



**NEAR EAST UNIVERSITY
INSTITUTE OF GRADUATE STUDIES
DEPARTMENT OF ENVIRONMENTAL EDUCATION**

**BELIEFS AND INTENTIONS TO ENACT POSITIVE ENVIRONMENTAL
CHANGE: A STUDY OF UNDERGRADUATES OF THE UNIVERSITY OF
IBADAN, NIGERIA**

MASTER'S THESIS

PETERS REBECCA NZUBECHUWKU

Nicosia

February 2022

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Thesis Supervisor: Prof. Dr. Engin BAYSEN

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Approval

We certify that we have read the thesis submitted by Peters Rebecca Nzubechuwku titled “**Beliefs and Intentions to Enact Positive Environmental Change: A Study of Undergraduates of the University of Ibadan, Nigeria**” and that in our combined opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Doctor of Educational Sciences.

Examining Committee	Name-Surname	Signature
Head of the Committee:	Assoc. Prof. Dr. Askın KIRAZ
Committee Member:	Assoc. Prof. Dr. Behcet ÖZNACAR
Supervisor:	Prof. Dr. Engin BAYSEN

Approved by the Institute of Graduate Studies

...../...../2022

Prof. Dr. Kemal Hüsnü Can Başer
Head of the Institute

Declaration

I hereby declare that this thesis study is my study, I had no unethical behavior in all stages from the planning of the thesis until writing thereof, I obtained all the information in this thesis in academic and ethical rules, I provided reference to all of the information and comments which could not be obtained by this thesis study and took these references into the reference list and had no behavior of breaching patent rights and copyright infringement during the study and writing of this thesis.

Peters Rebecca Nzubechuwku

...../...../2022

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Peters Rebecca Nzubechuwku

Abstract

Beliefs and Intentions to Enact Positive Environmental Change: A Study of Undergraduates of the University of Ibadan, Nigeria

Peters Rebecca Nzubechuwku

Institute of Graduate Studies, Department of Environmental Education

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This study assessed beliefs and intentions of the undergraduates of the University of Ibadan, Nigeria, to enact positive environmental change using a quantitative survey research design. Data elicited from a randomly sampled 400 undergraduates through the Climate Change Attitude Survey instrument designed by Christensen & Knezek (2016), using the simple percentage, and Mann Whitney U and Kruskal Wallis.

Underpinned by the Theory of Planned Behaviour, results from our findings showed moderately high beliefs (3.97 mean) and intentions (3.56 mean), established a correlation between beliefs and intentions ($r(399)=0.265$, $p=0.000$). Results from our findings showed No significant difference between the beliefs and intentions of the students towards climate change according to Age, No significant difference between the beliefs and intention of the students towards climate change according to gender, no significant difference between the beliefs and intention of the students towards climate change according to grade.

Also, results indicated no significant difference between the beliefs and intention of the students towards climate change according to some non-sciences related faculties while there is a significant difference between the belief and intention of the students towards climate change according to science courses related faculties in comparison with Arts related faculties, leaving Medicine faculty with the most distinguished faculty with both high belief and intention towards climate change which thus implies that education is a starring factor and as such Environmental education should extend to all students.

Keywords: Beliefs, Climate Change, Environmental Change, Intentions, Undergraduates

Özet

Olumlu Çevresel Değişimi Gerçekleştirmeye Yönelik İnançlar ve Niyetler: Nijerya, İbadan Üniversitesi Mezunları Üzerine Bir Araştırma

Peters Rebecca Nzubechuwku

Lisansüstü Eğitim Enstitüsü, Çevre Eğitimi Bölümü

Şubat 2022

Bu çalışma, Nijerya'daki Ibadan Üniversitesi'ndeki lisans öğrencilerinin, nicel bir anket araştırma tasarımı kullanarak olumlu çevresel değişimi yürürlüğe koyma konusundaki inançlarını ve niyetlerini değerlendirdi. Veriler, Christensen & Knezek (2016) tarafından basit yüzde kullanılarak tasarlanan İklim Değişikliği Tutum Anketi aracı ve Mann Whitney U ve Kruskal Wallis aracılığıyla rastgele örneklenen 400 lisans öğrencisinden elde edildi.

Planlı Davranış Teorisi tarafından desteklenen, bulgularımızdan elde edilen sonuçlar orta derecede yüksek inançlar (3,97 ortalama) ve niyetler (3,56 ortalama) gösterdi, inançlar ve niyetler arasında bir ilişki kurdu ($r(399)=0.265$, $p=0.000$). Bulgularımızdan elde edilen sonuçlar, Yaşa göre öğrencilerin iklim değişikliğine yönelik inanç ve niyetleri arasında anlamlı bir farklılık olmadığını, Cinsiyete göre öğrencilerin iklim değişikliğine yönelik inanç ve niyetleri arasında anlamlı bir farklılık olmadığını, iklim değişikliğine yönelik inanç ve niyetleri arasında anlamlı bir farklılık olmadığını göstermiştir. öğrencilerin sınıfa göre iklim değişikliğine karşı

Ayrıca, sonuçlar, bazı fen dışı fakültelere göre öğrencilerin iklim değişikliğine yönelik inanç ve niyetleri arasında anlamlı bir farklılık olmadığını gösterirken, Türkiye'deki ilgili fakültelerin fen bilimleri derslerine göre öğrencilerin iklim değişikliğine yönelik inanç ve niyetleri arasında anlamlı bir farklılık bulunmuştur. Sanatla ilgili fakültelerle karşılaştırıldığında, Tıp fakültesini iklim değişikliğine hem yüksek inanç hem de niyetle en seçkin fakülte ile bırakmak, bu nedenle eğitimin başrol oyuncusu olduğu ve bu nedenle Çevre eğitiminin tüm öğrencilere yayılması gerektiği anlamına gelir.

Anahtar Kelimeler: İnançlar, İklim Değişikliği, Çevresel Değişim, Niyetler, Lisans Öğrencileri

List of Abbreviation

- IPCC** : Intergovernmental Panel on Climate Change.
TPB : Theory of planned behavior
TRA : Theory of reasoned action
CCAS : Climate change attitude survey

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CHAPTER I

Introduction

Background of the Study

Across the world, change in the environment is a critical issue that requires urgent and collective effort as adverse weather conditions affect the survival of sensitive species and habitats. As the Anthropocene progresses, global environmental change, including a more deep and unsettling transformation of the climate, is accelerating (McMichael et al., 2015). Technological advancements, wasteful consumption, and rapid population expansion are all contributing to global environmental changes. For a long time, the harmful environmental change discourse has continued to receive a lot of attention in the media and academia (Nickerson and Moray, 1995), especially in recent times. Scientists, policymakers, and the populace have grown huge concerns about the future harm that environmental change poses if it continues unhalting.

On a worldwide scale, climate change is a global challenge that has economic, environmental, and social implications (Mendelsohn and Williams, 2006). Climatic change, according to the United States Environmental Protection Agency (USEPA, 2014), is defined as any critical shift in climate measures that lasts for a prolonged period. Put differently, change in climatic conditions includes significant alteration in temperature, precipitation, or wind patterns, among other things, that occur over a long period, a few decades or more. A growing number of scientists from several fields of study have been examining specific aspects of this transition to develop effective techniques for minimising possibly destructive consequences.

