a selected cluster of intermediate college scholars.
Mejía-Cáceres et al.	Political Discourses as	2023	Qualitative Method	Brazil	The research focused on

		A Resource for Climate Change Education: Promoting Critical Perception by Closing the Gap between Science Education and Political Education				online academic programs based on policies and implementation for climatic change teaching.
Oberman Sainz	&	Critical perception, critical pedagogy, and climate change education	2021	Qualitative Method	General overview	The study focused on reasoning or intellectual capabilities for pupils to distinguish science-based from non- science-based matters, evaluating proofs and statistics, and concluded through open discussion and debating.
Romero Ariza et al.		Promoting critical perception through mathematics and science teacher education: The	2021	Qualitative Method	Spain	The study discourse collaborative studies involvement in instructor teaching and evaluation of in-

	case of argumentation and graphs interpretation about climate change					depth reasoning and understanding to promote climate change agenda.
Tolppanen & Aksela	Identifying and addressing students' questions on climate change	2018	Qualitative content analysis	General overview of existing studies		The research surveys scholars' inquiries on climatic change and what students discover to be appropriate regarding climate change.
Vargas-Callejas et al.,	How do students perceive and evaluate responses to climate change?	2018	Qualitative Method	Brazil, Mexico, Portugal, and Spain		The study raised inquiries concerning the relationship between climatic change messages, teaching, and public awareness of scientific knowledge, revealing societal and cultural depictions of climatic change through open discussion among youngsters.

4. CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

This chapter presented the outcomes of the data analysis of the study. The researcher employed descriptive statistics techniques, Sample T-test, and ANOVA to analyze the respondents' demographic information, including frequency, percentage, mean, and standard deviation concerning the population to conduct the survey. The pilot study identified the underlying and appropriate items measured for each variable and answered all the research questions. This chapter also analyses and discusses the empirical results derived from this study. The information was analyzed employing frequency counts, percentages, item analysis, and Pearson Product Moment Correlation (PPMC). The data analysis broadly centered on descriptive and inferential aspects and finally ended with a discussion of findings.

Thus, the findings of the study were analysed and interpreted in two different fundamental ways as follows:

4.1. Descriptive Data Analysis

The descriptive statistics employed by the researcher address the frequency and percentage (%), degree of effects (Df), Statistical Mean (Mean), and Standard deviation (SD) of the responses based on investigating the students' perception of climate change and politics: cases of universities across six geopolitical zones in Nigeria. The descriptive statistics employed in this study serve a crucial role in elucidating the critical characteristics of students' perceptions of climate change and politics across six geopolitical zones in Nigeria. The chosen descriptive methods, including frequency and percentage (%), degree of effects (Df), Statistical Mean (Mean), and Standard Deviation (SD), are particularly suitable as they offer an effective means to summarize and present the demographic profiles of the surveyed participants. By providing frequencies and percentages, we gain a clear overview of the distribution of respondents based on gender, education status, age, institutions, and faculties. It further allows for the identification of trends and patterns within the dataset. By presenting data in a tabular format (as seen in Table 4.1 to Table 4.17), readers can quickly discern patterns related to gender distribution, educational

background, age groups, and the representation of different institutions. A practical illustration of how employing descriptive statistics provides a clear snapshot of the demographic background of the surveyed participant. It stems from the point that understanding the demographic composition is foundational for contextualizing subsequent analyses.

The same is valid with statistics on age differences, as it is crucial for capturing the diversity of age groups and presenting a comprehensive view of how various age cohorts perceive climate change. It provides a baseline for further exploration of age-related patterns. Descriptive statistics on gender differences offer a straightforward way to identify and communicate gender dynamics concerning climate change. It aids in understanding potential variations in viewpoints.

Descriptive statistics, particularly frequency distributions, summarize students' perceptions of climate change threats, threats to human activities, collective responsiveness, improvement proposals, atmospheric observations, and culture of environmental values. Descriptive statistics enable a succinct presentation and a robust toolset for presenting a nuanced and comprehensive overview of students' perspectives on various aspects of climate change, aiding readers in identifying critical demographic trends.

4.1.1. Demographic Background of the Respondents

First, demographic information from the surveyed participants depicted a total of 720 based on the questionnaire administered to undergraduates and postgraduates of the selected universities across the six geopolitical zones of Nigeria. It is only 696 wholly.

The researcher employed a valid return of 696 questionnaires as a sample without other uncompleted questionnaires. The total number of respondents used was 696, with 321 males and 375 females. The respondents included 46% males and 54% females. Similarly, the demographic table below indicates that most respondents (455, 65%) were undergraduates. In comparison, postgraduate respondents (241 35%) and the highest in age were above 30 years (408, 59%). Others were below 21 years (64, 9%) and 21-30 years (224, 32%). It shows several results in different institutions and

faculties, as illustrated in Table 8 below. Most respondents were from the University of Ibadan, with a total number and percentage of 118 and 17.0%, respectively. Uthman Dan Fodo University was next regarding the high number of respondents, 117 at 16.8%.

Meanwhile, Imo State University has a total of 116 respondents at a rate of 16.7%. Moreover, three other universities were equal in terms of respondents and percentages as listed: Kwara State University (115, 16.5%), University of Port Harcourt (115, 16.5%), and Federal University Kashere - Gombe State (115, 16.5%) respectively. Thus, the sample used was mature enough to investigate the students' perception of climate change: a case of selected universities in Nigeria and West Africa. It also reflects the enormous challenges climate change poses, which becomes a debatable topic at any conference. Thus, researchers work daily for a solution that enhances our world.

A diversity of population features has been assumed and later revealed to affect the view on climate change. The outstanding and stable discovery is the pattern of sex-gender concerns relating to climate issues. It exposed that gender is the most stable denominator for forecasting views on climate change. Most empirical searches showed that adult females showed more concern than adult males, and no other studies revealed any contradiction (McCright et al., 2016; Lewis et al., 2019). It also revealed significant male and female differences in the empirical studies conducted in the United States of America. The conceptual description for this relationship showed no clarity of significance and scope. Many adult females could depict social influence in offering higher thoughtful positions as significant threatening steps than adult male counterparts (Egan and Mullin, 2017; Bergquist & Warshaw, 2019). The relationship between adult females and males concerning weather-related issues impacts nationwide surveys – considering multiple evaluations of twenty-five stations and one hundred seventy-one educational searches across fifty-six countries (Hornsey et al., 2016; Hornsey et al., 2018). They revealed that adult females' views of concern regarding worldwide temperature increase were, to some extent, more remarkable than their adult male counterparts (Arıkan & Günay, 2021). Another survey depicted many adult females referring to weather-related menace as a terrible threat, with over fifteen percent greater than adult males.

On the other hand, it showed how academic background enhances the level of understanding regarding climatic variation education, whose outcome was comparatively low (Hornsey et al.2018; Egan and Mullin 2017). Driven positive perception revealed the absence of relationships. At the same time, governmental representatives with higher academic status proved to be more versatile in the opinions of climatic variation than those with low educational backgrounds. At the same time, the impact of age has been proven to be unremarkable, especially among youths running across both female and male genders (Hornsey et al.2016, McCright et al.2016, Egan and Mullin 2017). However, studies also revealed that the impact of financial status as an individual and nation varied significantly regarding global climatic variation (McCright et al., 2016). Religious belief has also proven to be the fear of threat from the adverse effects of climatic variation among faith beliefs and political affiliation in the United States, both liberal and non-liberal populace (McCright et al.2016; Konisky 2018). Globally, religious belief serves as a constructive tool to determine climate change interest among various nationalities of the globe. In summary, the existing study recommends that adult females, people with adequate academic backgrounds, and youngsters tend to show more interest in weather-related issues with massive proof of their religious background, not only in the United States but also across the globe. (Gleditsch, 2021).

Table 8: Demographic distribution of respondents (Author)

	Items	Frequency	Percentage %	Total	
Gender	Male	321	46		
	Female	375	54	Total=696, 100%	
Education Status	Undergraduate	455	65		
	Postgraduate	241	35	Total=696, 100%	
Age	Below 21	64	9		
	21-30	224	32		
	Above 30	408	59	Total= 696, 100%	
Institutions	Federal University Kashere-Gombe	115	16.5		
	Imo State University	116	16.7		
	Kwara State University	115	16.5		
	University Of Ibadan	118	17.0		
	University Of Port Harcourt	115	16.5		
	Uthman Dan Fodo University	117	16.8	Total= 696, 100%	
	FACULTIES	Humanities	116	16.7	
	Education	98	14.1		
Natural Science	156	22.4			
Medical Science	192	27.6			
Engineering	134	19.3			
	TOTAL			Total= 696, 100%	

N=696

4.1.2. The Relationship Between Age and Students' Perception of Climate Change

Table 9: Demographic distribution of respondents based on age (Author)

Items	Frequency	Percentage (%)
Below 21 years	64	9.2%
21 – 30 years	224	32.2%
Above 30 years	408	58.6%
Total	696	100%

Table 9 indicated that the majority of the respondents, 408 (58.6%), are above 30 years old, 224(32.2%) are within the age bracket of 21-30 years, while the remaining 64(9.2%) are below 21 years. The highest age was above 30 years, and other significant ages ranged from 21-30 years to below 21 years based on age categorization. Generally, there are no age limitations regarding university enrollment in Nigeria; enrollment is open to different age categories.

Table 10: Demographic distribution of respondents based on age descriptive analysis of climate change with age (Author)

	N	Mean	SD	Std. Error	95% Confidence Interval Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Below								
21 years	64	63.6875	8.78829	1.09854	61.4922	65.8828	47.00	85.00
21-30 years	224	63.6384	8.05856	.53844	62.5773	64.6995	46.00	85.00
Above								
30 years	408	63.6716	8.78154	.43475	62.8169	64.5262	44.00	85.00
Total	696	63.6624	8.54389	.32386	63.0265	64.2982	44.00	85.00

Thus, **Table 10** describes the Age difference in students' perception of climate change and politics: cases of universities across six geopolitical zones in Nigeria with total respondents aged 21 years below 64, 21-30 years, 224, and Above 30 years 408, respectively. The analysis outcome significantly revealed the variance test's homogeneity at .566 and .568.

On the contrary, these age-related comparisons by other related studies depict significant variations. However, more 11–16-year-olds (90%) were very or quite worried about global warming than 17–18-year-olds (82%). The research analyzed the answers to worldwide temperature rising among youngsters in the latter year of elementary education and early high college and found that a higher rate of elementary-aged pupils (75%) supposed that the earth's temperature rising was trendy now than college-aged students (65%). In the related empirical survey, sixty-six percent of primary school students showed keen interest regarding the globe heat increment, as related to fifty-five percent of high school students (Lee et al., 2020; Rousell & Cutter-Mackenzie-Knowles, 2020; Jones & Davison, 2021).

4.1.3. Gender Differences in Students' Perception Towards Climate Change

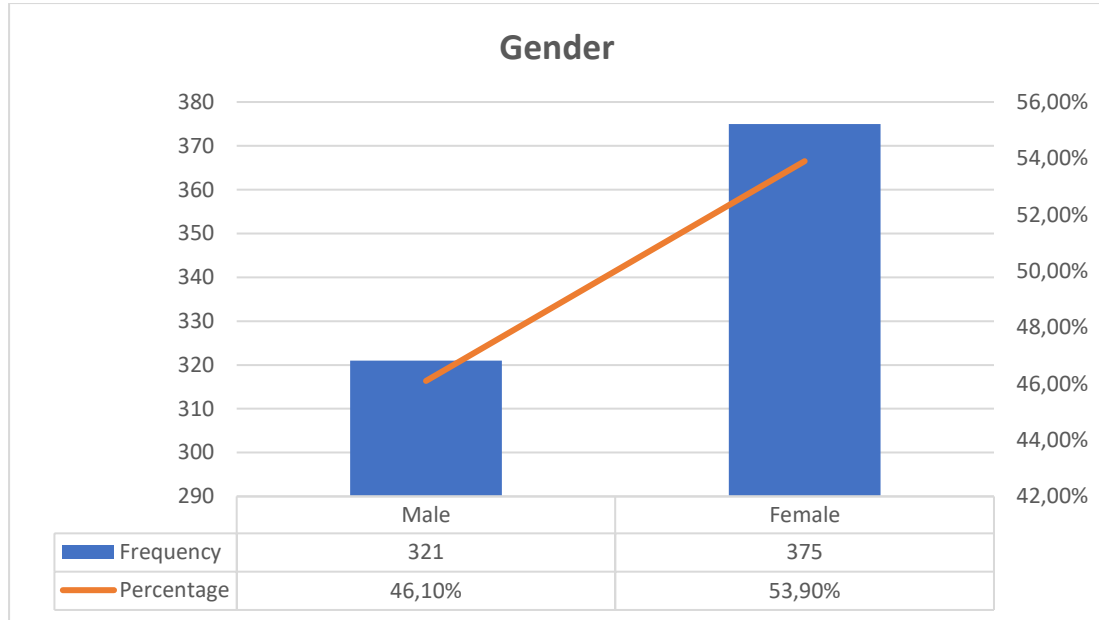


Figure 6: Demographic distribution of respondents based on gender (Author)

The Demographic information about the respondents' gender is in **Figure 6**, showing that the majority of the respondents, 375(53.9%), are female. In comparison, the remaining 321(46.1%) are male. The total number of respondents used was 696, with 321 males and 375 females. The respondents included, in approximation, 46% males and 54% females. It justified that more female than male respondents were in the cluster-sampled areas. Gender-related differences have ties to climate change based on the context of this study. It revealed risks to our modern world, occupations, well-being, protection, and safekeeping for womenfolk and young women across the globe. Factually, climatic change experts, academics, and public representatives have resisted showing the critical relationships between gender, societal fairness, and weather variation. As many gathered and studies depict their strong relationship, it is now to discuss the devastating effects of climatic alteration and the connections betwixt women-folks enablement and operative, and worldwide climatic deed (Women, U. N. 2022; Urzola & González, 2022; Lucas et al., 2022).

4.1.4. Students' Perception of Atmospheric Issues Toward Climate Change

Table 11 presents the results of analysis and discussions on the students' observation level as it affects climate change in Nigeria. In contrast, the result of their extent is in Table 12.