The increasing global issue of Climate Change cannot be most significantly studied if the beliefs and intentions of people are not well digested. Thus, this study sort to examine the beliefs and intentions of university students to make a positive impact in the environment. Climate change education begins in the classroom (Wunderlich, 2013). Schools according to McCaffrey, Berberco, and Scott (2013) require new tactics and resources to address young people's lack of world knowledge. Glaciers have shrunk, ice on rivers and lakes is shattering up earlier, plants and animals are going on extinction. Most negative implications were predicted by scientists in the past regarding climate change and other environmental issues are fast coming into reality. These include intense heatwave, loss of sea ice,

and accelerated sea-level rise.

Climate change has been the subject of a slew of conferences, campaigns, reports, and studies in the last two decades (Rio Declaration Agenda 21 1992. IPCC 2001, Copenhagen, 2009). Stakeholders across the world are not oblivious of the implications of man-made climate change, and these implications are widespread (United Nations, 2015). Consequent to this, a review of people's beliefs and intentions regarding the major environmental issue of climatic conditions is of great importance. Against this background, the researcher is interested in measuring the beliefs and intentions of university students to enact positive environmental change. Perhaps "NOW" is considered to be a crucial time to take decisive action to protect the future of the planet.

Statement of the Problem

Climate change poses a complex issue to today's society because of its effects on human life and the natural environment. Climate change manifests itself in a variety of ways, ranging from rising diurnal temperatures to seasonal changes in precipitation patterns, increasing sun intensity to decreasing rainfall, causing many distortions in industrial activities that rely on agricultural raw materials. Aside from these effects, climate change causes increased investment in infrastructure, economic operations, and other coping techniques, resulting in rising livelihood implications and poverty levels (Ferguson, 2006).

Climate change is a major, perhaps, most serious issue facing humanity, with far-reaching ramifications for humanity's survival across the globe. Man, as an ecological organism, requires a healthy environment in which to live. Resulting from its significant reliance on agricultural activities driven by rain, widespread poverty, and limited mitigation and response capacity, Africa is particularly vulnerable to the negative implications of climate change (Igwebuike et al., 2009). The socio-economic actions of the people exacerbate this vulnerability. Africa's sensitivity to climate change, as well as its incapacity to adapt to these changes, could have disastrous consequences for the people's socio-economic well-being. Given its southern location along the coast and northern borders with the dry Sahel, African is one of the most prone continents to the effects of global warming (IPCC, 1996), particularly Nigeria.

Climate change is already impacting the trajectory of people's lives in Nigeria.

Extreme weather events and weather pattern unpredictability are wreaking havoc on people who rely on land, lakes, and oceans to support themselves and earn a living. Climate change is a serious subject that necessitates a broad public understanding and awareness. Humans are progressively impacting the climate and the earth's temperature in a variety of ways, making the environment not healthy. Information is a powerful tool. Within the school curriculum, opportunities abound for students to deepen their awareness of sustainable development. Nonetheless, there appears to be a paucity of research on students' awareness of and growth of sustainability, as well as its integration into the school curriculum, particularly in Africa's most populous nation, which is why this study was undertaken.

By population and geographical scope, Ibadan is the third-largest city in Nigeria, the capital, and most populous, industrialised city in Oyo State, South West, Nigeria. There is an increased level of industrialisation, as well as a lot of commercial activities that generate waste in Ibadan, being a growing economic hub in the South West region of the country. Among other, federal and non-governmental institutions, the University of Ibadan, the first in Nigeria is domiciled in the city of Ibadan. The university is a top-tier educational institution. University students must be aware of climate change issues as they pertain to long-term development. Although scientific, awareness and comprehension of climate change concepts and occurrences are beneficial to all humans; sufficient to say, undergraduates assume responsibility for imparting knowledge when they graduate and begin practicing their professions (2009, Nath). It is based on the above-stated premise that this study aims to assess the level of students' participation and their attitudes towards environmental sanitation and protection.

Purpose of the Study

This study assesses the beliefs and intentions to enact positive environmental change among the undergraduates of the University of Ibadan, Nigeria. However, the specific objectives are to:

- i) investigate the climate change beliefs of the undergraduates of the University of Ibadan, Nigeria.
- ii) examine the climate change intentions of the undergraduates of the University of Ibadan, Nigeria.

Research Questions

This study was guided by the following research questions.

1. Is there any significant difference between the beliefs of the students towards climate change according to Gender?
2. Is there any significant difference between the intention of the students towards climate change according to Gender?
3. Is there any significant difference between the beliefs of the students according to Faculty?
4. Is there any significant difference between the intention of the students towards climate change according to Faculty?
5. Is there any significant difference between the beliefs of the students towards climate change according to grade?
6. Is there any significant difference between the intentions of the students towards climate change according to grade?
7. Is there any significant difference between the beliefs of the students towards climate change according to age?
8. Is there any significant difference between the intentions of the students towards climate change according to age?

Significance of the Study

The outcome of this study will drive positive environmental change, encourage positive belief systems and the right intentions of the students towards the environment. The study is relevant in creating awareness to the public most importantly university students about the right belief and intention to make a beneficial impact on the environment. Considering rate and adverse effects of environmental change, ranging from Climate change, global warming, ozone layer depletion, etc. The study would help create awareness and spur the right actions toward the environment especially in combating climate change amongst university students and the larger society. More so, the findings of this study would serve as a significant planning input to reshape and develop an effective and efficient belief system and intention to achieve a sustainable environmental future. The findings of this study will help to drive curriculum development, as well as educational policies to train environment and climate-conscious students.

Limitations

This study is delimited to the beliefs and intentions of university students to enact environmental changes. The factor is to motivate the action and examine ways to institute the right belief systems of students including their intention to enact positive environmental change. It is also limited to the environmental and economic relevance of engaging the university students to study their beliefs and intention for a positive environmental change. Specifically, this study will cover the beliefs and intentions of the undergraduates of the University of Ibadan to drive positive environmental change.

This study is limited to the beliefs and intentions of the undergraduates of the University of Ibadan, Nigeria. It does not include other student categories. The study is limited to undergraduates who are 16 years of age and above, between 100L to 700L and are across all the faculties in the University of Ibadan. The questionnaire is limited to beliefs and intentions on climate change and the environment. Due to time constraints, the study is limited to only undergraduates of the University of Ibadan. Also, COVID 19 guidelines hindered the time spent on data collection.

The first chapter introduced the study with a focus on the study's background, statement of the problem, findings, justification, research questions, purpose of the study, aim and objectives. Chapter two comprises main of the review of literature related and relevant literature and the conceptual framework. The third chapter contains the research methodology which is composed of the population of the study/sample size, data need, method of data collection, research instrumentation, the research design, data processing, data analysis, method of data presentation, and discussion of result. Chapter four deals with the analysis of data, presentation of the data, the test of hypothesis. Chapter five focuses on the summary, conclusion from findings, and recommendations.

Definition of Terms

Behavioural Intention: Behavioural intention significantly predicts and determines actual behaviour. The strength of a person's desire to engage in a specific behavior.

Beliefs: This explains the mindset and predisposition needed to anticipate The intention of a person to act or engage in behavior.

Environmental Change: This explains the outcome or experience occasioned by human activities that alter the natural order in the environment. Here, the intention is influenced by beliefs that can either be a positive or negative change in the environment.

Undergraduates: This refers to the registered regular students of the University of Ibadan, Nigeria.

CHAPTER II

Literature Review

Theoretical Framework

Generally, in behavioural and social sciences, attitude and intention are essential constructs and variables in studying and understanding human behaviour. Attitude and intention are essential constructs in the Theory of Planned Behaviour by Ajzen (1991) posited that attitude among other factors determines intention to carry out an action or behaviour at any given time (Kan and Fabrigar, 2017). According to LaMorte (2019), the intent is a key component of the TPB which is driven by the attitude to display behaviour. While attitude describes the degree or extent to which a person has a favorable (positive) or unfavorable (negative) a study of the behavior of a person of interest,, the behavioural intention explains the drive or motivation for a behaviour per time, and this intention, when stronger dictates how well or likely the behaviour will be performed or carried out (LaMorte, 2019).

The Climate Change Attitude Survey (CCAS) was designed to be employed to evaluate elementary school students' attitudes and views regarding climate change, as well as their aspirations to make positive changes. Educators can arrange suitable instruction and evaluate curriculum performance by measuring students' attitudes toward educational activities.

Environmental education aims to generate informed people with positive attitudes toward energy conservation through both emotive and cognitive outcomes (Lawrenz, 1988). Individuals who are aware of resource issues may not always be willing or able to alter their behavior in order to save energy and protect the environment (DeWaters & Powers, 2013). Beliefs are built on the foundation of knowledge, that can lead to actions or not. Environmental attitudes are made up of beliefs, feelings, and intentions to act in a certain way in response to environmental actions or challenges (Schultz, Gouveia, Cameron, Tankha, Schmuck & Franek, 2005; DeWaters & Power, 2013).

For decades, scientists have acknowledged the importance of intentions and beliefs in science teaching (Haney, Czeriak, & Lumpe, 1996). It is noteworthy that Beliefs

are used to predict a person's desire to behave in Ajzen's theory of planned behavior. Ajzen (2002) described behavioural intentions as a sign of an individual's readiness to engage in a particular action based on their attitudes and perceived behavioral control, and they are regarded as an immediate antecedent to conduct. Many researchers have found a strong link attitudes, behavioral intention, and finally behavior (Sheppard, Hartwick, & Warshaw, 1988). Students that have a favorable attitude on human-caused climate change are more likely to take or do something about it, according to one study (Sinatra, Kardash, Taasobshirazi, & Lombardi, 2012).

Theory of Planned Behaviour

In conformity with Ajzen (1991), TPB is the most prominent and widely utilized method for explaining, predicting, and clarifying human behavior in a given situation. TPB was created as an extension of TRA to address TRA's limitations in dealing with human behaviors on which people do not have complete control. Perceived Behavioural Control, a third independent predictor of intention was introduced to predict the occurrence of intentional behaviour. TPB indicates that behavioural intentions determine individual behavior, with behavioural intention being a result of an individual's attitude toward the behavior, the SNs surrounding the behavior's performance, and the individual's judgment of the behavior's ease of execution. (Behavioral control as it is perceived) (Omotayo and Adebayo, 2015). The theory is presented below:

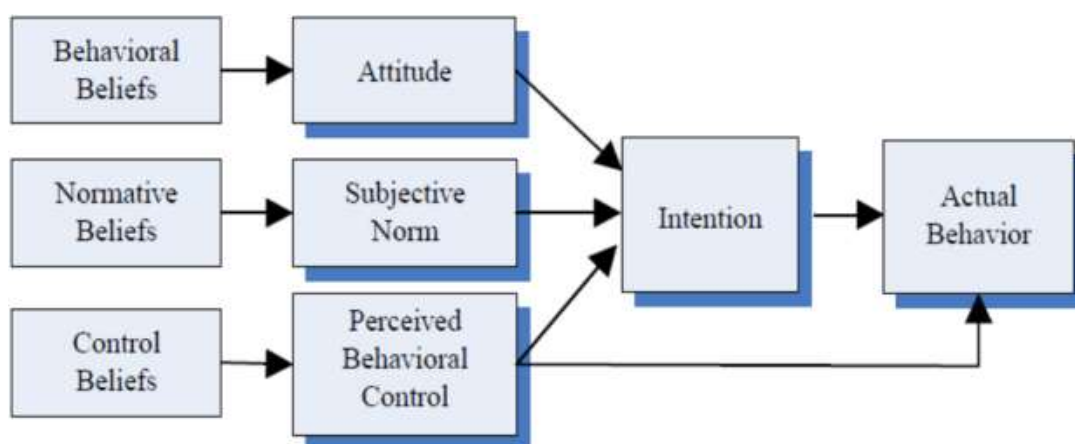


Figure 2.1: Theory of Planned Behaviour by Ajzen (1991)

CCAS was developed to test acceptance of climate change (beliefs) and desire to take an action (intentions) following established theories and research-based suggested practice. Using the CCAS, TPB will be adopted as the theoretical underpinning for this study to better understand the beliefs and intentions of the undergraduates of the University of Ibadan towards climate change. From the Theory of Planned Behaviour, the conceptual model for this study is presented below:



Figure: 2.2: Research Model

Beliefs: It is noteworthy that Beliefs are used to predict a person's intention to act or engage in certain behaviors according to Ajzen's theory of planned behavior (Ajzen, 2002)

Behavioural Intention: According to Ajzen (1991) behavioural intention significantly predicts and determines actual behaviour. The strength of a person's desire to engage in a specific behavior.

Environmental Change: This explains the outcome or experience occasioned by human activities that alter the natural order in the environment. Here, the intention influenced by beliefs which can either be positive or negative change in the environment (Lawrenz, 1988).

Environmental Change: Issues, Drivers, and Implications

Environmental changes are global/universal issues, especially as the world is witnessing global warming with various degrees of negative implications. These changes have devastating implications on the people, especially the less-privileged and the downtrodden in the society who lack befitting shelter, in-access to medical care, and lack basic amenities to reduce the effect of the climate and environmental change. However, more terrible environmental issues do not respect social class, and in these cases, even the affluent get hit badly, lose their properties, and live like every other person on the social status ladder. For instance, the hazard caused by Hurricane Katrina in 2005 was suffered by some middle-income households in New Orleans (Barnett, 2009).

On planet earth, environmental changes have been attributed to many factors and causes. These are natural events factors that drive changes in climate such as the massive Volcanic eruptions that spew microscopic particles into the atmosphere, blocking sunlight and causing a few-year cooling of the surface. This kind of natural disaster leads to loss of lives and properties and destroys the environment in no little measure. This and many other ocean currents alter the of heat and precipitation distribution. More also, Changes in the geographical distribution of solar radiation, as well as the quantity of greenhouse gases and dust suspended in the atmosphere, have occurred naturally resulted in an alteration in climatic conditions from ice ages to relatively warmer periods (Encyclopedia, 2021).

Humans are susceptible to environmental hazards on a small scale, large-scale and global scale. This can imply that some environmental hazards have minimal effects on the population, while some bring massive destruction and loss of life and properties. Some of these environmental hazards are ozone layer depletion, biodiversity loss, land degradation, hydrological systems alteration and freshwater pollution, and climate change among others. These have immeasurable adverse effects and implications on human health. There is the need to better understand the rate at which these environmental conditions impair human health, and this could be achieved through an ecosystem-designed model which identifies that the roots of a demographic's protracted healthy life are heavily reliant on the biosphere's life-supporting systems remaining stable and functioning (World Health Organisation, 2021).