Table 11: Students' perceptions of atmospheric issues towards climate change (Author)

S/N	Items	Yes	No	\bar{X}	Std Dev
1.	Has the intensity of heat increased during summer?	570 81.90%	126 18.10%	1.82	.385
2.	Are heatwaves more frequent now during summer/drought?	489 70.30%	207 29.70%	1.70	.457
3.	Are there more frequent and strong storms during summer/drought?	403 57.90%	293 42.10%	1.58	.499
4.	Is there enough rainfall during summer/drought?	439 63.10%	257 36.90%	1.63	.483
5.	Do hailstorms/windstorms occur more frequently?	381 54.80%	315 45.30%	1.58	.749
6.	Is the severity of cold more irregular than in the past?	433 62.20%	263 37.80%	1.62	.485
7.	Does winter arrive on time?	383 55.00%	313 45.00%	1.55	.498
8	Does the Harmattan season last for a longer period?	405 58.20%	291 41.80%	1.58	.494
9	Is the frequency of rain the same as previously?	370 53.30%	326 47.00%	1.53	.499
10	Do cold waves occur with the same frequency as in the past?	419 60.20%	277 39.80%	1.60	.490

11	Has the intensity of fog decreased compared to previous days?	424 60.90%	272 39.10%	1.61	.488
12	Is there the presence of dewdrops along with fog?	392 56.30%	304 43.70%	1.56	.496
13	Does the severity of the cold linger for a shorter time?	458 65.80%	238 34.20%	1.66	.475
14	Does the dense fog conceal sunlight for more than a day?	377 54.10%	319 45.80%	1.54	.501
15	Is the timing of the sunrise delayed?	420 60.30%	276 39.70%	1.60	.490
16	Is the occurrence of rainfall the same as previously?	396 56.90%	300 43.10%	1.57	.496
17	Do rainfall events occur for 5-7 days during the rainy season?	446 64.10%	250 35.90%	1.64	.480
18	Does rainfall occur regularly during the rainy season?	430	266	1.62	.486
Weighted mean=4.08; std.dev=1.10					

Key: Yes(Y)=2 and No (N)=1

Table 11 examines the observational level of students in Nigerian universities towards climate change in Nigeria. The result of item-by-item analysis, as shown in **Table 11**, reveals that the respondents indicated that some of their predominant observations towards climate change include: heat intensity has increased during summer ($\bar{x}=1.82$; std dev. =.385); heatwaves are more frequent now during summer/drought($\bar{x}=1.70$; std dev. =.457); the severity of the cold seems to linger for a shorter time($\bar{x}=1.66$; std dev. =.475); rainfall events often occur for 5-7 days during the wet season ($\bar{x}=1.64$; std dev. =.480), and the severity of the cold seems to be more irregular than in the past ($\bar{x}=1.62$; std dev. =.485). The result also revealed in **Table 11** that the most negligible predominant observations towards climate change include energy supplier frequency of rain, the same as previously ($\bar{x}=1.53$; std dev. =.499) and that the dense fog conceals sunlight for more than a day ($\bar{x}=1.54$; std dev. =.501).

Based on this, the predominant students' observations towards climate change in Nigeria include: heat intensity has increased during summer, heatwaves are more frequent now during summer/drought, the severity of cold seems to linger for a shorter time, rainfall events often occur for 5-7 days during the rainy season, the severity of cold seems to be more irregular than in the past among others.

To establish the extent (High or Low) to which students' levels of observations towards climate change, the result depicted the test of norm using **Table 12**, as illustrated below.

Table 12: Test of norms table showing the extent (high or low) of students' perceptions of atmospheric issues towards climate change (Author)

Scale	Implication
Weighted mean=1.61; std dev=0.50	
"1-1.5"	Low
1.6-5.00"	High

From the results presented in **Table 12**, this section contained items on a 2-point Likert scale comprising Yes (Y) =2 and No (N) =1. Thus, the highest and least weighted scores were 2 and 1, respectively. Table 4.9b shows that the mean within the "1-1.5" range implies poor extent while "1.6-2.00" implies high. The weighted mean (overall) for the extent (high or low) to which students think their level of observations affects climate change in Nigeria is "1.61", which falls between the scales "1.60-2.00". It can, therefore, depict that the extent (high or low) to which students think their level of observation affects climate change in Nigeria is high. The United States of America demonstrated an example in an empirical study; it revealed that twenty districts openly discussed the air environment, notions of atmospheric conditions, and events according to the requirements. In contrast, eight districts rejected the call regarding the climatic notions. Thus, approximately eighty percent of grownups in the United States faced the contest of disinformation or inconsistent ecological folklore regarding climatic matters (Ruggiero, 2016; Orion & Libarkin, 2014).

The knowledge and perception of students regarding ecological matters will no doubt affect their ecological principles and preferences. Weather-related education for high school students is highly essential because they will, in the nearest function, have an encounter with such matters. The outcome of their choices then shall affect weather-related issues. Thus, with poor knowledge of worldwide weather variations and man's impact, there is no assurance that they can take proper protective measures to counter this critical ecological matter in their day-to-day endeavors and public governance situations. Considering the need for a climatic education for high school learners, it indicated the absence of proper representations for climatic education among high school students to discourse the most critical matter. In addition to this despair situation, limited searches revealed no proof of the severe influence of climatic education on learners' knowledge and ecological attitude (Klapp & Bouvier-Brown, 2021; Kuster & Fox, 2017).

4.1.5. Students' Perception of the Threat of Climate Change Threats

Table 13: Climate change as a threat to the environment (Author)

S/N	Items	SA	A	U	D	SD	\bar{x}	St d De v
1.	Everybody can do a lot to minimize the threat of climate change.	109	193	117	128	149	2.98	1.405
		15.7%	27.7%	16.8%	18.4%	21.4%		
2.	So many threats are associated with climate change, such as rising temperatures, sea levels, drought, heavy storms, desertification, and floods.	473	176	31	14	2	4.59	.698
		68.0%	25.3%	4.5%	2.0%	0.3%		
3.	The threat of climate change is inevitable because of how modern society works.	278	250	83	40	45	3.97	1.154
		39.9%	35.9%	11.9%	5.7%	6.5%		
4	People should minimize energy consumption to minimize climate change threats.	325	217	95	38	19	4.14	1.026
		46.8%	31.3%	13.7%	5.5%	2.7%		
5.	Climate change is just a natural fluctuation in the earth's temperatures.	263	221	135	46	31	3.92	1.110
		37.8%	31.8%	19.4%	6.6%	4.5%		
6.	If everyone else did, I would do my bit to reduce climate change threats.	267	217	93	83	36	3.86	1.200
		38.4%	31.2%	13.4%	11.9%	5.2%		
7.	There should be access to relief materials in case of potential environmental threats driven by climate change.	318	207	95	53	23	4.07	1.092
		45.7%	29.7%	13.6%	7.6%	3.3%		
8.	It is probably too late to address any threat relating to climate change.	134	192	156	98	116	3.19	1.350
		19.3%	27.6%	22.4%	14.1%	16.7%		
9.	Human activities have no significant impact on global temperature threat.	168	142	159	113	114	3.20	1.397
		24.1%	20.4%	22.8%	16.2%	16.4%		
10.	Climate change is something that frightens me.	247	183	142	79	45	3.73	1.235
		35.5%	26.3%	20.4%	11.4%	6.5%		
11.	Developing countries	208	179	158	70	81	3.52	1.3

	should take most of the blame for climate change.							23
		29.9%	25.7%	22.7%	10.1%	11.6%		
12.	I am uncertain about whether the climate change threat is happening.	301	152	111	65	67	3.80	1.3 39
		43.2%	21.8%	15.9%	9.3%	9.6%		
13.	Layout Steps to address the climate change threat.	299	198	93	64	42	3.93	1.2 13
		43.0%	28.4%	13.4%	9.2%	6.0%		
14.	People seem to be less concerned about addressing threats relating to climate change.	247	229	114	53	53	3.81	1.2 14
		35.5%	32.9%	16.4%	7.6%	7.6%		
15.	The proof of climate change threat is undependable.	260	168	171	44	53	3.77	1.2 28
		37.4%	24.1%	24.6%	6.3%	7.6%		
16.	The United States and other advanced nations should take most of the blame for climate change threats.	256	143	140	88	69	3.62	1.3 50
		36.8%	20.5%	20.1%	12.6%	9.9%		
17.	Claims that human activities are climate change threats are exaggerated.	206	198	142	92	58	3.58	1.2 66
		29.6%	28.4%	20.4%	13.2%	8.3%		

Key: SA = Strongly Agree, A = Agree, U=Undecided, D = Disagree, SD = Strongly Disagree

Table 13. presents information on the threatening effect of climate change on the environment. The result of item-by-item analysis, as shown in **Table 13**, explains that the respondents indicated that some of the profound environmental effects of climate change include so many threats such as rise in sea level, drought, heavy storms, desertification, and floods are associated with climate change ($\bar{x}=4.59$; std dev. =.698); energy consumption cutting to minimize climate change threat ($\bar{x}=4.14$; std dev. =1.026); access to relief materials in case of any potential environmental threats driven by climate change ($\bar{x}=4.07$; std dev. =1.092); climate change threat is inevitable because of the way modern society works ($\bar{x}=3.97$; std dev. =1.154) and that drastic steps need to address the climate change threat ($\bar{x}=3.93$; std dev. =1.213). The result also revealed in **Table 13.** that the most negligible environmental threat of climate change includes everybody can do a lot to minimize the menace of climate change

($\bar{x}=2.98$; std dev. =1.405) and that it is probably too late to address any risk relating to climate change ($\bar{x}=3.19$ std dev. =1.350). Based on this, climate change's most significant environmental threats include rising sea levels, drought, heavy storms, desertification, and floods. These are also associated with alleviating climate change threats, such as energy consumption minimization and access to relief materials in case of potential environmental threats driven by climate change and reducing excesses in modern lifestyles.

The results finally established the extent (high or low) climate change threatens the environment, using a normed test presented in **Table 14**. Considering the anticipated effects of climatic variation on man's healthiness and state of living, it appears realistic for it to have adverse effects psychologically, like growing nervousness and worry. The main impact on feelings by prevailing physical actions related to climatic change are severe weather tempests, prolonged dry seasons, land encroachment by the sea and desert as predictable (Manning & Clayton, 2018; Obradovich et al., 2018), and severe weather effects could trigger worrisome and mental torture. People's actions in these harsh weather conditions varied depending on the severity level. As unusual weather conditions surge, it connects to worldwide extreme weather variation (Clayton et al., 2017; Hayes et al., 2018; Limaye et al., 2018). It could be reasonable to think that weather severity may trigger fear, depression, and psychological imbalance worldwide due to unstable weather variations (Clayton & Karazsia, 2020).

Table 14: Test of norms table showing the extent (high or low) to which climate change serves as a threat to the environment (Author)

Scale	Implication
Weighted mean=3.75; std dev=1.21	
"1-2.5"	Low
2.6-5.00"	High

From the results presented in **Table 13**, this section contained items on a 5-point Likert scale: Strongly Agree = 5, Agree (A) = 4, Undecided = 3, Disagree =2,

and Strongly Disagree = 1. Hence, the highest and least weighted scores are 5 and 1, respectively. **Table 14** shows that the mean within the “1-2.5” range implies a low extent while “2.6-5.00” implies a high. The weighted mean (overall) for the extent (High or Low) climate change threatens the environment in Nigeria is 3.75, ranging from 2.60 to 5.00. Thus, it depicts a significant (High) extent to which climate change threatens Nigeria's environment.

4.1.6. Student Perception of Awareness towards Climate Change

Table 15: Student perception of awareness towards climate change (Author)

S/N	Items	A-Lo	A-Li	U	NVM	NAA	\bar{x}	Std Dev
1.	Through family members or a friend	340	178	112	46	20	4.11	1.078
		48.90%	25.60%	16.10%	6.60%	2.90%		
2.	A scientist.	311	207	114	41	23	4.07	1.068
		44.70%	29.70%	16.40%	5.90%	3.30%		
3.	The government.	306	204	129	36	21	4.06	1.049
		44.00%	29.30%	18.50%	5.20%	3.00%		
4.	An energy supplier.	312	186	124	39	33	4.02	1.133
		44.80%	26.70%	17.80%	5.60%	4.70%		
5.	An environmental organization	384	152	92	40	28	4.18	1.116
		55.20%	21.80%	13.20%	5.70%	4.00%		
6.	The media (i.e., television, radio, newspapers).	326	209	73	60	28	4.07	1.130
		46.80%	30.00%	10.50%	8.60%	4.00%		
7.	How vital is the matter of climate change personally?	326	209	73	60	28	4.07	1.130
		46.80%	30.00%	10.50%	8.60%	4.00%		
Weighted mean=4.08; std.dev=1.10								

Key: A-Lo= A Lot, A-Li=A Little, U=Undecided, NVM=Not Very Much, NAA=Not at All

Table 15 examines students' awareness level about climate change in Nigeria. The result of item-by-item analysis, as shown in Table 4.8, shows that the respondents indicated that the sources and areas where they possess some high level of awareness about climate change include environmental organizations ($\bar{x}=4.18$; std dev. =1.116); family/friend($\bar{x}=4.11$; std dev. =1.078); government($\bar{x}=4.07$; std dev. =1.068); mass media($\bar{x}=4.07$; std dev. =1.130) and the importance of climate change related-issues ($\bar{x}=4.07$; std dev. =1.130). The result also revealed in **Table 15** that the most negligible sources and areas where they possess some awareness about climate change include energy suppliers ($\bar{x}=4.02$; std dev. =1.133). Based on this, students maintain a high level of responsiveness about climate change in Nigeria, including environmental organizations, family/friends, government, and mass media, attaching importance to climate change-related issues, among others. It established the extent (High or Low) to which students' awareness levels affect their perception of climate change. The result revealed the test of norm using **Table 16**.

Table 16: Test of norms table showing the extent (high or low) of students' perception of awareness towards climate change (Author)

Scale	Implication
Weighted mean=4.08; std dev=1.10	
“1-2.5”	Low
2.6-5.00”	High

From the results presented in **Table 15**, this section contained items on a 3-point Likert scale comprising A Lot (A-Lo) =5, A Little (A-Li) =4, Undecided(U)=3, Not Very Much (NVM) =2 and Not at All (NAA) =1. Thus, the highest and least weighted scores obtained are 5 and 1, respectively. **Table 16** shows that the mean within the “1-2.5” range implies poor extent while “2.6-5.00” implies high. The weighted mean (overall) for the extent (high or low) to which students think levels of awareness affect their perception of climate change in Nigeria is “4.08”, which falls between the scales “2.60-5.00”. The result depicted that the extent (High or Low) students' levels of awareness affect their perception of climate change in Nigeria is high. Understanding how the youngsters of Southern African nations comprehend

climatic variation and perceive man operations as crucial in this event is vital. In the meantime, the college syllabus has combined info on areas of climatic change. This new syllabus acknowledges that youths are crucial in training the public on matters of climatic variation subject to their immediate ecosystems, which involves spreading information acquired from colleges regarding the subject matter. Therefore, the societal and traditional surroundings could offer interaction opportunities between youngsters and the public. Based on this, youngsters are vital tools and representatives that will disseminate climatic information faster (Nongqayi et al., 2022; Akrofi et al., 2019).

4.1.7. Students' Perceptions of Environmental Values Towards Climate Change

Table 17 depicts the result of students' perception of environmental values toward climate change in Nigeria. In contrast, the result shows the extent indicated in Table 18.