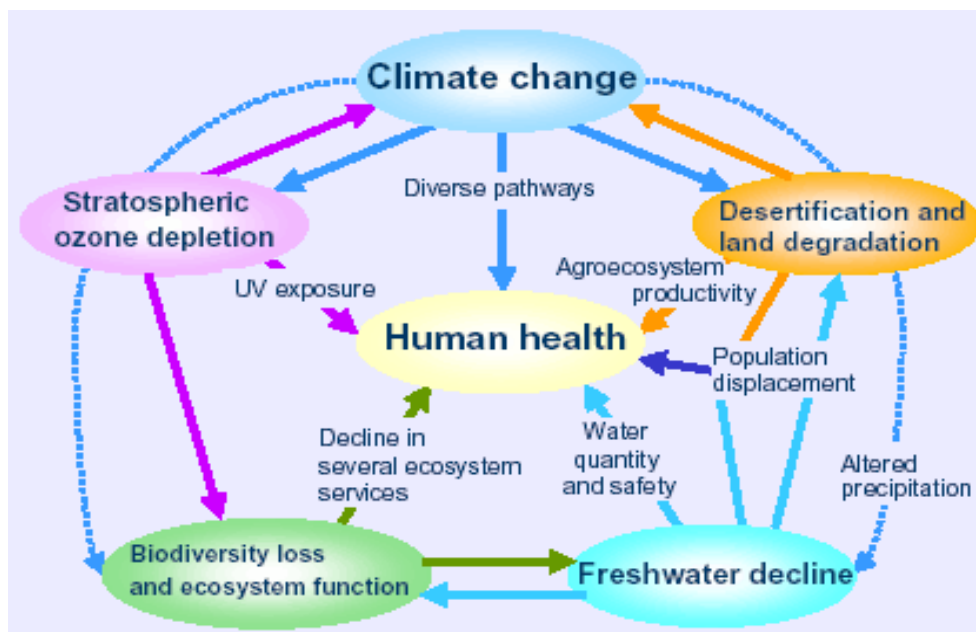


Figure 2.3: Global Climate Change and Human Health (World Health Organisation, 2021)

Global warming is an increasing threat to the human race, as, without the The average surface temperature emission would have turned the globe into a greenhouse earth into a near den of death, an uninhabitable planet for human beings across the globe. Industrial activities such as fossil fuel burning, crude oil exploration among others, have ejected CO₂ in large quantities and other greenhouse gases that impair the climate over the last 50 years. There is also an increased percentage of carbon dioxide in the atmosphere and this traps more heat in the lower atmosphere, and drought and famine increases across populations. The health implication of climate change is enormous. Some of the health implications of change in climatic conditions are:

- Increasing rate of heatwaves: As established in recent times, In no significant fraction, human-caused The 2003, European summers was made more likely by changing climate and heatwaves.
- The fresh water supply is getting compromised as a result of variable precipitation patterns, and with this, risks of water-borne disease become inevitable.
- Stable food production will reduce significantly as a result of the rising temperatures and variable precipitation, and malnutrition will be on the

increase, especially across many of the poorest regions.

- Coastal flooding and displacement of the population may be occasioned by rising sea levels. Within 60 kilometers of the sea, Currently, it is responsible for more than half of the earths population. Egypt's Nile delta, Bangladesh's Ganges-Brahmaputra delta, and many small islands such as the Maldives, Marshall Islands, and Tuvalu are among the most vulnerable.
- Ending vector-borne disease may not be possible any time soon as a result of climate changes(World Health Organisation, 2021).

In addressing climate change implications on the human race, the World Health Organisation does the following:

- The World Health Organization (WHO) Supports the IPCC assessment by managing scientific evidence reviews on the link between climate, climate change, and health. As a result of these discoveries, “WHO” submits the human race risks bad health, particularly among the poorest populations due to the increasing climate change. As a result, the organization suggests taking steps to decrease human impacts on the global climate.
- Health benefits and improvement can be driven through carefully mapped out and designed mitigation policies. For example, greenhouse gas emissions implications can be reduced to the barest minimum through a well-designed urban transport system, while also lowering the negative health effects of Pollution in the city and a lack of physical activity. Efficient insulation in housing can reduce carbon emissions and energy emissions, as well as mortality from cold and heat, as well as the The impacts of indoor air pollution caused by the combustion of biomass fuels in poor people.
- As identified by WHO, for more decades to come, varied climate change conditions as a result of historical greenhouse gas emissions continue to exist. The WHO puts in critical efforts such as funding campaigns and programmes to address disease outbreaks and treat poor populations, provide hygienic water, improve and encourage sanitation, to help to reduce health vulnerability to future climate change. Capacity building is also one of the significant efforts of the WHO in combating the implications of climate change. This includes seminars, workshops, symposia, and lectures on the to push intersectoral initiatives to reduce health vulnerability as a result of climate change and related weather patterns. With these interventions, the

health conditions of populations are improved and grounds are prepared to kick-start climate change adaptative measures.

According to scale Mendelsohn and Williams (2006), climate change is a universal phenomenon that poses environmental, social, and economic challenges across the globe. Climate change as a concept describes any critical alteration in climate measures of characteristics that persists for a long period (The United States Environmental Protection Agency (USEPA, 2014). It encompasses a significant shift in the pattern of wind, precipitation, temperature, among other climatic implications. Human survival is dependent on the possibility of managing climatic conditions and the environment to avert possible destructive risks (Knutson (2011). Sustainable development becomes difficult to actualise due to the challenges posed by climate change.

Climate change (CC) is a contemporary environmental occurrence as it translates into environmental change (Akinyoade and Akinwande, 2016). Environmental changes are seen as having social implications, and the social class of the people determines how susceptible they are to the climate and environmental change implications. The poor and middle class are so much dependent on the environment (the natural resources, the ecosystem benefits, and services whose abundance and quality is at risk from environmental changes) though they are rich, through their many industrialisation businesses activities, contribute more to the destruction of the environment.

Due to the low quality of life, the poor cannot afford the luxury that can protect them from the hazards and health implications of environmental change. By implication, environmental change poses a threat to human life and security. At this level, people and the entire community are incapacitated to manage life and environmental challenges, and these erode their values, rights, and existence. There is a total denigration of human values, and erosion of human rights to life and safety (Barnett, 2009).

Furthermore, human behaviours are attributed to the numerous terrible aspects of environmental change. Thus, it is logical to posit that a systematic behavioural change is essential in addressing environmental change, and a push or vanguard for behaviour change should be prioritised when designing environmental conservation and preservation programs or schemes as the case may be.

Behaviour is predictive and not constant. Thus, it can be changed over time through concerted and collective efforts of individuals and designated authorities to drive behavioural change towards the environment. A sense of responsibility must be put in all citizens to see the promotion of environmental change as a national responsibility in which they must contribute their quota by being conscious of their environment, conserving and preserving it to remain habitable for coming generations. As a national issue, systems must be put in place to ensure that citizens do not worsen the environmental situation with a lackadaisical attitude (National Research Council, 1995).

Arguably, driving behavioural change towards the environment change as human factors research is instrumental to shaping technology so that the natural implications of its use for human ends will be more dastard, environmentally. Technological advancement no doubt has various degrees of implications on the health of the people, and the environment. The human factor can be explored to re-engineer our mindset to drive a reversal of unwanted and undesirable occurrences in environmental change. It can help widen and expand our knowledge of how human behaviour cause changes in the environment, it can engender development of more effective tools for analysing environmental change; and it can help evaluate the effectiveness of steps to modify undesirable current occurrences (National Research Council, 1995).

Environmental changes are detrimental to the health of all living things. The lives of animals and humans are at risk and may be more endangered in the nearest future if drastic measures are not taken to address the development. Having global implications, it should present unusual avenue for international collaboration among researchers across the globe. To achieve effective and result-oriented collaboration, the researchers must be equipped with new environmental analysis tools, techniques, and perspectives. There is the need to drive collaborative efforts to ensure and engender expectations of making real progress on global climate change issues. Otherwise, we run the risk of designing inapplicable behavioural analogs of very tall smokestacks and transferring various forms of cultural acid rain to other climes in our bids to support our society (National Research Council, 1995).