Table 17: Students' perception of environmental values on climate change (Author)

S/N	Items	SA	A	U	D	SD	\bar{x}	Std Dev
1.	Occupations today are more vital than preserving the environment for the future.	313 45.00%	178 25.60%	101 14.50%	68 9.80%	36 5.20%	3.95	1.205
2.	Unwilling to make personal expenses for the sake of the environment.	212 30.50%	205 29.50%	133 19.10%	96 13.80%	50 7.20%	3.62	1.246
3.	If a job causes environmental problems, I would rather be unemployed than carry on triggering	172 24.70%	214 30.70%	190 27.30%	60 8.60%	60 8.60%	3.54	1.198

	them.							
4.	Having a Motor vehicle is part of having a good life.	218 31.30%	205 29.50%	159 22.80%	77 11.10%	37 5.30%	3.70	1.173
5.	People have the right to alter the natural environment to suit their needs.	291 41.80%	163 23.40%	125 18.00%	74 10.60%	43 6.20%	3.84	1.247
6.	Humans are severely abusing the planet.	221 31.80%	170 24.40%	165 23.70%	102 14.70%	38 5.50%	3.62	1.222
7.	Plants and animals have the same civil liberties as people to exist.	260 37.40%	223 32.00%	150 21.60%	64 9.20%	45 6.50%	3.87	1.268
8.	Nature is adequate to cope with the effects of modern industrial nations.	246 35.30%	191 27.40%	150 21.60%	64 9.20%	45 6.50%	3.76	1.210
9	Humans are to rule over the rest of nature.	239 34.30%	167 24.00%	135 19.40%	82 11.80%	73 10.50%	3.60	1.340
10	The equilibrium of nature is very delicate and easily upset.	312 44.80%	185 26.60%	120 17.20%	52 7.50%	27 3.90%	4.01	1.127
Weighted mean=3.75; std.dev=1.21								
Key: SA = Strongly Agree, A = Agree, U=Undecided, D = Disagree, SD = Strongly Disagree								

Table 17 examines the students' perception of how environmental values affect climate change in Nigeria. The result of item-by-item analysis, as shown in **Table 17**, reveals that the respondents indicated that some of their predominant perceptions of how environmental values affect climate include the balance of nature is very

threatening and easily upset ($\bar{x}=4.01$; std dev. =1.127); jobs today are more important than protecting the environment for the future. ($\bar{x}=3.95$; std dev. =1.205); plants and animals have the same rights as man to exist ($\bar{x}=3.87$; std dev. =1.168); humans have the right to change the natural ecosystem to meet their needs ($\bar{x}=3.84$; std dev. =1.247), and having a car is part of having a good lifestyle ($\bar{x}=3.70$; std dev. =1.173). The result also revealed in **Table 17** that the most negligible perception of how environmental values affect climate was that once a job caused environmental problems, such a job must cease to carry on causing them ($\bar{x}=3.54$; std dev. =1.198). Based on this, it showed that some of the predominant perceptions of how environmental values affect climate in Nigeria include the balance of nature is very threatening and easily vulnerable, jobs today are more significant than protecting the environment for the future, plants and animals have the same civil liberties as man to exist, people have the right to alter the ecosystem to suit their needs among others.

To establish the extent (high or low) to which students' levels of perception of environmental values affect climate in Nigeria, a test of the norm applied to the use of the result in **Table 18**.

Table 18: Test of norms table showing the extent (high or low) of students' perception of environmental values towards climate change (Author)

Scale	Implication
Weighted mean=1.61; std dev=0.50	
"1-2.5"	Low
2.6-5.00"	High

From the results presented in **Table 17**, this section contained items on a 5-point Likert scale comprising Strongly Agree = 5, Agree = 4, Undecided = 3, Disagree (D) =2, and Strongly Disagree (SD) =1. Thus, the highest and least weighted scores obtained are 5 and 1, respectively. **Table 18** shows that the mean within the "1-1.5" range implies poor extent while "1.6-2.00" implies high. The weighted mean (overall) for the extent (high or low) to which students think their level of perception of environmental values affect climate in Nigeria is "3.75", which falls between the

scales “2.60-5.00”. It can, therefore, depict the extent (High or Low) to which students think their perception of environmental values affects the climate in Nigeria. Recent studies on ecological principles highlighted three facets of principle directions: self-centeredness, unselfishness, and the biotic environment. Self-centered principles motivate people to cater to more advantageous ecosystems and counter eco-friendly activities that affect their choices or policies. Unselfish principles gear up care for eco-friendly activities for the sake of humankind with no regard for individual or corporate gains. Biotic environmental principles champion the call for immediate ecosystems as fundamental necessities, disregarding personal gains for all humanity. Thus, people support principal directives for various reasons. The power of responsibility to every primary directive found a deep connection to the socio-traditional frameworks, which may transform all environmental concepts (Ignell et al., 2019; Haring & Jagers, 2018).

4.1.8. Students Perception of Climate Change Towards Human Activities

Table 19: Students perception of human activities as the leading cause of climate change (Author)

S/N	Items	SA	A	U	D	SD	\bar{x}	Std Dev
1.	There are several controversial proofs about climate change being caused by human activities.	319	191	97	55	34	4.01	1.164
		45.8%	27.4%	13.9%	7.9%	4.9%		
2.	Leaving the lights on in my home adds to climate change.	215	228	138	52	63	3.69	1.236
		30.9%	32.8%	19.8%	7.5%	9.1%		
3.	Climate change is a consequence of modern life.	293	199	138	26	39	3.98	1.130
		42.2%	28.6%	19.9%	3.7%	5.6%		
4	The effects of climate change are likely to be disastrous.	336	170	108	43	39	4.04	1.179
		48.3%	24.4%	15.5%	6.2%	5.6%		
5.	Nothing I do makes any difference to minimize climate change one way or another.	252	175	144	73	52	3.72	1.259
		36.2%	25.1%	20.7%	10.5%	7.5%		
6.	Pollution from industry is the leading cause of climate change.	174	201	181	101	39	3.53	1.174
		25.0%	28.9%	26.0%	14.5%	5.6%		
7.	I tend to consider information about human-caused climate change irrelevant to me.	288	132	135	101	40	3.76	1.284
		41.4%	19.0%	19.4%	14.5%	5.7%		
8.	Recent floods in this country are due to climate change.	214	208	155	70	49	3.67	1.209
		30.7%	29.9%	22.3%	10.1%	7.0%		

9.	It is too early to say whether human activities cause climate change.	197	194	161	95	49	3.57	1.228
		28.3%	27.9%	23.1%	13.6%	7.0%		
10.	Flooding is not increasing, and there is just more reporting of it in the media these days.	219	145	128	87	117	3.38	1.458
		31.5%	20.8%	18.4%	12.5%	16.8%		
11.	It is unnecessary to address the human cause of climate change because no one else is.	285	181	99	69	62	3.80	1.309
		40.9%	26.0%	14.2%	9.9%	8.9%		
12.	Experts agree that climate change and human activity is a real problem.	213	220	130	62	71	3.64	1.279
		30.6%	31.6%	18.7%	8.9%	10.2%		
13.	Nothing I do daily contributes to the problem of climate change.	209	194	128	86	79	3.53	1.334
		30.0%	27.9%	18.4%	12.4%	11.4%		
14.	Industry and business should be doing more to tackle climate change.	204	189	158	91	56	3.57	1.263
		29.0%	27.2%	22.7%	13.1%	8.0%		
15.	The government honestly wants to minimize the human effects of climate change.	321	152	119	60	44	3.93	1.242
		46.1%	21.8%	17.1%	8.6%	6.3%		
16.	I do not believe climate change is a real problem.	174	127	121	113	160	3.06	1.506
		25.0%	18.3%	17.4%	16.3%	23.0%		
17.	The government is not doing enough to address the human cause of climate change.	335	227	75	21	38	4.15	1.087
		48.1%	32.6%	10.8%	3.0%	5.5%		
18.	Morally, I am ready to do	233	228	141	62	32	3.82	1.129

something about climate change.					
	33.5%	32.8%	20.3%	8.9%	4.6%
Weighted mean=3.71; std.dev=1.25					

Key: SA = Strongly Agree, A = Agree, U=Undecided, D = Disagree, SD = Strongly Disagree

Table 19 presents respondents' positions on human activities toward climate change. The result of item-by-item analysis, as shown in **Table 19**, explains that the respondents indicated that some of the human activities that heavily impact climate change include the government's inability to deal with the human cause of climate change effectively ($\bar{x}=4.15$; std dev. =1.087); the effects of climate change are likely to be disastrous ($\bar{x}=4.04$; std dev. =1.179). Although several controversial proofs have shown that human activities always accelerate climate change ($\bar{x}=4.01$; std dev. =1.164), climate change is a consequence of modern life, and the government honestly wants to minimize the human effects of climate change ($\bar{x}=3.93$; std dev. =1.242). The result also revealed in **Table 20** that the most negligible impact of human activities toward climate change includes the belief that climate change is not a real problem ($\bar{x}=3.06$; std dev. =1.506). The result also indicated that the media always overhyped the reports of cases of flooding ($\bar{x}=3.38$ std dev. =1.458). Based on this, it is so glaring that human activities heavily impact climate change due to the government's inability to deal effectively with the human cause of climate change. These effects of climate change are likely to be disastrous, and several controversial proofs indicate that human activities trigger climate change. Thus, climate change is a consequence of modern life and the government's incapacitation to minimize the human effects of climate change, among other related factors.

The outcome reflects the extent (High or Low) students perceive that human activities cause climate change, using a test of the norm presented in Table 20.

Table 20: Test of norms table showing the extent (high or low) of students perception of human activities toward climate change (Author)

Scale	Implication
Weighted mean=3.71; std dev=1.25	
“1-2.5”	Low
2.6-5.00”	High

From the results presented in **Table 19**, this section contained items on a 5-point Likert scale comprising Strongly Agree = 5, Agree = 4, Undecided = 3, Disagree (D) =2, and Strongly Disagree (SD) =1. Thus, the highest and least weighted scores obtained are 5 and 1, respectively. **Table 20** shows that the mean within the “1-2.5” range implies a low extent while “2.6-5.00” implies a high. The weighted mean (overall) for the extent (high or low) to which students think that human activities cause climate change in Nigeria is “3.71”, which falls between the scales “2.60-5.00”. The conclusion of this survey revealed that the extent (High or Low) to which students think that human activities cause climate change in Nigeria is remarkably High. Person day-to-day work has increased carbon dioxide accumulation in the air environment more than we could ever imagine in the history of humankind (Stevenson et al., 2015; Sutton et al., 2021). Suppose there is a remarkable minimisation of petroleum energy and the fall down of valuable forest resources. In that case, it will eventually triple the carbon emission rate before reaching the three decades of this millennium age. Statistics on weather indicate that North America and other nations of the world have growing heatwaves – which are very alarming. For instance, in the United States, using non-liberal set-ups, the forecast indicated that in the nearest years – the earth's heat should increase drastically with frequent short of rainfall, windstorms, and excessive heat conditions (Arias et al., 2021)

4.1.9. Students' Perception of Collective Responsibility Towards Climate Change

The following represent the analysis results on the improvement proposal towards climate change in Nigeria as presented in **Table 21 and Table 22**.

Table 21: students' perception of collective responsibility towards climate change (Author)

S/N	Items	R	O	N	\bar{X}	Std Dev
1.	Reprocess paper materials.	393 56.50%	193 27.70%	110 15.80%	2.41	.747
2.	Preserve electric power by turning off the lights.	393 56.50%	200 28.70%	103 14.80%	2.42	.735
3.	Cut down the use of a car.	311 44.70%	197 28.30%	188 27.00%	2.18	.829
4.	Purchase power-saving washing gadgets.	322 46.30%	235 33.80%	139 20.00%	2.26	.771
5.	Purchase environmentally friendly goods.	300 43.10%	219 31.50%	177 25.40%	2.18	.809
6.	Make use of private bags while shopping.	256 36.80%	243 34.90%	197 28.30%	2.08	.803
7.	Donate to an environmental organization monetarily and by personal involvement.	234 33.60%	258 37.10%	204 29.30%	2.04	.793
8.	Encourage others to take environmentally-friendly actions (e.g., recycling).	301 43.20%	201 28.90%	194 27.90%	2.15	.830
9	Visit natural places (i.e., countryside, parks, forests, beaches.).	282 40.50%	256 36.80%	158 22.70%	2.18	.775
10	Think of anything to combat climate change.	157 22.60%	368 52.90%	171 24.60%	1.98	.687
11	Are you always concerned about activity regarding	279 40.10%	281 40.40%	136 19.50%	2.21	.745

climate change?
Weighted mean=2.19; std.dev=0.77

Table 21 examines information on the perception that climate change is a collective responsibility in Nigeria. The result of item-by-item analysis, as shown in **Table 21**, shows that the respondents indicated that some of the good perceptions about climate change as a collective responsibility include the preservation of electric power by turning off the lights ($\bar{x}=2.42$; std dev. =.735); reprocess paper materials ($\bar{x}=2.41$; std dev. =.747); taken action out of concern for climate change ($\bar{x}=2.21$; std dev. =1.177); visit natural places (i.e., countryside, parks, forests, beaches.) ($\bar{x}=2.18$; std dev. =.775) and purchase of environmentally friendly goods ($\bar{x}=2.18$; std dev. =.809). The result also revealed in **Table 21** that the most negligible perception of climate change as a collective responsibility includes any concern about things that can help combat climate change ($\bar{x}=3.06$; std dev. =1.506) and Donating to an environmental organization monetarily and by personal involvement ($\bar{x}=2.04$ std dev. =.793). Thus, students' perception of collective responsibility towards climate change includes preserving electric power by turning off the lights, reprocessing paper materials, acting out of concern for climate change, and visiting natural places (i.e., countryside and parks, forests, and beaches.).

This result established the extent (High or Low) to which students perceive climate change as a collective responsibility, using a test of the norm according to **Table 22**.

Table 22: Test of norms table showing the extent (high or low) of students' perception of improvement proposals towards climate change (Author)

Scale	Implication
Weighted mean=2.91; std dev=0.77	
"1-1.5"	Low
1.6-3.00"	High

From the results presented in **Table 22**, this section contained items on a 3-point Likert scale comprising Regular(R) =3, Occasionally (O) =2, and Never (N) =1. Thus, the highest and least weighted scores obtained are 3 and 1, respectively. It shows that the mean within the “1-1.5” range implies poor perception while “1.6-3.00” implies good. The weighted mean (overall) for the extent (High or Low) to which students perceive climate change as a collective responsibility in Nigeria is “2.19”, which falls between the scales “of 1.60 and 3.00”. It revealed that the extent (High or Low) to which students perceive climate change as a collective responsibility in Nigeria is good.

Regarding the alliance, the machinery represented a similitude of a personal obligation order, in which nationalities of people known with an individual involvement solve general menace collectively. Ecological strategies enlighten people about preferences, verdicts, resolutions, and activities. All these could help address many ecosystem issues we are facing in our environment. This policy, geared toward replacing power-driven rule with individual rule, eventually resulted in societal players being accountable figures in their various activities. Based on these circumstances, people should be ready to acknowledge the penalties of their preferences or decisions. The policy indicated the importance of Foucault’s public governance concept—because it affects people’s behavior (Frere et al., 2021; Dugast et al., 2019).

4.1.10. Students Perception of Improvement Proposals for Climate Change

Table 23: Students' perception of improvement proposal towards climate change (Author)

S/N	Items	SA	A	U	D	SD	\bar{x}	Std Dev
1.	By trekking or riding a bicycle to work	184 26.40%	173 24.90%	131 18.80%	104 14.90%	104 14.90%	3.33	1.396
2.	Using public means of transportation	258 37.10%	217 31.20%	125 18.00%	54 7.80%	42 6.00%	3.85	1.177
3.	Turn off lights or not when applicable.	273 39.20%	188 27.10%	115 16.60%	66 9.50%	54 7.80%	3.80	1.265
4.	Purchase energy-efficient electrical gadgets.	220 31.60%	225 32.30%	163 23.40%	60 8.60%	28 4.00%	3.79	1.102
5.	Purchase organic foodstuff.	210 30.20%	221 31.80%	138 19.80%	76 10.90%	51 7.30%	3.67	1.219
6.	Reprocess wasted glass materials.	239 34.30%	178 25.60%	158 22.70%	88 12.60%	33 4.70%	3.72	1.195
7.	Recycle other items.	298 42.80%	154 22.10%	133 19.10%	72 10.30%	39 5.60%	3.86	1.233
8.	Be involved in public environmental matters.	313	186	131	46	20	4.04	1.077

Weighted mean=3.76; std.dev=1.21

Key: SA = Strongly Agree, A = Agree, U=Undecided, D = Disagree, SD = Strongly Disagree

Table 23 presents information on improvement proposals for climate change in Nigeria. The result of item-by-item analysis, as shown in **Table 23**, explains that the respondents indicated that some of the prevailing improvement proposals towards

climate change include involvement in public environmental matters ($\bar{x}=4.04$; std dev. =1.087); recycling of other items ($\bar{x}=3.86$; std dev. =1.233); use of public means of transportation. ($\bar{x}=3.85$; std dev. =1.177); turning off unused lights ($\bar{x}=3.80$; std dev. =1.265) and purchase of energy-efficient electrical gadgets ($\bar{x}=3.79$; std dev. =1.102). The result also revealed (**Table 23**) that the minor improvement proposal on climate change in Nigeria includes the belief that climate change is not a real problem ($\bar{x}=3.06$; std dev. =1.506) and that reports overhyped cases of flooding by the media ($\bar{x}=3.38$ std dev. =1.458). Based on this, Nigeria's prevailing improvement proposals towards climate change include involvement in public environmental matters, recycling of other items, public means of transportation, turning off unused lights, and purchasing energy-efficient electrical gadgets.

The outcome shows the extent (High or Low) to which students think about improvement proposals on climate change, using a test of the norm presented in **Table 24**.

Table 24: Test of norms table showing the extent (high or low) of students' perception of improvement proposals towards climate change (Author)

Scale	Implication
Weighted mean=3.71; std dev=1.25	
"1-2.5"	Low
2.6-5.00"	High

From the results presented in **Table 23**, this section contained items on a 5-point Likert scale comprising Strongly Agree = 5, Agree = 4, Undecided = 3, Disagree (D) =2, and Strongly Disagree =1. Thus, the highest and least weighted scores obtained are 5 and 1, respectively. **Table 24** shows that the mean within the "1-2.5" range implies a low extent while "2.6-5.00" implies a high extent. The weighted mean (overall) for the extent (high or low) to which students think about improvement proposals on climate change in Nigeria is "3.76", which falls between the scales "2.60-5.00". It, therefore, depicted that the extent (high or low) to which students think about improvement proposals on climate change is high. Nearest years expectation rationale

is a significant skill in eco-sustainability education (Clark and Harley 2020, Brundiers et al. 2021). It is essential to assume the insistence to resolve continuing eco-sustainability tasks - like ecological ruin, impoverishment, and disparity. However, using engagement set-up methods is not rare for growth experts; now, there is drastic growth for engagement simulation advancement and prescriptive fore-sighting in an empirical study (Beck and Forsyth 2020; Fazey et al. 2020; Wyborn et al. 2020). In this context, people's engagement with prospects reasoning has attained increasing acceptance in pursuing substitutes to determined eco-sustainability trials for over three decades (Kishita et al. 2016). This knowledge is predominantly essential within the framework of the continent of Africa – an area where eco-sustainability trials tend to intensify due to severe impoverished and socio-financial inequalities, massive populace density, ecological devastation due to the poor pattern of land-usage, massive susceptibility to climatic crises, and higher rate of parallel organizational division (Jiren et al. 2020; Johansson, 2021).

4.2. Inferential Data Analysis Based on Research Questions and Hypothesis of the Study

The application of inferential data analysis methods in this study serves a crucial purpose in extending our understanding beyond the observed data. Inferential methods such as t-tests or ANOVA are employed to examine whether observed age differences in students' perception of climate change are statistically significant. By using inferential statistics, we move beyond describing age differences to infer whether these differences are likely to be representative of the broader student population. It enables us to generalize findings beyond the sample and make meaningful conclusions about age-related patterns.

Similar to Gender Differences in Students' Perception Towards Climate Change, Inferential methods, including chi-square tests or t-tests, are used to assess whether gender differences in students' perception towards climate change are statistically significant. Inferential statistics allow us to ascertain whether the observed gender differences will likely be generalizable to the entire student population. It adds a layer of robustness to our findings and helps draw more confident conclusions about gender-related patterns.

In essence, applying inferential data analysis methods elevates our study by allowing us to draw broader conclusions about the relationships and differences observed within the sample. These methods enable us to make informed inferences about the entire population of interest based on the data collected, enhancing the reliability and robustness of our study.

However, this section presents the Compare Mean, One-way ANOVA Independent sample T-test, and descriptive statistics on each variable to answer the research questions and hypothesis. The descriptive statistics employed by the researcher address the frequency and percentage (%), degree of effects (DF), Statistical Mean (Mean), and Standard deviation (SD) of the responses based on investigating the students' perception of climate change and politics: cases of universities across six geopolitical zones in Nigeria. Besides that, the researcher analysed according to the scope of the study. Thus, the degree enables the researcher to evaluate the students' perception of climate change and politics: cases of universities across six geopolitical zones in Nigeria and determine the significant difference. The initial research question and hypothesis are as follows:

4.2.1. Data Analysis of the Relationship Between Age and Students' Perceptions of Climate Change

To simplify the findings of this research, the researcher applied one-way and ANOVA to answer research question one as follows: (RQ1) Are there any significant age differences in students' perception towards climate change?

Moreover, H1: There are significant age differences in students' perception of climate change, and H0: There are no significant age differences in students' perceptions.

Table 25 shows the results of respondents regarding the significant age differences in students' perceptions of climate change. The first research question and hypothesis stated:

- RQ1: RQ1: Are there any significant age differences in students' perceptions of climate change?

- H1: There are significant age differences in students' perception of climate change
- H0: There are no significant age differences in student perception of climate change

Table 25: Test of homogeneity of variances (Author)

Levene Statistic	df1	df2	df3
.566	2t	693	.568

The above test (Test of Homogeneity of variances) led the research to perform ANOVA, Robust test of equality, and Multiple Comparisons for significant differences between the age and climate change in students' perception of climate change cases of universities across six geopolitical zones in Nigeria (**Table 25 – Table 30**). Nevertheless, there are significant differences between age and student perception in the cases of universities across six geopolitical zones in Nigeria by comparing the means difference inclusively.

Table 26: ANOVA on age differences and climate change (Author)

	Sum of Squares	Df	Mean Square	F	Sig
Between Groups	.204	2	.102	.001	.999
Within Groups	50733.450	693	73.208		
Total	50733.654	695			

Table 27: Robust test of equality of mean (Author)

	Statistic	df1	Df2	Sig.
Welch	.001	2	171.292	.999
Brown-Forsythe	.001	2	239.047	.999

a. Asymptotically F distributed.

Table 28: Multiple comparisons of age differences towards climate change (Author)

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
	21-30 years	.04911	1.21273	.999	-2.7993	2.8975
Below 21 years	Above 30 years	.01593	1.15035	1.000	-2.6860	2.7178
	Below 21 years	-.04911	1.21273	.999	-2.8975	2.7993
21-30 years	Above 30 years	-.03318	.71152	.999	-1.7044	1.6380
Above 30 years	Below 21 years	-.01593	1.15035	1.000	-2.7178	2.6860
	21-30 years	.03318	.71152	.999	-1.6380	1.7044

Table 29: Means for Groups in Homogeneous Subsets of Age Towards Climate Change (Author)

Age	N	Subset for alpha = 0.05
		1
21-30 years	224	63.6384
Above 30 years	408	63.6716
Below 21 years	64	63.6875
Sig.		.999

Means for groups in homogeneous subset demonstrated.

- a: Uses Harmonic Mean Sample Size = 133.095
- b: The group extents are different. The connection mean of the group sizes is applicable. Type I error levels are not guaranteed.

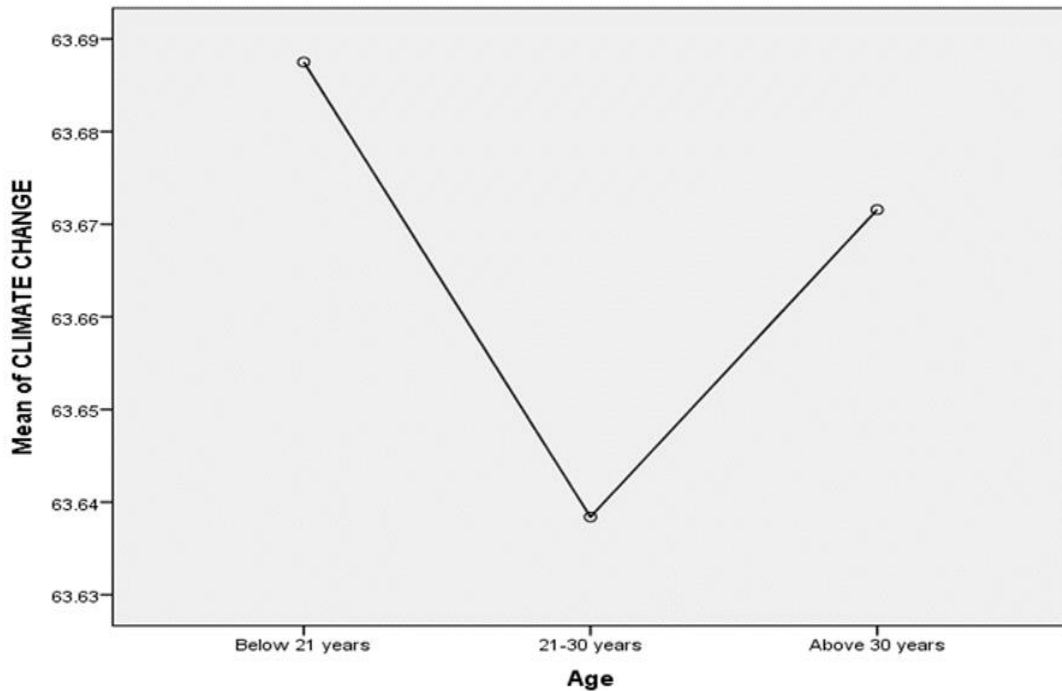


Figure 7: Showed graphical mean of climate change towards age difference (Author)

Thus, the researcher applied One-way ANOVA to answer the RQ1: Are there any significant age differences in students' perception of climate change? Moreover, H1: There are significant age differences in students' perception of climate change, and H0: There are no significant age differences in students' perceptions. The result indicates significant age differences in student perception regarding the cases of universities across six geopolitical zones in Nigeria. It indicates age differences in opinion, as shown in the mean plot. Hence, the rejection of the null hypothesis (Ho) follows.

Moreover, previous studies revealed that grown-up people could show more concern for posterity than the younger generation, who could be keener about the present day (Gollner et al., 2018). The youngsters could exhibit short-sightedness but could see and understand far more regarding the climate crisis among their age equals – which is a reasonable transformation of perception towards climate change. Based on this likelihood, these tendencies could be contestable using sex and time of life features as a connection to populace inclination to create diverse leverage of understanding towards climatic variation (Chu, 2022; Duan et al., 2022).

Table 30: Summary of the outcome of the data analysis (RQ1, H1, H0) (Author)

RQ1: Are there any significant age differences in students' perceptions of climate change?	
H1: There are significant age differences in students' perception of climate change	ACCEPTED
H0: There are no significant age differences in student perception of climate change	REJECTED

4.2.2. Data Analysis of the Gender Differences in Students Perception Towards Climate Change

To simplify the findings of this research, an independent sample T-test answers the RQ2: Any significant gender differences in students' perception towards climate change?

Table 31 – Table 33 shows the results of respondents regarding the significant gender difference in students' perception of climate change. Research question two and hypothesis stated:

- RQ2: Are there any significant gender differences in students' perceptions of climate change?
- H1: There are significant gender differences in student perception of climate change
- H0: There are no significant gender differences in student perception of climate change

Table 31: Group statistics of gender differences toward climate change (Author)

	Gender	N	Mean	Std. Deviation	Std. Error Mean
CLIMATE CHANGE	Male	321	64.7570	8.35109	.46611
	Female	375	62.7253	8.60648	.44444

Table 32: Independent samples test of gender difference toward climate change (Author)

	Levene's		t-test for Equality of Means							
	Test for		T	Df	Sig. (2-	Mean	Std. Error	95% Confidence		
	Equality of							tailed)	Differenc	Differenc
Variances		F	Sig.	e	e	Lower	Upper			
CLIMATE CHANGE	Equal									
	varian									
	ces	.494	.482	3.147	694	.002	2.03168	.64555	.7642	3.29913
	assum								2	
	e									
	Equal									
	varian									
	ces are			3.155	683.19	.002	2.03168	.64404	.7671	3.29621
	not				2				4	
	assum									
	ed.									

Finding the effect size to show variance explains the value of the independent variable:

$$\text{Eta squared} = \frac{t^2}{t^2 + (N1 + N2 - 2)}$$

Replacing with the appropriate values from the table of the independent samples test:

$$\text{Eta squared} = \frac{t^2}{t^2 + (N1 + N2 - 2)} = \frac{9.92}{9.92 + (694)} = 0.0014$$

.01=Small effect, .06= Moderate effect, .14= large effect; therefore, the effect size is small. In conclusion, an independent samples t-test compares the climate change in students' perception scores for males and females. Equal variances assumption

showed there was a significant variance in scores of males ($M=64.75$, $SD=8.35$) and females ($M=62.73$, $SD=8.61$); $t(694) = 3.35$, $P=.002$ (two-tailed). The extent of the variances in the means (mean difference=1.99, 95% CI: 3.25 to 3.26) was very small (Eta square=.0014). Therefore, the alternative hypothesis (H1) was accepted, and the rejection of the null hypothesis (Ho). Consequently, the sex-gender feature could significantly affect the peculiarity passion of the masses' perception and understanding of climatic variation. Empirical studies revealed that sex impacts peculiarity compassion as women tend to be more sensitive to other people's challenges or happy moments than men counterparts. (Ciarrochi et al., 2017). Also, studies revealed that women are more likely to be more capable of considering people's opinions and always being conscious of how their activities could impact people around them. As mentioned earlier, there is also a higher possibility that variations in closeness could affect women more than men with climatic crises (Busch & Ayala, 2022).

Table 33: Summary of the outcome of the data analysis (RQ2, H1, H0) (Author)

RQ2: Are there any significant gender differences in students' perceptions of climate change?	
H1: There are significant gender differences in students' perception of climate change	ACCEPTED
H0: There are no significant gender differences in student perception of climate change	REJECTED

4.2.3. Data Analysis of the Students' Perception of Atmospheric Issues Toward Climate Change

Students' perception of atmospheric issues toward climate change undergoes various tests through the following research question:

- RQ3: Are there significant differences in students' perceptions of atmospheric issues toward climate change?
- H1: There are significant differences in students' perception of atmospheric issues toward climate change
- H0: There are no significant differences in students' perception of atmospheric issues toward climate change

Students' perception of atmospheric issues toward climate change on male and female students' opinions. It invariably indicates students' observation of the atmospheric problems toward climate change by comparing means of means employed to analyze the significant differences in students' observation of atmospheric issues toward climate change. **Table 34** case processing summary illustrates the total sample used as 696 at 0.0% exclusion. **Table 35** reports the students' perception means and standard deviation with their gender.