In order to assess current Dalhousie University undergraduate students' levels of climate change comprehension, awareness, and concern According to the findings, students in the faculties of science and architecture and planning were more

informed, comprehending, and concerned about climate change than students in other faculties. Engineering, health professions, administration, and arts and social sciences at Dalhousie University have all benefited as a result faculties must strengthen their incorporation of climate change into academic programs (Drebot, Jenny, Jodi, Smith, Mason & Monica 2017).

Human development is grossly hindered by environmental changes which arise as a consequence of natural and human-made processes. Through the massive exploration of natural resources and the transportation and transformation of energy and materials, the environment is polluted and put at risk of destruction. While the transformation of energy from the sun into living things leads to change by cycling used resources Natural processes produce material and energy transformation into products, goods, and services through biological, oceanic, geological, and atmospheric operations (the biogeochemical cycles outlined below) Natural processes produce material and energy transformation into products, goods, and services through biological, oceanic, geological, and atmospheric operations (the biogeochemical cycles outlined below). designed to meet human needs.

Human activities are enormous, we are the largest user and explorers of the environment among all other living things and organisms. Thus, the natural process of altering the environmental order is less-destructive than human activities. In recent times are altered by Human behaviors at unparalleled sizes; human-induced consumption and net primary productivity transformation are expected to account for around 40% of that driven by the Earth's ecological processes (Vitousek et al, 1986). Nature and humans operate at par in respect to fixing nitrogen and sulphur in the environment (Graedel and Crutzen, 1989). Furthermore, Humans are responsible for disrupting the carbon cycle by releasing significant amounts of carbon into the atmosphere through fossil fuel combustion, and gas flaring. More than natural flows, Human emissions of chemical contaminants like lead outnumber natural emissions by a ratio of 17. Furthermore, about three times more than natural sources and processes, other elements such as cadmium, zinc, mercury, nickel, arsenic, and vanadium produced by humans (Nriagu and Pacyna, 1988).

Moreover, the degree of planetary changes induced or produced by human activity is obvious in physical landscape modification and modification, thus according reports. A total of 6 million km² of forest have been lost on the planet, an area larger than Europe, since the eighteenth century, (Clark, 1989). Additionally, through human

activities, land degradation has increased terrifically to a level of biotic function damage and destruction. According to a research conducted by the United Nations Environment Programme (UNEP), the rate of vegetative soil deterioration has increased since 1964. Due to various immoral agricultural/industrial operations and practices such as deforestation, 4 million hectares (17 percent of the Earth's land area) have been lost in the last 45 years, overgrazing, and overexploitation (UNEP, 1993). Arguably, more than 28 years after, soil degradation through agricultural and industrial practices has had more terrific implications on the environment with fewer efforts to cushion the effort of these unethical activities which is heating the global space and environment.

Citing McMichael et al. (2008), human destructive pressures and activities on the environment have enormous effects on biophysical and ecological systems in the world. The climate systems, as well as the natural environmental systems, are being tampered with by human activities and actions. The above Systems are critical to biological development and human health, and their disruption and depletion make it more difficult to resolve health inequities (see Fig. 2.3), McMichael posited. In every crisis, the poor and vulnerable are most affected as they are the soft targets with no capacity to acquire luxuries or afford basic health. The environmental changes harbour impending risks and this can only be addressed through adaptive and preventive strategies with the help of healthcare professionals whose roles are indispensable. Invariably, the unaddressed climate and environmental change pose greater risks and damage to the global economy as it is only healthy nations that can become wealthy nations.

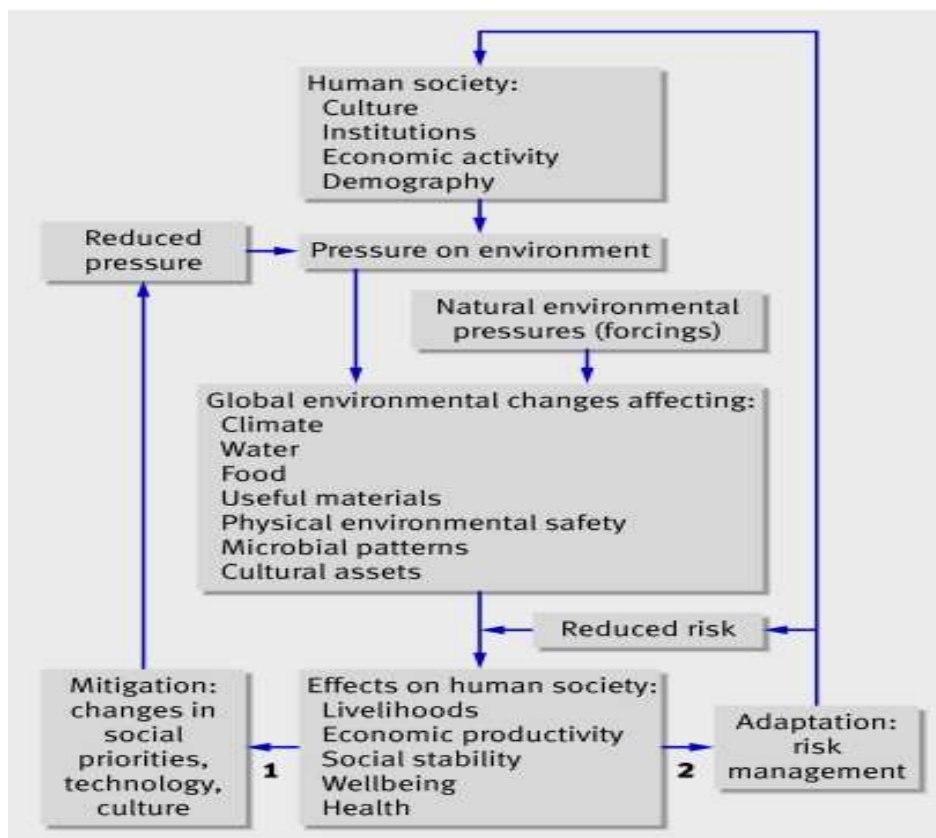


Figure. 2.4: Risks to population health from environmental change and strategies

Related Research

Climate Change: Issues, Awareness, and Implications

Some studies have been carried out on environmental change and its implications on human health and other activities. A study conducted among teachers in Ondo State, Nigeria indicated a low awareness level of climate change among teachers, and that there is variation by gender. Awareness is a factor of information availability and access, thus, the study reported that there was low access to climate change information. It suffices to state that the lack of awareness about climate change among a population is bad for environmental safety and protection as there is no consciousness to prevent the implications of environmental change.

A related study on the awareness of sustainable development as well as climate change among two universities' undergraduates (University of Ibadan and LAOTECH, Ogbomoso in Oyo State of Nigeria, reported that the undergraduates

showed a high awareness level, they have access to climate change information, and this is driven by their individual experience, public sources, and the education they acquired. In addition, there are no significant differences in their levels of climate change and sustainable development awareness based on gender, while the level of awareness based on the school was significantly different. Inference from this study is that students' high level of awareness results from their level of exposure and access to information, especially through the Internet.