Table 34: Case processing summary on students' perception of atmospheric issues (Author)

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
ATMOSPHERIC ISSUES * Gender	696	100.0%	0	0.0%	696	100.0%

Table 35: Report on students' perception of atmospheric issues (Author)

Gender	Mean	N	Std. Deviation
Male	17.5545	321	2.40656
Female	17.6880	375	2.46391
Total	17.6264	696	2.43679

The result depicts the mean square for any significant variations between the male and female students' perceptions of atmospheric issues towards climate change in the cases of universities across six geopolitical zones in Nigeria by ANOVA (**Table 36**). Nevertheless, there is no significant difference in students' perception of atmospheric issues toward climate change in the cases of universities across six geopolitical zones in Nigeria by comparing the mean difference at the Eta Squared of .001 (**Table 37**)

Table 36: ANOVA test on students' perception of atmospheric issues (Author)

		Sum of Squares	Df	Mean Square	F	Sig.
ATMOSPHERIC ISSUES * Gender	Between Groups (Combined)	3.082	1	3.082	.519	.472
	Within Groups	4123.792	694	5.942		
	Total	4126.874	695			

Table 37: Measures of association on students' perception of atmospheric issues (Author)

	Eta	Eta Squared
ATMOSPHERIC ISSUES * Gender	.027	.001

Table 38: Group Statistics on students' perception of atmospheric issues (Author)

	Gender	N	Mean	Std. Deviation	Std. Error Mean
ATMOSPHERIC ISSUES	Male	321	17.5545	2.40656	.13432
	Female	375	17.6880	2.46391	.12724

Students' perception of atmospheric issues toward climate change was the independent samples t-test conducted to compare the scores for males and females. Equal variances assumption revealed there were no significant variations in scores of males because the p-value is more than 0.05 and its (M=17.56, SD=2.41) and females (M=17.69, SD=2.46); $t(694) = -.720$, $P = .472$ (two-tailed) (**Table 36**). The level of the differences in the means (mean difference=.135, 95% CI: 0.23 to -.50) (**Table 38**) was minimal (Eta square=.001) (**Table 37**). Thus, the independent samples t-test also proves the rejection of the alternative hypothesis (H1), while the null hypothesis (Ho) was accepted (**Table 39; Table 40**).

Table 39: Independent samples test on students' perception of atmospheric issues (Author)

	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
ATMOSPHERIC ISSUES	Equal variances assumed	.579	.447	-.720	694	.472	-.13348	.18536	-.49741	.23044
	Equal variances not assumed.			-.721	682.053	.471	-.13348	.18502	-.49675	.22979

Students' observation of atmospheric issues toward climate change scores indicates no significant differences in students' perception based on their opinion, as the mean difference shown above. In conclusion, Ho accepted, and H1 rejected.

Comparatively, this research's result appears unremarkable due to low weather-related. The outcome of this study is foreseen to be insignificant because of the poor climate tutoring on matters related to the reflection of the atmosphere. Other pragmatic research exposed the learners' ideological knowledge regarding climatic variation through the assessment of misunderstanding carbon dioxide emissions, reduction of ozone-related layers, and changes in global climatic composition (Hornsey & Fielding, 2020; Pielke & Ritchie, 2021). Most essentially, empirical searches recommended that learners' perception required an ideological knowledge of comprehensive climatic composition for a clear, rational perception of the impacts of climatic variation across all nations globally. Notional knowledge of worldwide climatic variation should illustrate the capability to reason judiciously within the scope of the global climatic composition – like the accumulation and movement of carbon dioxide and their relationship with the planetary structures (Pielke & Ritchie, 2021). Other pragmatic contentions revealed that first-year university degree holders believe that temperature variation reacts instantly to carbon dioxide discharge and accumulation variations. These natural occurrences eventually regulate the atmospheric weather conditions.

Thus, students can reason above the elementary facts about climate change (Liu, 2021; Thacker & Sinatra, 2019).

Table 40: Summary of the outcome of the data analysis (RQ3, H1, H0) (Author)

RQ3: Are there significant differences in students' perceptions of atmospheric issues toward climate change?	
H1: There are significant differences in students' perception of atmospheric issues toward climate change	REJECTED
H0: There are no significant differences in students' perception of atmospheric issues toward climate change	ACCEPTED

4.2.4. Data Analysis of the Differences in Students Perception Toward Climate Change Threats

- RQ4: Are there significant differences in students' perceptions of climate change threats?
- H1: There are significant differences in student perception toward climate change threats
- H0: There are no significant differences in student perception toward climate change threats

The outcome revealed male and female opinions by comparison of the mean(s) to evaluate the significant differences in students' perception of climate change threats (**Table 41 – Table 47**). Therefore, **Table 41** shows a case processing summary illustration. **Table 42** reports the students' perception means and standard deviation with their gender.

Table 41: Case processing summary of differences in students' perception towards climate change threats (Author)

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
CLIMATE CHANGE THREAT * Gender	696	100%	0	0.0%	696	100%

Table 42: Further test of ANOVA comparing the mean square for significant differences between the male and female students' perception towards climate change threats (Author)

Gender	Mean	Std. Deviation
Male	38.2243	5.51471
Female	37.1920	5.90526
Total	37.6681	5.74748

The above test on the climate change threat further tested Anova by comparing the mean square for any significant differences between the male and female students' perception of climate change threat in the cases of universities across six geopolitical zones in Nigeria. Nevertheless, there are significant differences in student perception toward climate change threats in universities across six geopolitical zones in Nigeria by comparing the mean difference at the Eta Squared of .008.

Table 43: ANOVA table on students' perceptions of climate change threats (Author)

			Sum of Squares	Df	Mean Square	F	Sig
CLIMATE CHANGE THREAT	Between Groups	(Combined)	184.305	184.305	184.305	5.616	.018
	Within Groups		22774.026	694	32.816		
Total			22958.332	695			

Table 44: Measures of association on students' perceptions of climate change threat toward gender (Author)

	Eta	Eta Squared
CLIMATE CHANGE THREAT * Gender	.090	.008

Table 45: Group statistics on students' perceptions of climate change threat towards gender (Author)

		Gender	N	Mean	Std. Deviation	Std. Error Mean
CLIMATE CHANGE THREAT	Male		321	38.2243	5.51471	.30780
	Female		375	37.1920	5.90526	.30495

In addition, the independent samples t-test compares the climate change threat in students' perception scores for males and females, respectively. Equal variances assumption showed there was a significant variance in ratings of males (M=38.22, SD=5.52) and females (M=37.19, SD=5.91); $t(694) = 2.37, P = .018$ (two-tailed). The extent of the variances in the means (mean difference = 1.03, 95% CI: 1.88 to 0.18) was minimal (Eta square = .008). Thus, the independent samples t-test also proves that

the alternative hypothesis (H1) is accepted and the rejection of the null hypothesis (Ho).

Table 46: Independent samples test on students' perceptions of climate change threat toward equal variance assumed/not (Author)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
CLIMATE	Equal variances assumed	1.302	.254	2.370	694	.018	1.03230	.43559	.17707	1.88753
CHANGE THREAT	Equal variances are not assumed.			2.383	688.740	.017	1.03230	.43328	.18159	1.88301

In conclusion, the research indicates differences in students' perception of climate change threat-based opinion, as the mean difference shown above. Hence, Ho rejected it. Climatic variation is well known to represent various risks to man's well-being; it includes psychological well-being and other consequences of the emotional trauma of such environmental risk (Clayton & Karazsia, 2020; Manning & Clayton, 2018). Other aftermath effects emerged from the physical effects of severe wind and rain tempests, rainfall deficiencies, floods, and outbreaks of natural fire. Many news reporters and research journals give detailed analyses of the adverse psychological effects of climatic threats. Although some public knowledge of these menaces seems to apply to their encounter with the climatic change threats (Patrick et al., 2022; Ogunbode et al., 2022), for instance, after the winter season in 2018, the British Broadcasting Media narrated the effects of climatic variation amongst youngsters in Vietnam; later, Portland news media also released a publication on climatic fear and people (Nguyen et al., 2020). One global journal named climatic fear and threat the most trending issue in 2019 (McGinn, 2019; Solnit, 2020). The enormous risks caused

by climatic variation are vast compared to how the public exhibited their concerns. Previous studies critically presumed and assessed the consequences of climatic change. The consequences could wipe away the dignity of life and safety due to the worry and grief connected to the severe events of climatic variation – it is highly alarming and life-threatening, which represents so many advents of threat to the populace and immediate environment (Tschakert et al., 2019; Boyd et al., 2021).

Table 47: Summary of the outcome of the data analysis (RQ4, H1, H0) (Author)

RQ4: Are there any significant age differences in students' perceptions of climate change threats?	
H1: There are significant age differences in students' perception of climate change threat	ACCEPTED
H0: There are no significant age differences in student perception of climate change threat	REJECTED

4.2.5. Data Analysis of Students' Perception of Awareness Towards Climate Change

- RQ5: Are there any significant differences in students' perception and awareness towards climate change?
- H1: There are significant differences in student perception of awareness towards climate change
- H0: There are no significant differences in student perception awareness toward climate change

Student perception of awareness towards climate change on male and female students' opinions. Meanwhile, the researcher asserted the students' perception of awareness by comparing means to evaluate the significant differences in students' perception of awareness towards climate change. Thus, **Table 48**, the case processing summary, illustrates the total sample used, as 696 included at 0.0% exclusion. **Table 49** reports the students' perception means and standard deviation towards gender differences.

Table 48: Case processing summary on students' perceptions of climate change awareness (Author)

		Cases					
		Included		Excluded		Total	
		N	Percent	N	Percent	N	Percent
CLIMATE CHANGE							
AWARENESS	*	696	100.0%	0	0.0%	696	100.0%
Gender							

Table 49: Report on students' perceptions of climate change awareness (Author)

Gender	Mean	N	Std. Deviation
Male	26.9252	321	3.97343
Female	26.7200	375	4.06419
Total	26.8147	696	4.02100

Students' perception of awareness towards climate change was further experimented with the ANOVA by comparing the mean square for significant differences between the male and female students' perception of awareness towards climate change in the cases of universities across six geopolitical zones in Nigeria (**Table 49**). As a point of emphasis, there are no significant differences in students' perception of awareness towards climate change in the cases of universities across six geopolitical zones in Nigeria by comparing the mean difference at the Eta Squared of .001 (**Table 50**).

Table 50: Measures of association on students' perceptions climate change awareness (Author)

	Eta	Eta Squared
CLIMATE CHANGE		
AWARENESS *	.025	.001
Gender		

Table 51: ANOVA test on students' perceptions of climate change awareness (Author)

			Sum of	Df	Mean	F	Sig.
			Squares		Square		
CLIMATE CHANGE AWARENESS	Between Groups	(Combined)	7.285	1	7.285	.450	.502
	Within Groups		11229.806	694	16.181		
Gender	Total		11237.091	695			

Table 52: Group statistics on students' perceptions of climate change awareness (Author)

	Gender	N	Mean	Std. Deviation	Std. Error Mean
CLIMATE CHANGE AWARENESS	Male	321	26.9252	3.97343	.22178
	Female	375	26.7200	4.06419	.20987

Regarding students' perception of climate change, the independent samples t-test compared the level of awareness towards climate change in students' perception scores for males and females. Equal variances assumption illustrated there were no significant differences in scores of males because the p-value is more than 0.05 and its (M=26.93, SD=3.97) and females (M=26.72, SD=4.06); $t(694) = .671, P = .502$ (two-tailed) (**Table 51**). The extent of the variances in the means (mean difference=.205, 95% CI: 0.81 to -.40) (**Table 53**) was very low (Eta square=.001). Thus, the independent samples t-test (**Table 53**) also attests to rejecting the alternative hypothesis (H1). At the same time, the null hypothesis (Ho) was also accepted (**Table 54**).

Table 53: Independent samples t-test on students' perceptions of climate change awareness (Author)

Levene's Test for Equality of Variance	t-test for Equality of Means

		F	Sig.	T	Df	Sig. (2- tailed)	Mean Differ ence	Std. Error Differ ence	95% Confidence Interval of the Difference	
									Lower	Upper
CLIMATE CHANGE	Equal variances assumed	.047	.829	.671	694	.502	.20523	.30587	-.39532	.80578
	AWARENES S									
	Equal variances are not assumed.			.672	681.88 1	.502	.20523	.30534	-.39428	.80475

Student perception of awareness towards climate change scores indicates no significant differences in student perception based on their opinion, as the mean difference has shown above. In conclusion, Ho accepted, and H1 rejected. Other previous studies supported the direction of this pragmatic research – it exposed high-institution students in Africa to the views that significantly hampered the ecosystem (Akrofi et al., 2019). The research further revealed that youngsters were unaware of their impacts in connection with the challenges facing climatic variations. It affected their roles as significant influencers in societies by spreading awareness on how climatic variation may affect people's sources of income and standard of living worldwide. The school syllabus on Geography and science-related subjects needs reformation to accommodate major areas of climatic change. Our youngsters must experience climate teachings at different levels of education (Nongaqayi et al., 2022).

Table 54: Summary of the outcome of the data analysis (RQ5, H1, H0) (Author)

RQ5: Are there any significant differences in students' perception and awareness towards climate change?	
H1: There are significant differences in student perception of awareness towards climate change	REJECTED
H0: There are no significant differences in student perception awareness toward climate change	ACCEPTED

4.2.6. Data Analysis of Students' Perceptions of Environmental Values Towards Climate Change

- RQ6: Are there any significant differences in students' perceptions of environmental values towards climate change?
- H1: There are significant differences in students' perceptions of environmental values toward climate change
- H0: There are no significant differences in students' perceptions of environmental values toward climate change

It depicts students' perceptions of environmental value toward climate change on male and female opinions by comparing means of the mean(s) to analyze the significant differences in students' perception of environmental conservation value toward climate change. **Table 55**, case processing summary, illustrates the total sample used as a 696-sample size at 0.0% exclusion. **Table 56** reports the students' perception means and standard deviation with their gender.

Table 55: Case Processing summary on students' perceptions of environmental values towards climate change (Author)

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
ENVIRONMENTAL VALUE * Gender	696	100.0%	0	0.0%	696	100.0%

Table 56: Report on students' perceptions of environmental values towards climate change (Author).

Gender	Mean	N	Std. Deviation
Male	29.5607	321	5.71212
Female	30.0640	375	4.85910
Total	29.8319	696	5.27180

Students' perceptions of environmental values towards climate change through ANOVA compare the mean square for significant variances between the male and female students' perceptions of ecological values towards climate change in the cases

of universities across six geopolitical zones in Nigeria (**Table 56**). Nevertheless, there is no significant difference in students' perceptions of environmental values towards climate change in the cases of universities across six geopolitical zones in Nigeria by comparing the mean difference at the Eta Squared of .002 (**Table 58**).