In another study, it was submitted that despite the increasing awareness level on climate change in Lagos, farmers are still deficient in understanding climate change. A very low percentage have a better understanding of the concept, a paltry opined that climate change is a natural occurrence that cannot be addressed by anyone or any measure(s) and that it is temporary. The study established that there is a disparity in the understanding of the climate change concept between younger farmers and older farmers as a result of educational inequalities (Nkwusi, Adeaga, Ayejuyo, and Annuk, 2015). However, older farmers have over time been able to develop some adaptation measures based on experience. These results point to the importance of education in climate change information access and use. It is essential to state that farmers are active interactors with the environment and the success of their farming activities is largely dependent on the favourableness of the climate.

In a similar survey, it was reported that about fifty eight percent of the respondents (undergraduates and civil servants) got information and knowledge about climate change through tertiary education, newspaper, radio, and television respectively. A majority of them have high beliefs that climate change is not connected with human activities; Almost a half of the respondent attributed climate change to natural processes; quarter believe it is an act of God, while another quarter ascribed climate change to either predominantly, not lots of respondents attested that climate change is results from human effect or series of human activities and natural causes, the other percent do not believe in climatic condition.

Furthermore, findings showed that the respondents connected contributing activities to minute or small human or individual activities such as household use of electricity and gas. However, a large part of the respondents pointed at macro activities such as the destruction of forests. More than half of the respondents apportioned blame to the government and nature, apportioned blame to everybody, and apportioned blame to oil companies. In addition, related Long term implications of CC to water/rain-

related problems that have direct effects on their daily lives, such as less rain and hotter temperatures, more rain, increased erosion; only a fraction of respondents connected it with the destruction of public utilities, while none connected it with private business destruction and properties, or intrusion of salt into drinking water sources. Similarly, many of the participants were unsure of their feelings, felt powerless in the face of climate change, or were in denial regarding climate change. However, a small percentage have hope about climate change.

Furthermore, the finding showed that the most of the respondents see climate change as the sole responsibility of the government, about a quarter believe it is the business of environmental organisations, or non-governmental organisations. Only a small percentage opined that individuals have roles to play too. Compared with other issues of priority to the government, climate change takes the fifth position after health services, anti-terrorism, economic growth, education (Akinyoade and Akinwande, 2016). Despite Nigeria's exposure to the risks to climate change, the elites are not significantly aware (low level of awareness) of the implications of individual micro activities, and how its future consequences will impair individuals' daily lives. Thus, the drive for consequent interaction with the environment is of a low degree. It can be inferred from these findings that undergraduates are very well aware of climate change, however, this may not imply actions to protect the environment as beliefs and intentions to the environment indicates if they would engage in actions to protect the environment, or otherwise.

Also, a 2019 survey reported among senior high school students in the Philippines, a moderate to a high awareness level on climate change, and they are not oblivious of their roles in addressing the implications of climate change. The television, internet, and school were their major sources of information, knowledge, and awareness about climate change, in consistence with Akinyoade and Akinwande's findings (Lopez and Malay, 2019). The intention and willingness to protect the environment can be assured through high awareness level and strong positive attitude of populations as it is in the case of the studied senior high school students. In addition, a related study reported that the secondary school teachers in Calabar Municipality have a low awareness level about climate change, and this varies across gender lines (Ekpoh and Ekpoh, 2011). This low level of awareness can be attributed to low accessibility to climate change information sources.

Furthermore, another study reported that Nepalese youth are very much aware of climate change, and their awareness is connected with their demographic characteristics, formal education, and participation in training on climate change. climate change talks about family and society. Also, the result established a statistical relationship between access to mobile phones and the use of a mobile phone for climate change learning (Devkota and Phuyal, 2017). Here, we can submit that tech-savviness is one of the qualities that make youth access information faster and easier, especially through mobile phones.

A similar study among higher institutions students in Jalingo, the capital of Taraba State, Nigeria, reported that 18.2% of the interviewed respondents had never heard any knowledge or information about climate change before participating in the survey. More critically, almost all the 81.8% of the students who have heard about climate change, do not have in-depth knowledge about its causes, effects, and measures to cope and adapt, or mitigate its effects (Oruonye, 2011). Another survey in Umuahia, Abia among students in secondary revealed that their awareness level is low and they have a poor attitude towards climate change. Thus, the study recorded a difference, though not a significant difference across gender mean scores on climate change awareness and attitude. These results indicate some sort of difference from the findings on students' population in other regions of Nigeria. This may be connected to the inequalities in education across states or regions in Nigeria. In another study conducted in central Ghana, findings demonstrated that demographic characteristics such as gender, years of education, and income are correlates of climate change awareness among Ghanaians in that region and that the level of awareness is low, and the residents are deficient in knowledge on the causes and prevention of climate change (Acquah, 2011). This result infers that socio-demographic status plays a vital role in access to information sources. Consistent with Acquah (2011), a survey reported that demographic variables like religion and gender are important, parental education, occupation, earning, etc. has a significant relationship with students' climate change informedness in Bangladesh (Rahman, Tasmin, Uddin, Islam and Sujauddin, 2014). This further establishes that socio-demographics, perhaps social status are factors to consider in creating awareness about climate change.

Environmental Change

Due to climate change, populations are expected to experience some changes in the environment. Since the year 2017, Working Group on Denudation and Environmental Changes in Different Morphoclimatic Zones of the International Association of Geomorphologists (IAG) (DENUCHANGE) has the mandate to provide research understanding on the effects of environmental changes across the universe on contemporary Earth surface systems. Like many other countries, in Brazil, a study reported that the world's largest freshwater wetland, Pantanal's ecological integrity is under threat due to actions and activities attributed to humans: deforestation, agricultural intensification, and construction of hydropower plants. These activities have adverse effects on the livelihood of the local population. To better address environmental changes, there is the need to consider multidisciplinary insights integration, and significant environmental management can be achieved through traditional practices and local perspectives (Schulz, Whitney, Rossetto, Neves, Crabb, de Oliveira, Saito, 2019).

Monitoring the intensity of environmental change helps to swiftly address the implications before it results in the loss of lives and properties. The proposed IEC reacts to changes in the intensity of the environmental change and then reacts when the change is dissimilar to an existing historical environment, and it was found to be effective and futuristic (Hu, Zheng, Zou, Yang, Ou & Wang, 2020).

Human-caused changes in temperature, light availability as a result of forest canopy management, nitrogen deposition, and land-use legacies, according to a 2019 study, can modify and distort ecological processes like litter decomposition. Warming, increasing nitrogen deposition, and All of these factors have a direct impact on degradation of organic matter, according to the study. Warming and increasing light also had a higher favorable direct effect on understorey herbaceous cover, resulting in Degradation rates are slower, particularly in more rich soils.. (Wang, Blondeel, Baeten, Djukic, De Lombaerde & Verheyen, 2019). This finding indicates the ecological implications of environmental change which is perhaps orchestrated by human activities.

A study of human activities in river basins result in According to studies, this will result in nutrient deposition and environmental disruption in the Yangtze Delta. Evidence suggests that human activities in the river basin are linked to environmental changes. As fertilizers are transferred to the innermost shelf and open waters instead

of being deposited in the delta, increasing pressure in the Yangtze Delta and nearby coastal areas is increasing silt (Liu, Deng, Du, Zhang & Hou, 2019). A study also reported that soil weathering is connected with environmental changes, as Alkalis and rare earth elements can trace environmental changes in speleothems (Drugat, Pons-Branchu, Douville, Foliot, Bordier & Roy-Barman, 2019). A similar study reported that in water-limited locations, streamflow is more sensitive to climate change than in both equitant and low supply power locations, the climate is dominant, as well as other connected variables in the water-low supply region. As a result, in management of water resources approaches such as water diversion, the variability in hydrological responsiveness to climatic circumstances should be taken into account between ecological restorations and river basins, according to the study. (Li, Liu, Yu, Tian, & Bai, 2019).