Table 57: ANOVA Test on students' perceptions of environmental values towards climate change (Author)

			Sum of Squares	Df	Mean Square	F
ENVIRONMENTAL VALUE * Gender	Between Groups	(Combined)	43.802	1	43.802	1.577
	Within Groups		19271.529	694	27.769	
	Total		19315.332	695		

Table 58: Measures of association on students' perceptions of environmental values towards climate change (Author)

	Eta	Eta Squared
ENVIRONMENTAL VALUE * Gender	.048	.002

Table 59: Group Statistics on students' perceptions of environmental values towards climate change (Author)

	Gender	N	Mean	Std. Deviation	Std. Error Mean
ENVIRONMENTAL VALUE	Male	321	29.5607	5.71212	.31882
	Female	375	30.0640	4.85910	.25092

For students' perceptions of environmental values towards climate change, the independent samples t-test compares perceptions of environmental values toward climate change in students' perception scores for males and females. Equal variances assumption illustrated there were no significant variances in scores of males because the p-value is greater than 0.05 and its (M=29.56, SD=5.71), and females (M=30.06, SD=4.86); $t(694) = 126, P=.210$ (two-tailed) (**Table 59**). The level of the differences in the means (mean difference=.503, 95% CI: 0.28 to -1.29) (**Table 60**) was minimal

(Eta square=.002) (**Table 58**). Thus, the independent samples t-test also proves the rejection of the alternative hypothesis (H1), while the null hypothesis (Ho) was accepted (**Table 61**).

Table 60: Independent samples test on students' perceptions of environmental values towards climate change (Author)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
ENVIRONMENTAL VALUE	Equal variances assumed	12.263	.000	-1.256	694	.210	-.50325	.40070	-1.28997	.28347
	Equal variances not assumed			-1.240	631.800	.215	-.50325	.40572	-1.29997	.29347

Regarding students' perceptions of environmental values towards climate change scores, this study indicates no significant differences in student perception based on their opinion, as the mean difference shown above. In conclusion, Ho accepted, and H1 rejected.

Thus, previous empirical studies in ecological teaching showed no fundamental focus on environmental value. How could researchers work collectively on this trending matter? The only solution is for the academic community to restructure their research problems as a model to depict students' conduct affecting climatic variation (Ardoin et al., 2023). However, some studies centered on how college students perceive the origin of climate change, both socially and environmentally. (Beach, 2023; Jack & Pang, 2017). High perception of environmental principles –

exceptionally high humane principles could constructively trigger higher choices or stances for communal compared to personal views or selections.

In contrast, higher self-centered principles may facilitate personal desire. Comparatively, there are few searches on learners' conduct, attitudes, and academic background regarding people. There has been little research on students' beliefs and education about how individual, marketplace, and public administration could significantly impact environmental values (Ignell et al., 2019; Lundholm, 2019).

Table 61: Summary of the outcome of the data analysis (RQ6, H1, H0) (Author)

RQ6: Are there any significant differences in students' perceptions of environmental values towards climate change?	
H1: There are significant differences in students' perceptions of environmental values toward climate change	REJECTED
H0: There are no significant differences in students' perceptions of environmental values toward climate change	ACCEPTED

4.2.7. Data Analysis of the Differences in Students' Perception of Climate Change Towards Human Activities

- RQ7: Are there any significant differences in students' perceptions of climate change toward human activities?
- H1: There are significant differences in student perception of climate change towards human activities
- H0: There are no significant differences in student perception of climate change towards human activities

The result indicates male and female students' perceptions by comparing means of mean to assess the significant differences towards climate change. Therefore, **Table 62, the case processing summary, illustrates the total sample used, as 696** included at 0.0% exclusion. **Table 63** reports the students' perception means and standard deviation with their gender.

Table 62: Case processing summary on students' perception of climate change towards human activities (Author)

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
HUMAN ACTIVITIES	696	100%	0	0.0%	696	100%
* Gender						

Table 63: Report on students' perception of climate change towards human activities (Author)

Gender	N	Std. Deviation
Male	67.5109	321
Female	66.2400	375
Total	66.8261	696

The result showed ANOVA by comparing the mean square for significant differences between the male and female students' perception of human activities towards climate change in the cases of universities across six geopolitical zones in Nigeria (**Table 63**). Nevertheless, there is no significant difference in student perception towards climate change threat in the cases of universities across six geopolitical zones in Nigeria by comparing the means difference at the Eta Squared of .004.

Table 64: ANOVA Test on students' perception of climate change towards human activities (Author)

	Sum of Squares	Df	Mean Square	F	Sig.
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	Between Groups	(Combine d)	279.352	1	279.352	2.736	.099
HUMAN ACTIVITIES * Gender	Within Groups		70862.612	694	102.108		
	Total		71141.964	695			

Table 65: Measures of association on students' perception of climate change towards human activities (Author)

	Eta	Eta Squared
HUMAN ACTIVITIES * Gender	.063	.004

Table 66: Group statistics on students' perceptions of human activities towards climate change (Author)

	Gender	N	Mean	Std. Deviation	Std. Error Mean
HUMAN ACTIVITIES	Male	321	67.5109	9.81329	.54772
	Female	375	66.2400	10.34775	.53436

Independent samples t-test compares human activities to the immediate environment towards climate change in students' perception scores for males and females. Equal variances assumption indicates there was no significant difference in scores of males because the p-value is more than 0.05 and its (M=67.51, SD=9.81) and females (M=66.24, SD=5.91); $t(694) = 1.65$, $P = .099$ (two-tailed) (**Table 64**). The extent of the variances in the means (mean difference=1.27, 95% CI: 2.78 to -.24) was very small (Eta square=.004) (**Table 65**). Thus, the independent samples t-test also proves the rejection of the alternative hypothesis (H1), while the null hypothesis (Ho) was accepted (**Table 68**).

Table 67: Independent samples test on students' perceptions of human activities towards climate change (Author)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
HUMAN ACTIVITIES	Equal variances assumed	.162	.687	1.654	694	.099	1.27090	.76836	-.23769	2.77949
	Equal variances are not assumed.			1.661	686.739	.097	1.27090	.76520	-.23152	2.77332

The outcome indicates no significant differences in student perception towards human activities based on their opinion, as the mean difference has shown above. In conclusion, Ho accepted, and H1 rejected. Irrespective of the results of the previous survey, it depicts so much evidence that there are variations in the atmospheric weather conditions – linked to a high volume of carbon-related substances in the atmosphere and increments in carbon dioxide absorptions in the air environment. Even the United States of America witnessed the highest temperature rising annually. The worldwide temperature variation increased tremendously from 2014 to 2022 – the annual temperature fluctuated from 0.23 to 1.8 degrees centigrade with a significant increment in carbon dioxide emissions, degree centigrade. It is a vital factor resulting in global warming across every nation worldwide (Hartter et al., 2018; Hartinner & Sarathchandra, 2022). For instance, the vegetation compositions and variations in their density and pattern are typical cases of vegetation density reactions that exist betwixt variations in weather conditions, natural endowment accessibility, disorder, and administration in environment and period. Such weather variations adversely influence

the vegetation's general well-being, development, production capacity, and other aftermath effects, including a severe shortage of rainfall, natural outbursts of fires, and pest outbursts. The climatic variation affects vegetation's spread, range, occurrence, and concentration. Thus, there are adverse impacts on plant varieties and ecosystems (Sloggy et al., 2021).

Table 68: Summary of the outcome of the data analysis (RQ7, H1, H0) (Author)

RQ7: Are there any significant age differences in students' perceptions of climate change toward human activities?	
H1: There are significant differences in students' perception of climate change toward human activities	ACCEPTED
H0: There are no significant differences in student perception of climate change toward human activities	REJECTED

4.2.8. Data Analysis of Students' Perception of Collective Responsibility Towards Climate Change

- RQ8: Are there any significant differences in students' perceptions of collective responsibility towards climate change?
- H1: There are significant differences in student perception of collective responsibility toward climate change
- H0: There are no significant differences in student perception of collective responsibility toward climate change

Students by males and females represented the variable for students' perception and collective responsibility towards climate change; comparison means to evaluate the significant differences in students' perceptions of collective responsibility towards climate change. Therefore, **Table 69**, the case processing summary, illustrates the total sample used, as 696 included at 0.0% exclusion. Meanwhile, **Table 70** reports the students' perception means and standard deviation towards gender.

Table 69: Case processing summary on students' perceptions of collective responsibilities toward climate change (Author)

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
COLLECTIVE						
RESPONSIBILITIES *	696	100.0%	0	0.0%	696	100.0%
Gender						

Table 70: Report on students' perceptions of collective responsibilities toward climate change (Author)

Gender	Mean	N	Std. Deviation
Male	12.5732	321	2.80542
Female	12.5547	375	2.80022
Total	12.5632	696	2.80062

The result indicates students' perception of collective responsibility towards climate change through ANOVA by comparing the mean square for significant differences between the male and female students' perception of collective responsibility towards climate change in the cases of universities across six geopolitical zones in Nigeria (**Table 70**). However, there are no significant differences in students' perception of collective responsibility towards climate change in the cases of universities across six geopolitical zones in Nigeria by comparing the mean difference at the Eta Squared of .000 (**Table 72**).

Table 71: ANOVA on students' perceptions of collective responsibilities toward climate change (Author)

	Sum of Squares	Df	Mean Square	F	Sig.

COLLECTIVE RESPONSIBILITIES * Gender	Between Groups (Combined)	.059	1	.059	.008	.931
	Within Groups	5451.159	694	7.855		
	Total	5451.218	695			

Table 72: Measures of association on students' perceptions of collective responsibilities toward climate change (Author)

	Eta	Eta Squared
COLLECTIVE RESPONSIBILITIES * Gender	.003	.000

Table 73: Group statistics on students' perceptions of collective responsibilities toward climate change (Author)

	Gender	N	Mean	Std. Deviation	Std. Error Mean
COLLECTIVE RESPONSIBILITIES	Male	321	12.5732	2.80542	.15658
	Female	375	12.5547	2.80022	.14460

Independent samples t-test comparing the collective responsibility towards climate change in students' perception scores for males and females. Equal variances assumption indicates there was no substantial difference in scores of males because the p-value is more than 0.05 and its (M=12.57, SD=2.81) and females (M=12.56, SD=2.80); $t(694) = .087$, $P = .931$ (two-tailed) (**Table 71**). The extent of the variances in the means (mean difference = .018, 95% CI: 0.44 to -.40) (**Table 74**) was minimal (Eta square = .000) (**Table 72**). Thus, the independent samples t-test also proves the rejection of the alternative hypothesis (H1). In contrast, the null hypothesis (Ho) was accepted (**Table 75**).

Table 74: Independent samples test on students' perceptions of collective responsibilities toward climate change (Author)

		Levene's t-test for Equality of Means								
		Test for Equality of Variances								
		F	Sig.	T	Df	Sig.	Mean	Std.	95%	
						(2-	Differe	Error	Confidence	
						tailed	nce	Differe	Interval of the	
)	nce	nce	Difference	
								Lower	Upper	
COLLECTIVE RESPONSIBILITIES	Equal variances assumed	.079	.779	.087	694	.931	.01854	.21311	-.39987	.43696
	Equal variances are not assumed.			.087	677.156	.931	.01854	.21314	-.39995	.43704

Collective responsibility towards climate change in students' perception scores indicates no significant differences in student perception based on their opinion, as the mean difference shown above. In conclusion, Ho accepted, and H1 rejected.

Table 75: Summary of the outcome of the data analysis (RQ8, H1, H0) (Author)

RQ8: Are there any significant differences in students' perceptions of collective responsibility towards climate change?
H1: There are significant differences in student perception of collective responsibility toward climate change

H0: There are no significant differences in student perception of **ACCEPTED**
collective responsibility toward climate change

In this critical conjunction, collective responsibility, which depicts people's engagement in fighting against any ecological and climatic crisis, could be a public management technique for implementing values of attitude that compel people to oblige ecological solutions to combat climate change. The community representatives emerged as administrators, publishing values and governing or moderating people's conduct. It depicts public governance indirectly or from a remote sense of view – where public governance affects and guides residents with no close contact. This general reformation and decentralization of obligation represent separating people from specific reliance on the government and taking social obligation that results in answerable eco-liberty. It further implies the procedure of liberating people toward answerable environmental objectives. The method also involved the order to be independent and responsible. These values are expectations for every people in society (Frere et al., 2021; Dugast et al., 2019).

4.2.9. Data Analysis of Students Perception of Improvement Suggestions/Proposals for Climate Change

- RQ9: Are there any significant differences in students' perceptions of improvement proposals towards climate change?
- H1: There are significant differences in student perception of improvement proposals toward climate change
- H0: There are no significant differences in student perception of improvement proposals toward climate change

The result indicates male and female students' perception of improvement proposals towards climate change by comparing means of means to assess the significant differences. Therefore, **Table 76** case processing summary illustrates the total sample used, with 696 included and 0.0% excluded. **Table 77** reports the students' perception means and standard deviation with their gender.

Table 76: Case processing summary on students' perceptions of improvement suggestions/proposals for climate change (Author)

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
REMEDIES TO CLIMATE CHANGE	696	100.0%	0	0.0%	696	100.0%
* Gender						

Table 77: Report on students' perceptions of improvement suggestions/proposals for climate change (Author)

Gender	Mean	Std. Deviation
Male	30.4268	5.14190
Female	29.7627	5.16360
Total	30.0690	5.16054

The above test on improvement proposals towards climate change was further tested through ANOVA by comparing the mean square for significant differences between the male and female students' perception in the cases of universities across six geopolitical zones in Nigeria (**Table 78**). Nevertheless, there are no significant differences in student perception towards climate change remedies in the cases of universities across six geopolitical zones in Nigeria by comparing the mean difference at the Eta Squared of .004 (**Table 79**).

Table 78: ANOVA test on students' perceptions of improvement suggestions/proposals for climate change (Author)

		Sum of Squares	Df	Mean Square	F	Sig.
REMEDIES TO CLIMATE CHANGE * Gender	Between Groups (Combined)	76.283	1	76.283	2.872	.091
	Within Groups	18432.407	694	26.560		
	Total	18508.690	695			

Table 79: Measures of association on students' perceptions of improvement suggestions/proposals for climate change (Author)

	Eta	Eta Squared
REMEDIES TO CLIMATE CHANGE * Gender	.064	.004

Table 80: Group statistics on students' perceptions of improvement suggestions/proposals for climate change (Author)

		Gender	N	Mean	Std. Deviation	Std. Error Mean
REMEDIES TO CLIMATE CHANGE	Male		321	30.4268	5.14190	.28699
	Female		375	29.7627	5.16360	.26665

The result indicates an independent samples t-test comparing the improvement proposals towards climate change in students' perception scores for males and females. Equal variances assumption showed there was no significant difference in scores of males because the p-value is more than 0.05 and its (M=30.43, SD=5.14) and females (M=29.76, SD=5.16); $t(694) = 1.70$, $P = .091$ (two-tailed) (**Table 78**). The extent of the variances in the means (mean difference = .66, 95% CI: 1.43 to -.11) was very small (Eta square = .004) (**Table 79 & Table 81**). Thus, the independent samples t-test also proves the rejection of the alternative hypothesis (H1), while the null hypothesis (Ho) was accepted (**Table 82**).