Summary of Review

There are physical, ecological, and human dimensions to environmental change experienced across populations. This review indicates that many scholarly works have been done on climate change and not specifically on environmental change in the Nigerian context and population. However, empirical research on environmental change awareness, views, and intentions among Nigerian students is insufficient to inform public opinion and policy. As a result, this study aims to fill a vacuum in the literature and add to the body of knowledge by focusing on the beliefs and intentions of undergraduates students at the University of Ibadan in Nigeria about environmental change.

CHAPTER III

Methodology

Research Design

This study embraced quantitative survey research design, as adopted by previous related studies which focus on identifying perceptions and opinions, especially through responses elicited with the questionnaire (Check and Schutt, 2012). This research design allows the research to get the opinions of the respondents and be able to make statistical inferences.

Population and Sample

Location Description

Nigeria is the most populous nation in the West African region. It is a multilingual, multi-religious, and multi-ethnic nation with many ethnic nationalities. The country is blessed with many natural resources which makes the interaction of Nigerians with the environment significantly high. For instance, in the exploration of crude oil, its highest source of IGR, the natural order of the environment in the oil-producing area is negatively-significantly altered. Another major source of revenue that also affects the environment is Agriculture, and the southwest region of the country is notable for agricultural activities. There is also increased economic and industrialisation activities in the region, especially Ibadan, Oyo State, where the University of Ibadan is domiciled (Abiola, 2016).

Population and Sample

The population of the study describes the total people or entity being studied or considered to be studied for information purposes, in this case, academic and research information. The population of this study is undergraduates students of the University of Ibadan, Nigeria.

➤ Sample size determination

In research, there is the need to select a portion or percentage of a given population of study to represent the study as it is practically impossible to have all members of the population partake in the study at

once. This necessitates the scientific selection of a sample that considerably represents the population. Sampling can be defined as a set or process or procedure of selecting a portion of a population of study to represent that population. Through a simple random sampling technique, the sample size for this study is 450 undergraduates, that are regular students of the University of Ibadan, Nigeria.

Inclusion criteria: Students who are undergraduates, and are in 100-700 level were selected to participate in the study.

Exclusion criteria: Postgraduates and undergraduates who do not want to participate in the study are excluded (Bhandari, 2021).

Data Collection Tools

Questions Form

In the research, we adopted standardised questionnaire designed and used in a previous survey- the Climate Change Attitude Survey. The updated version of the CCAS has 18 items. The items created a two-factor structure that was named Climate Change Beliefs (Factor 1) and Climate Change Intentions (Factor 2). Factor 1 Climate Change Beliefs includes Items 1-8, 10 from Part 1 below and Item 1,6,7,8 from Part 2. In a recent analysis of the data, the Cronbach's alpha for the 10 items was .89. Factor 2 Climate Change Intentions has 5 items all that are negatively worded and must be reversed before scoring. (1 = 5, 2 = 4, 3 = 3, 4 = 2, 5 = 1). The items included are Item 9 from Part 1 and Items 2,3,4,5 from Part 2. The Cronbach's alpha for this factor was .76. (Christensen, R. & Knezek, G. (2016). CCAS 2.0. The researcher sent a mail to the author and designer of the instrument and received approval to adopt and use the CCAS for this study (see Appendix). Data were elicited using the CCAS between November 2021 and December 2021. The information about the study was presented in the introductory section, and participation in the study was made voluntary with respondents' information made confidential.

Data Collection Procedures

Administration of the copies of the questionnaire was done with the assistance of Two hired Research Assistants who assisted the researcher in locating the respective Faculties and common areas where the (undergraduates) can be easily located in their numbers for easy administration and retrieval.

Data Analysis Procedures

The retrieved copies of the questionnaire were sorted and the responses were entered into the coded format file on the Statistical Package for the Social Sciences (SPSS version 20). After the data was entered, the data was cleaned and the required analysis was run. The descriptive statistics were done using simple percentages and frequency. To choose the right statistics for significance differences, the normality test for the two parts was calculated. We resulted in the use of Kolmogorov- Smirnov test for part one; Beliefs, to answer the research questions and the Kolmogorov- Smirnov test resulted for part two; Intentions, to answer the research questions. Thus nonparametric tests were used. The two tests were for two groups **Mann Whitney-U test** and for more than two groups **Kruskal Wallis**, (level of significance p-value = 0.05).

Reliability and Validity

Reliability and validity describe if the instrument is fit to be used for data collection, and if it collects the data it was designed to collect and can do so at any other time. The test of reliability has a Cronbach's Alpha of 0.89 for 10 items (PART 1), and Cronbach's Alpha of 0.76. This indicates that the instrument is extremely reliable and suitable for collecting data for the study

Ethical Considerations

The researcher with the support and guidance of the research supervisor received ethical approval (statement of consent, statement confidentiality, and compliance to research ethic on data collection) from the Near East University Ethics Committee, after which the study commenced.

CHAPTER IV

Results

This chapter contains the data presentation, analysis, and representation. The collection of data is hence presented and analyzed in the form of tables and figure to achieve the objectives of the study.

Table 4.1 Distribution descriptive characteristics (n=161)

Variables	Number (n)	Percentage (%)
Gender		
Male	186	46.5
Female	214	53.5
Age		
16-20 years	195	48.8
21-25 years	157	39.3
26-30 years	29	7.3
31-35 years	15	3.8
36-40 years	4	1
Faculty		
Arts	39	9.8
Education	41	10.3
Social Science	40	10.0
Science	40	10.0
Veterinary Medicine	40	10.0
Medicine	40	10.0
Agriculture	40	10.0
Technology	40	10.0
Law	40	10.0
Human Nutrition	40	10.0
Academic Level (Grade)		
100L	81	20.3
200L	112	28.0
300L	97	24.3
400L	54	13.5
500L	30	7.5
600L	19	4.8
700L	7	1.8

Socio-demographics variables of the surveyed undergraduates students of the University of Ibadan, Nigeria are shown in Table 4.1. The majority (53.4%) of the surveyed undergraduates were female, while the majority (48.8%) are between the

ages of 16-20 years. The respondents were selected from across the 10 Faculties, and the majority were 200L undergraduates.

Cronbach's Alpha for the Beliefs part is 0.82 while the Cronbach's Alpha for the Intentions part is 0.77 which are both greater than 0.75 showing that the items have internal consistency for both parts (Heo, M., Kim, N. & Faith, M.S. 2015).

Analysis of Research Data

In analysing the data for this study, the 5-Likert scale SD= strongly Disagreed, D= Disagreed, U= Undecided, A= Agreed, SA= Strongly Agreed is presented below including the result interpretation and explanation.

The results generated from the study data are presented in Table 4.2 and Table 4.3.