Table 81: Independent samples test on students' perceptions of improvement suggestions/proposals for climate change (Author)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
REMEDIES TO CLIMATE CHANGE	Equal variances assumed	.263	.608	1.695	694	.091	.66412	.39188	-.10528	1.43353
	Equal variances are not assumed.			1.695	678.395	.090	.66412	.39175	-.10506	1.43331

On improvement proposal represented by remedies to the immediate environment towards climate change in students' perception scores, this research indicates no significant difference in student perception based on their opinion as the mean difference shown above. In conclusion, Ho accepted, and H1 rejected. In summary of this result, people involvement prospects reasoning, as originated in other previous studies, have commonly been created for information dissemination to eradicate threats and develop prospects for eco-sustainability and socioeconomic prosperity (Cockburn et al., 2018). These techniques are vital in nations where the populace has less impact on public policy-making – like in a government system where the politicians, establishments, and media have domineering effects on general matters (Madrid-Morales et al., 2020). Involving diverse public policy-makers in a case study – implies that there would be higher governmental likelihood and people credibility than in virtuously professionally motivated settings. In this case, climatic variation is a massive worldwide socio-economic and environmental risk. Alleviating

climatic change demands unrelenting efforts from every person, society, and public administration. For this reason, any ecological issue caused by populace actions or day-to-day operations and their available natural endowments, the ways out, are found in their day-by-day operations and anticipations. Therefore, people's involvement in socio-climatic knowledge should be vital (Goldberg et al., 2020).

Table 82: Summary of the outcome of the data analysis (RQ9, H1, H0) (Author)

RQ9: Are there any significant differences in students' perceptions of improvement proposals towards climate change?
H1: There are significant differences in student perception of improvement proposals toward climate change REJECTED
H0: There are no significant differences in student perception of improvement proposals toward climate change ACCEPTED

5. CHAPTER FIVE: INTRODUCTION, RESULT AND DISCUSSION, RECOMMENDATION

This research utilized descriptive statistics techniques, mean, ANOVA, and independent sample t-test in presenting the data collected from 696 respondents from universities across six geopolitical zones in Nigeria. These comprise descriptive statistic method, percentage, and frequency concerning three and five Likert scales, including agree, neutral, and disagree, where the respondents' demographic data were required and analyzed. Besides that, the research applied various statistical methods on both pilot and actual variables for reliability and validity and to identify the underlying items responsible for exploring the student perception of climate change: a case of selected universities in Nigeria, West Africa. These make us understand the challenges facing as climate change has become a total topic of rich conference debate and research, and researchers are increasing day-in-day for a solution.

This research indicates that Students' perception of climate change and its various variables is significant in different ways. The others have no significant differences in terms of Climate Change (CC), Climate Change Threat (CCT), Human Activities (HA), Improvement Proposal/Remedies to Climate Change (IP/RCC), Collective Responsibilities (CR), Climate Change Awareness (CCA), Atmospheric Issues (AI), and Environmental Value (EV) with gender respectively. Finally, this research indicates that most students think of no significant differences towards climate change.

The outcomes of this study attested to the research carried out by a group of scholars (Levrini et al., 2021). It revealed that youngsters, like older groups, have no elongated potential but risk and cannot envisage thinkable constructive posterity situations for humanity. Experimental confirmation of these apprehensions triggers recent studies on public awareness of period and posterity. These revealed limits in youths' thoughts and capabilities to plan toward posterity. Numerous youngsters' searches have evaluated undergraduates' works on posterity and revealed concurrent negative and positive understandings of posterity. The fundamental discovery is a division in posterity discerning: youngsters may view their prospects as optimistic and lie with them, but the state and particularly the worldwide posterity are despairing, alarming, and totally out of their control (Lynas et al., 2021). It resembles the doubled

rationale detected amongst the grown person and the youngster in climatic change, wherein the longstanding worldwide posterity is theorized disjointedly from individual posterity. It illustrates the propensity as a tactic to manage the uncertainties and concerns related to the longstanding posterity in the discipline of ecological teaching, climatic change rejection, and negation as mental battlements to the prevalent environmental concern (Pihkala, 2020). Following the study on grown-up youngsters, these uncertainties seem to spread to the forfeiture of trust in the concept that humankind is continuing in the direction of constructive posterity (Levrini et al., 2021). These uncertainties are the vacuums created amongst our youths in Nigeria and across the globe regarding the ecosystem threat and prevailing climatic crises. Thus, how prepared are Nigerian and global youths to realize the need for worldwide consensus to see climate change as an environmental threat and human activities that trigger climate change? Those collective responsibilities, remedy proposals, awareness, observation of atmospheric issues, and ecological values intuition work as a safeguard against the encroachment of climate change in our world.

Table 76: Summary of the overall outcome of the data analysis (RQ1-RQ9, H1, H0, (1-9) subject of study, and the techniques used) (Author).

s/n	Research Questions (RQ)	Alternative Hypothesis H1	Null Hypothesis H0	Subject of Study	Techniques used
1	RQ1	Accepted	Rejected	Age differences in students' perception of climate change	One-way Test, ANOVA, Test of Homogeneity of Variance, Robust Tests of Equality, Multiple Comparison, Test of Homogeneous Subset Display, Mean
2	RQ2	Accepted	Rejected	Gender Differences in students' Perception of climate Change	Independent T-test, Group Statistic test

3	RQ3	Rejected	Accepted	Differences in students' perception of atmospheric issues toward climate change	Case Processing Summary Test, Report test, ANOVA, Measure of Association, Group Statistic, Independent T-test
4	RQ4	Accepted	Rejected	Differences in students' perception toward climate change threats	Case Processing Summary Test, Report test, ANOVA, Measure of Association, Group Statistic, Independent T-test
5	RQ5	Rejected	Accepted	Differences in student perception of awareness towards climate change	Case Processing Summary Test, Report test, ANOVA, Measure of Association, Group Statistic, Independent T-test
6	RQ6	Rejected	Accepted	Differences in students' perceptions of environmental values toward climate change	Case Processing Summary Test, Report test, ANOVA, Measure of Association, Group Statistic, Independent T-test
7	RQ7	Rejected	Accepted	Differences in students'	Case Processing

				perception of human activities toward climate change	Summary Test, Report test, ANOVA, Measure of Association, Group Statistic, Independent T-test
8	RQ8	Rejected	Accepted	Differences in students' perception of collective responsibility toward climate change	Case Processing Summary Test, Report test, ANOVA, Measure of Association, Group Statistic, Independent T-test
9	RQ9	Rejected	Accepted	Differences in students' perception of improvement proposals toward climate change	Case Processing Summary Test, Report test, ANOVA, Measure of Association, Group Statistic, Independent T-test

5.1. Results and Discussion

This section revealed the report on research questions and hypotheses; shall respond to them with the findings documented in the SPSS results. It shall summarize the results and discuss how they relate to prior research. This research critically examines the formulated hypotheses and questions after considering the outcome and interpretation of the SPSS analysis. It determined whether age, gender, nationality, and fields of study. Students' perception of climate change as a threat, perception of the causes, awareness, responsibility, environmental values, and knowledge will significantly affect their perception. - Students probably view man as the significant

cause of climate change. According to Schuldt et al. (2017), they acknowledged that perception is a highly remarkable driving factor of attitude transformation. It determines the formulation and implementation of programs for climatic variation control and modification (Chu & Yang. 2020; Zanoocco et al., 2019).

This thesis summarizes the findings of the study highlighted in the preceding chapter. Further studies extended to other unsampled universities across Nigeria's six geopolitical zones. This research revealed how demographic factors, perceptions of environmental values, awareness, and collective responsibilities are crucial in combating climate change and human activities. It increases the students' tendency to think that human activities, the option of obligation, awareness ratings, and acceptance or denial ratings induce climate change. Regardless of the respondents' results, the vacuum shall still open for more students in an academic environment. It repeatedly uses the same variables to assess how students perceive climate change. Although research results continue to vary, most importantly, students' horizons in awareness, responsibility, beliefs, environmental values, and knowledge towards climate change shall continue to broaden and equally improve over time.

Firstly, based on demographic factors, the hypothesis states that age and gender will significantly affect students' perception of climate change. The Alternative hypothesis (H1) on research questions 1 to 3 accepted the Alternative Hypothesis and rejected the Null Hypothesis, respectively. Based on Hypothesis 4 to 9, the Alternative Hypothesis (H1) rejected that there are no significant differences in students' perception of climate change towards human activities, improvement proposals, collective responsibilities, awareness, observation of atmospheric issues, and perceptions of environmental values. It showed that Nigerian students' perception has no connection with the fundamental problems or critical attributes that could help facilitate climate change alleviation towards regulated human activities. The research outcome also indicated inadequate information on climate change education among Nigerian university students. It could solve a foundational problem from primary to tertiary education background. The academic syllabus of schools or fields of study loaded with ecological teaching schemes will impact students' perception of climate change. Even in nations with passion, programs, and laws protecting natural endowments, students of such states will likely have the correct perception of climate change. Gender differences imply students' perceptions about climate change. Males or

females can think rightly or contrarily that collective responsibility will solve climatic change. Hoffman affirmed that females display more passion for nature or the environment than their male counterparts; this is evident in a public campaign for environmental awareness and protection. Furthermore, females demonstrate more drive for living things in production and caring, contrary to male passion (Chang, 2015; Busch et al., 2019). Also, Bord and O'Connor's research revealed that females tolerated the mind for nature compared to their male counterparts (Fergus et al., 2020).

Based on other related studies, many students across the globe do significantly think that climate change is a threat to the environment. However, the answers to research question 3 revealed that most Nigerian university students acknowledged that climate change threatens our immediate environment. There is a strong tendency for students with knowledge and high awareness of the environment due to their field of study or nationality to be strong climate change activists or thoroughly environmentally informed. They considered climate change a threat than other students who are not exposed to environmental Education or have no encounter with being enlightened environmentally (Lehtonen et al., 2019; Brown & Berry, 2022)

The descriptive analysis of this study also revealed that age and gender are major determinant factors regarding students' perception of environmental threats, human activities, improvement proposals, collective responsibilities, awareness, atmospheric issues, and perceptions of ecological values towards climate change. Kempton's research revealed a remarkable correlation between perception and ecological conservation challenges (flood, pollution, desert encroachment, and drought). It created an obstacle to solutions that could combat human-induced climate change due to inadequate insight and awareness. Also, nature activists use awareness weapons to transform people's attitudes, but complicated and highly engaging discussion-wise. (Ernst et al., 2017; Paterson, 2014).

It implies that high or low environmental knowledge and values will invariably result in correct or incorrect perceptions of students regarding climate change. Thus, elaborated knowledge and fact interactions among people could result in highly significant information accumulation corresponding with what was carried out by Rachel Carson in the 1960s. People's views can quickly change due to the emergence

of the latest information that stands as convincing facts and insight for climate change philosophy (Caillaud & Flick, 2017).

The study may also discover general public, press, and social media views. Understanding climate change philosophy and mitigation may not be adequate for global communities to think correctly about climate change. It is a collective work from every field of life: science alone, humanity studies, Education, social science, art, and other unthinkable fields. Other vital means could help reform students' perceptions about climate change. These will foster programs that will reinforce critical perception and awareness of climate change and the need for environmental protection.

5.2. Recommendation

In conclusion, climatic variation could be the significant and central task that opposes humanity. Nevertheless, it is unavoidable that it will not be likewise noticeable in every space simultaneously. Because of the impact of the global economic predicament, it is transparent that the agitations of consigned commercial benefits contend with worldwide issues. Thus, the steadiness of such rivalry differs from nation to nation across an extended period. These impact community views, the behaviours and activities of societal representatives, and the varying stability of governmental rivalry as a fundamental issue in the change in the direction of climate-oriented plans and determining community views regarding specific planning procedures or actions.

Nevertheless, some nations globally have put forward the argument on the issue of climatic variation programs. The opinions or contentions reflect the science-based knowledge on the man's action and severe challenges toward climatic variation – while the people call for a quick strategy comeback. Thus, the people's views offer political establishments assurance to take action through environmental advocates, non-governmental institutions, and broadcasting outlets. These trigger massive people's views. Nevertheless, the governmental program requires discourse climatic change to transcend from a grassroots network to global initiation.

This thesis primarily focused on students' perception of climate change and politics – universities' cases across Nigeria's six geopolitical zones. The research has concluded, and therefore, make recommendations as follows:

- Reinforce more scientific and practical teachings on climate change through the academic classroom and various social media platforms.
- Geographers and institutions of learning should be more practical in understanding the human cause of climate change.
- Geographers and institutions of learning should emphasize threats constituted by climate change.
- Geographers and the academic community should be more environmentally conscious and disseminate atmospheric issues and ozone depletion.
- The academic community, public institutions, and corporate organisations should collaborate in ensuring public campaigns on awareness, collective social responsibility, and possession of environmental values toward climate change.
- Public representatives, activists, and academic communities should identify many renewable avenues to interact with our immediate environment by engaging in renewable activities that minimize climatic crises.
- To educate people to engage in more eco-friendly activities and lifestyles.
- To educate the public on the science behind the climatic crisis and ways to alleviate the predicaments.
- Public representatives should adopt policies that encourage collective responsibilities among the people as a tool to minimize climatic threats.
- More advancement should be channeled towards environmental hygiene and efficient waste management to minimize the effects of climate change.
- Government and private investors should invest in more renewable energy and innovations that will safeguard our environmental resources.
- Our academic communities should emphasize the adverse effects of the climatic crisis, human activities, climatic remedies, environmental values, environmental threats, atmospheric issues, and collective responsibilities.
- Climate change and environmental education should be vital to national advancement frameworks.

- Politicians and public servants should express more openness and political will toward climate change and education.
- Teaching the science behind climate change should not follow any political biases; instead, more practical teaching must be encouraged in all our academic communities.
- Academicians should conduct multiple studies on climate change, education, and environmental studies.
- The academic syllabus should emphasize comprehensive teaching of climate change and environmental studies.
- More emphasis and teaching should center on algae farming as an alternative to fossil fuel production, which will minimise carbon emissions and waste pollution. Conventional farmers should work towards that innovation.

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LIST OF ATTACHMENTS

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Attachments 2: Second Step Of The Questionnaire Administration For The General
Test.

RESEARCH QUESTIONNAIRE

FIRST STEP OF THE QUESTIONNAIRE ADMINISTRATION FOR THE PILOT TEST

The study proposed to educate people, the community, policymakers, and students and recommend remedies to combat climate change in every nation across the globe. The research is crucial to understanding the perception of climate change and climate politics, advancing viable environmental programs, and executing climate change education. The researcher shall deeply appreciate filling out this research questionnaire to access your data and opinions concerning the leading questions per the postulated research questions. All the information provided shall be treated privately without divulging details for any purpose – except for this current study.

Thanks for your anticipated cooperation.

SECTION I: Personal Information

(Please tick the appropriate box)

1. What is gender? Male Female
2. What is age? Below 21 21-30 31- above
3. What is education status? Undergraduate Postgraduate qualification
4. What is your department (Department/School/Faculty? Humanities) Education (Science) Natural Science Medical science Engineering Social science

SECTION II: Climate Change Threat

Please tick one box on each row: **Strongly Disagree (SD)**, **Disagree (D)**, **Undecided (U)**, **Agree (A)**, **Strongly Agree (SA)**

- | | (SD) | (D) | (U) | (A) | (SA) |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 5. Everybody can do a lot to minimize the threat of climate change. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. There are so many threats associated with climate change, such as temperature rise,
Rise in sea level, drought, heavy storms, desertification, and flood | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. The threat of climate change is inevitable because of how modern society works. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. People should minimize energy consumption to minimise climate change threats. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

9. Climate change is just a natural fluctuation in the earth's temperatures. () () () () () ()
10. If everyone else did, I would only do my bit to reduce the climate change threat. () () () () () ()
11. There should be access to relief materials for potential environmental threats
driven by climate change. () () () () () ()
12. It is probably too late to address any threat relating to climate change. () () () () () ()
13. Human activities have no significant impact on global temperature threat () () () () () ()
14. Climate change is something that frightens me. () () () () () ()
15. Developing countries should take most of the blame for climate change. () () () () () ()
16. I am uncertain about whether the climate change threat is happening () () () () () ()
17. Drastic steps need to be taken to address climate change threat. () () () () () ()
18. People seem to be less concerned about addressing threats relating to climate change. () () () () () ()
19. The proof of climate change threat is undependable. () () () () () ()
20. The United States and other advanced nations should take most of the blame
for climate change threats. () () () () () ()
21. Claims that human activities are climate change threats are exaggerated. () () () () () ()
- SECTION III: Human Activities/Human Impact on Climate Change**
- Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA)**
- (SD) (D) (U) (A) (SA)
22. There are several controversial proofs that climate change is caused
by human activities () () () () () ()
23. Leaving the lights on in my home adds to climate change. () () () () () ()
24. Climate change is a consequence of modern life () () () () () ()
25. The effects of climate change are likely to be disastrous. () () () () () ()
26. Nothing I do makes any difference to minimizing climate change one way or another. () () () () () ()
27. Pollution from industry is the leading cause of climate change. () () () () () ()
28. I tend to consider information about human-caused climate change irrelevant. () () () () () ()
29. Recent floods in this country are due to climate change. () () () () () ()
30. It is too early to say whether human activities cause climate change. () () () () () ()
31. Flooding is not increasing; there is just more reporting in the media these days. () () () () () ()

32. It is unnecessary to address the human cause of climate change because no one else is. () () () () () ()
32. Experts agree that climate change and human activity are real problems. () () () () () ()
33. Nothing I do daily contributes to the problem of climate change. () () () () () ()
34. Industry and business should be doing more to tackle climate change. () () () () () ()
35. The government wants to minimize the human effects of climate change. () () () () () ()
36. I do not believe climate change is a real problem. () () () () () ()
37. The government is not doing enough to address the human cause of climate change. () () () () () ()
38. Morally, I am challenged to do something about climate change. () () () () () ()

SECTION IV: Remedies to Climate Change

Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA)
 (SD) (D) (U) (A) (SA)

39. By trekking or riding a bicycle to work. () () () () ()
40. Using public means of transportation. () () () () ()
41. Turn off lights I am not using () () () () ()
42. Purchase energy-efficient electrical gadgets () () () () ()
43. Purchase organic foodstuff () () () () ()
44. Reprocess wasted glass materials () () () () ()
45. Recycle other items () () () () ()
46. Be involved in public environmental matters () () () () ()
47. What recommendations would you give to the following bodies for revision, alleviation, and communiqué purposes?
- a.Environmental Scientists
-
- b. The mass media
- c. The public administration
-

SECTION V: Collective Responsibilities

52. Reprocess paper materials. Regularly Occasionally Never

53. Preserve electric power by turning off the lights. Regularly Occasionally Never
54. Cut down the use of a car. Regularly Occasionally Never
55. Purchase power-saving washing gadgets. Regularly Occasionally Never
56. Purchase environmentally friendly goods. Regularly Occasionally Never
57. Make use of private bags while shopping. Regularly Occasionally Never
58. Donate to an environmental organization monetarily and by personal involvement. Regularly Occasionally Never
59. Encourage others to act in an environmentally friendly way (e.g., recycling). Regularly Occasionally Never
60. Visit natural places (i.e., countryside, parks, forests, beaches.). Regularly Occasionally Never

61. Do you think anything to combat climate change? "Yes () " No () " Undecided ()

62. If yes, what can be done to tackle climate change?

63. Who do you think should be responsible for tackling climate change? Please tick one box only:

International organizations (e.g., the UN) () The national government () Local government ()
Business and in

dustry () Environmental organizations/ lobby groups (e.g., Worldwide Fund for Nature) () Individuals
() Other (please write in _____)

64. Have you ever acted out of concern for climate change? Yes () " No () undecided ()

65. If yes, what did you do/ are you doing?

SECTION VI: Climate Change Awareness

66. Are you aware of climate change? Yes () " No () " Undecided ()

67. What do you know about it?

68. Where have you heard about climate change? Tick as many as you feel apply:

Television () Radio " Newspaper () Internet () Specialist publications/academic journals ()
Environmental groups (e.g., Worldwide Fund for Nature) () Schools/colleges/universities ()
Government agencies/ information () Public libraries () Friends/ family () Local council () Energy
suppliers () Other (Please write in _____)

69. By ticking one box on each row, please specify how much you would trust information about
climate change if you heard it. A lot () A little () Not very much () Not at all () Undecided ()

69.1. A family member or a friend A lot () A little () Not very much () Not at all () Undecided ()

69.2 A scientist A lot () A little () Not very much () Not at all () Undecided ()

69.3 The government A lot () A little () Not very much () Not at all () Undecided ()

69.3. An energy supplier A lot () A little () Not very much () Not at all () Undecided ()

69.4. An environmental organization A lot () A little () Not very much () Not at all () Undecided ()

69.5. The media (i.e., television, radio, newspapers) A lot () A little () Not very much () Not at all ()
Undecided ()

70. How important is the issue of climate change to you personally? A lot () A little () Not very much ()
) Not at all () Undecided ()

71. Why is it important to you?

72 What do you think causes climate change?

SECTION VII: Atmospheric issues

73. Has the intensity of heat increased during summer? Yes () No ()

74. Are heatwaves more frequent now during summer/drought? Yes () No ()

75. Are there more frequent and robust storms during summer/drought? Yes () No ()

76. Is there enough rainfall during summer/drought? Yes () No ()

77. Do hailstorms/windstorms occur more frequently? Yes () No ()

78. Is the severity of cold more irregular than in the past? Yes () No ()

79. Does winter arrive on time? Yes () No ()

80. Does the winter season remain for a more extended period? Yes () No ()

81. Is the frequency of rain the same as previously? Yes () No ()
82. Do cold waves occur with the same frequency as in the past? Yes () No ()
83. Has the intensity of fog decreased compared to previous days? Yes () No ()
84. Is there the presence of dewdrops along with fog? Yes () No ()
85. Does the severity of the cold linger for a shorter time? Yes () No ()
86. Does the dense fog conceal sunlight for more than a day? Yes () No ()
87. Is the timing of the sunrise delayed? Yes () No ()
88. Is the occurrence of rainfall the same as previously? Yes () No ()
89. Do rainfall events occur for 5-7 days during the rainy season? Yes () No ()
90. Does rainfall occur regularly during the rainy season? Yes () No ()

SECTION VIII: Environmental Values

Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA)

(SD) (D) (U) (A) (SA)

91. Jobs today are more important than protecting the environment for the future
92. I am unwilling to make personal sacrifices for the environment's sake.
93. If my job caused environmental problems, I would rather be unemployed than carry
 on causing them.
94. Having a car is part of having a good lifestyle.
95. Humans can modify the natural environment to suit their needs.
96. Humans are severely abusing the planet.
97. Plants and animals have the same rights as humans to exist.
98. Nature is strong enough to cope with the impact of modern industrial nations.
99. Humans were meant to rule over the rest of nature.
100. The balance of nature is very delicate and easily upset.

SECTION IX: Climate change

Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA)

(SD) (D) (U) (A) (SA)

101. Climate change related to political politics.

102. Climate change defined environmental values. () () () () ()
103. Climate change deals with voluminous atmospheric issues. () () () () ()
104. Climate change connotes regular awareness. () () () () ()
105. Climate change depends on collective responsibilities. () () () () ()
106. Climate change constitutes a threat. () () () () ()
107. Climate change triggers human activities. () () () () ()
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SECOND STEP OF THE QUESTIONNAIRE ADMINISTRATION FOR THE GENERAL TEST

The study proposed to educate people, the community, policymakers, and students and recommend remedies to combat climate change in every nation across the globe. The research is crucial to understanding the perception of climate change and climate politics, advancing viable environmental programs, and executing climate change education. The researcher shall deeply appreciate filling out this research questionnaire to access your data and opinions concerning the leading questions per the postulated research questions. All the information provided shall be treated privately without divulging details for any purpose – except for this current study.

Thanks for your anticipated cooperation.

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(Please tick the appropriate box)

1. What is gender? Male Female
2. What is age? Below 21 21-30 31- above
3. What is education status? Undergraduate Postgraduate qualification
4. What is your department (Department/School/Faculty? Humanities) Education (Science) Natural Science Medical science Engineering Social science

SECTION II: Climate Change Threat

Please tick one box on each row: **Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA)**

- | | (SD) (D) (U) (A) (SA) |
|--|-------------------------|
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Rise in sea level, drought, heavy storms, desertification, and flood | () () () () () () |
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| 8. People should minimize energy consumption to minimise climate change threats. | () () () () () () |
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| 10. If everyone else did, I would only do my bit to reduce the climate change threat. | |

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SECTION III: Human Activities/Human Impact on Climate Change

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suppliers () Other (Please write in _____)

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90. Does rainfall occur regularly during the rainy season? Yes () No ()

SECTION VIII: Environmental Values

Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA)

(SD) (D) (U) (A) (SA)

91. Jobs today are more important than protecting the environment for the future
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98. Nature is strong enough to cope with the impact of modern industrial nations.
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100. The balance of nature is very delicate and easily upset.

SECTION IX: Climate change

Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), Strongly Agree (SA)

(SD) (D) (U) (A) (SA)

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105. Climate change depends on collective responsibilities. () () () () ()
106. Climate change constitutes a threat. () () () () ()
107. Climate change triggers human activities. () () () () ()
108. Climate change represents different political views () () () () ()
109. Climate change views are essential. () () () () ()
110. Climate change refers to environmental transformation. () () () () ()
111. Climate change causes heavy floods. () () () () ()
112. Climate change depicts weather variation. () () () () ()
113. Climate change is a natural event. () () () () ()
114. Climate change is both a natural and human phenomenon. () () () () ()
115. Climate change signifies changes in atmospheric conditions. () () () () ()
116. Climate change induced by human activities () () () () ()
117. Climate change is an actual environmental event. () () () () ()

CURRICULUM VITAE

A. PERSONAL DATA

- i.** Name : **Gbadeyanka Gbadebo Edward**
- ii.** Gender : **Male**
- iii.** Marital Status : **Married**

B. OBJECTIVES:

To be a competent researcher and teacher in the teaching of English language, social sciences, Geography (Human and regional aspects), Management and Environmental related issues like housing, climate change, and environmental degradation, etc.

C. SELF-DESCRIPTION

Humble, Disciplined, Goal-oriented, Team player, Accountable, Teachable, and Reliable.

D. EDUCATIONAL INSTITUTIONS ATTENDED WITH DATES:

- i. Karabuk University, Turkey 2019 – 2023
- ii. Lead City University 2009/10 -2011
- iii. University of Ado Ekiti /Ekiti State University 1997/98 -1999
- iv. National Institute of Marketing of Nigeria/Chartered Institute of Marketing of Nigeria 2000
- v. University of Abuja 1991/92– 1995
- vi. Arandun Grammar School, Kwara State 1985 – 1990
- vii. Oremeji Primary School, Tolu, Lagos State 1979 – 1984

E. EDUCATIONAL QUALIFICATIONS OBTAINED WITH DATES:

- i. PhD Geography December 2023

ii.	M.Sc. Environmental Management	2011
iii.	MBA (Master of Business Administration)	1999
iv.	Associate Chartered Marketer [Amin Equivalent to Degree Award)	2000
v.	B. Sc [Geography]	1995
vi.	Waec O Level Certificate	1990
vii.	Neco O Level Certificate	2013
viii.	Primary School Leaving Certificate	1984

F. RESEARCH PROJECTS AND UNPUBLISHED PAPERS

PRESENTATION FROM UNDERGRADUATE TO POST-GRADUATE:

- B.Sc. (Hons) Geography

Users Satisfactory with Students Housing in Nigerian

Universities: A Case Study of University of Abuja 1995

- MBA (Master of Business Administration)

An Appraisal of the Activities of Nigeria Port

Authority (Plc) 1999

- MSc Environmental Management Challenges of Urban Housing Facilities in Nigeria: A Case Study of Molete Residential Area of Ogunpa Riverbank in Ibadan Northwest Local Government Area, Oyo State, Nigeria.
2011

OTHER UNPUBLISHED PAPER PRESENTATION INCLUDES THE FOLLOWING TOPICS:

- Challenges of Geographic Information System in Land Management of the Federal Capital Territory of Abuja, Nigeria – (1994)
- Challenges of Journey to Work in Abuja Metropolitan City – (1995)
- Marketing Challenges of Nigerian Liquified Natural Gas (NLNG) – (1998)
- Problems of Capital Rationing in Nigerian Banking System: A Case Study of United Bank of Africa – (1999)

- Water Management Problem in Nigerian River Niger and River Benue Basin – (2009)
- Challenges of Geophysical Survey in Nigerian Water Bore-Hole Industry – (2010)

- **Published and Pending Articles**

- Waste Management Education: A Driven Concern for Academy Community (2020)
- Climate Change: A Discourse of our Contemporary World (2021)
- Cases of Immigration Flux and Regulations in Turkey: A Crucial Lesson to (Under Review) the European Communities
- Contextual Review of Covid 19 and Climate Change Alleviation: A Message (2022) for our Present World
- An Information-based Approach to Sustainable Eco-communities through (2022)

Climate Change Initiatives

- Environmental Compliance Awareness among Hotel Operators: A Quest for (Under Review) Eco-sustainability

G. WORK EXPERIENCE/ PREVIOUS APPOINTMENTS WITH DATES:

Date	Institution	Post
i. 1995/96	Federal Capital Development Authority, Abuja	Planning Officer II
ii. 1997- 2000	Alpha Beta Magt. Consultancy Firm, Abuja	Marketing Officer
ii. 2001- 2019	Federal Civil Service Commission, Abuja	Chief Education Officer

H. NATURE OF DUTIES/JOB DESCRIPTION IN PREVIOUS APPOINTMENTS

- i. Mapping of Layout, Structure Development Control Allocations, Land Use Assessment and structural control.
- ii. Marketing of Company Services.
- iii. Class Room Teacher in Subjects such as Geography, Marketing, Commerce, Social studies, Nigerian Constitutional Studies, and Civic education

I. NATIONAL YOUTH SERVICE CORPS:

Certificate of National Service
(1995 – 1996)

J. EXTRACURRICULAR ACTIVITIES:

Reading, Research, Making of Art Works with Creativity and Sporting

K. REFERENCES:

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Karabuk, Turkey.

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Federal University of Kashere
Gombe State. Nigeria.