Table 4.2: Climate Change Beliefs

	CLIMATE CHANGE BELIEFS	SD	D (%)	U (%)	A (%)	SA (%)
1	I believe our climate is changing	28 (7)	8 (2)	22 (5.5)	166 (41.5)	176 (44)
2	I am concerned about global climate change.	5 (1.3)	35 (8.8)	53 (13.3)	193 (48.3)	114 (28.5)
3	I believe there is evidence of global climate change	13 (3.3)	11 (2.8)	55 (13.8)	183 (45.8)	138 (34.5)
4	Global climate change will impact our environment in the next 10 years.	7 (1.8)	9 (2.3)	53 (13.3)	172 (43)	159 (39.8)
5	Global climate change will impact future generations.	12 (3)	14 (3.4)	57 (14.3)	165 (41.3)	152 (38)
6	The actions of individuals can make a positive difference in global climate change.	10 (2.5)	20 (5)	30 (7.5)	186 (46.5)	154 (38.5)
7	Human activities cause global climate change.	10 (2.5)	19 (4.8)	38 (9.5)	170 (42.5)	163 (40.8)
8	Climate change has a negative effect on our lives.	12 (3)	35 (8.8)	89 (22.3)	146 (36.5)	118 (29.5)
10	I can do my part to make the world a better place for future generations.	22 (5.5)	11 (2.8)	34 (8.5)	174 (43.5)	159 (40)
11	Knowing about environmental problems and issues is important to me.	18 (4.5)	15 (3.6)	44 (11)	202 (50.5)	121 (30.3)
16	I believe that I can contribute to the solution of environmental problems by my actions.	26 (6.5)	39 (9.8)	44 (11)	181 (45.3)	110 (27.5)
17	Environmental problems can be solved without big changes to our way of life.	43 (10.8)	93 (23.3)	80 (20)	120 (30.3)	63 (15.8)
18	I think each of us can make a significant contribution to environmental protection.	15 (3.8)	18 (4.5)	46 (11.5)	148 (37)	173 (43.3)

Results presented in Table 4.2 show that of the surveyed undergraduates of the University of Ibadan, Nigeria, belief in climate change, as its (global climate change) evidence and implications abound, and will impact our environment in the next ten years, and impact future generations. Results also indicate that global climate is a result of human activities, and can be better addressed through individual actions to make a positive difference in global climate change.

Furthermore, results showed human life is being affected negatively by climate change, and the knowledge of the environmental challenges occasioned by climate change will help to address the problems make the world a better place for future generations, and engender environmental protection.

Table 4.3: Climate Change Intentions

	CLIMATE CHANGE INTENTIONS	SD (%)	D (%)	U (%)	A (%)	SA (%)
9	We cannot do anything to stop global climate change.	99 (24..8)	112 (28)	66 (16.5)	80 (20)	43 (10.8)
12	I think most of the concerns about environmental problems have been exaggerated.	70 (17.5)	141 (35.3)	84 (21)	78 (19.5)	27 (6.8)
13	Things I do have no effect on the quality of the environment.	104 (25.9)	128 (32)	76 (19)	66 (16.5)	26 (6.5)
14	It is a waste of time to work to solve environmental problems.	159 (39.8)	133 (33.3)	47 (11.8)	46 (11.5)	15 (3.8)
15	There is not much I can do that will help solve environmental problems.	117 (29.3)	127 (31.8)	65 (16.3)	63 (15.5)	29 (7.3)

Results presented in Table 4.2 show that the surveyed undergraduates of the University of Ibadan, Nigeria, can take steps and do anything to stop global climate change. This includes taking cognizance of their actions which affect the quality of the environment and dedicating time to solve environmental problems to promote environmental protection.

Moreso, the mean for the Beliefs is 3.97 while for the Intentions it is 3.56. Both can be accepted as moderate to high. That is participants of the present study have high beliefs and intentions for climate change.

The correlation between the Beliefs and the Intentions is 0.265 and it is significant at 0.01 level ($r(399)=0.265$ and $p=0.000$). Thus, there is a positive and

weak relationship between the two ([Rakesh Aggarwal](#) & [Priya Ranganathan](#) 2016). An increase in the intentions causes an increase in the beliefs or vice versa.

To choose the right statistics for significant differences for the variables, gender, age, faculty, and level, the normality test for the two parts was calculated. For part one; Beliefs, the Kolmogrov- Smirnov test resulted as 0.90 which is greater than 0.05. For part two; Intentions, the Kolmogrov- Smirnov test resulted is 0.113 which is greater than 0.05. Thus nonparametric tests were used. The two tests were for two groups **Mann Whitney-U test** and for more than two groups **Kruskal Wallis**.

Research Questions

The following research questions guided the study, and are tested through the Mann-Whitney U test.

Research Question 1: Is there any significant difference between the beliefs of the students towards climate change according to Gender.

The Mann-Whitney U test was used to achieve the result for the difference in belief according to gender. The p-value of the test statistic is $p=0.647$. Since the p-value is greater than our chosen significance level ($\alpha = 0.05$), thus, we can state that there is no significant difference between the beliefs of the students towards climate change according to gender.

Research Question 2: Is there any significant difference between the intention of the students towards climate change according to Gender?

The Mann-Whitney U test was used to achieve the result for the difference in intention according to gender, The p-value of the test statistic is $p=0.931$. Since the p-value is greater than our chosen significance level ($\alpha = 0.05$), thus, we can state that there is no significant difference between the intention of the students towards climate change according to gender.

Research Question 3: Is there any significant difference between the beliefs of the students according to Faculty?

To find the difference between the belief of the students according to faculty, the **Kruskal Wallis** test was first used to calculate the differences in the mean rank for each pair of the faculty followed by the Mann Whitney-U to test the level of significance.

Faculty of Art in pair with Other Faculties

There is no significant difference between the beliefs of Arts and Education Faculty students ($p > .05$). There is no significant difference between the beliefs of Arts and Social Sciences Faculty students ($p > .05$). There is no significant difference between

the beliefs of Arts and Sciences Faculty students ($p > .05$). There is no significant difference between the beliefs of Arts and Veterinary Medicine Faculty students ($p > .05$). There is no significant difference between the beliefs of Arts and Agriculture

Faculty students ($p > .05$). There is no significant difference between the beliefs of Arts

and Technology Faculty students ($p > .05$). There is no significant difference between

the beliefs of Arts and Law Faculty students ($p > .05$). There is no significant difference between the beliefs of Arts and human Nutrition Faculty students ($p > .05$). However, there is a significant difference ($p < .05$) between the belief of Arts (34.6) and Medicine (45.2) students in favour of Medicine students.

Faculty of Education in pair with Other Faculties

There is no significant difference between the beliefs of Education and Social Science

Faculty students ($p > .05$). There is no significant difference between the beliefs of Education and Science Faculty students ($p > .05$). There is no significant difference between the beliefs of Education and Veterinary Medicine Faculty students ($p > .05$).

There is no significant differences between the beliefs of Education and Agriculture Faculty students ($p > .05$). There is no significant difference between the beliefs of Education and Technology Faculty students ($p > .05$). There is no significant difference

between the beliefs of Education and Law Faculty students ($p > .05$). There is no significant difference between the beliefs of Education and Human Nutrition Faculty students ($p > .05$).

However, there is a significant difference ($p < .05$) between the belief of Education (35.7) and Medicine (46.4) students in favour of Medicine students.

Faculty of Social Science in pair with Other Faculties

There is no significant differences between the beliefs of Social Science and Science Faculty students ($p > .05$). There is no significant difference between the beliefs of Social Science and Veterinary Medicine Faculty students ($p > .05$). There is no significant difference between the beliefs of Social Science and Agriculture Faculty students ($p > .05$). There is no significant difference between the beliefs of Social Science and Law Faculty students ($p > .05$).

However, there is a significant difference ($p < .05$) between the belief of Social Science (34.2) and Medicine (46.8) students in favour of Medicine students.

There is a significant difference ($p < .05$) between the belief of Social Science (35.1) and Technology (46.0) students in favour of Technology students. There is a significant difference ($p < .05$) between the belief of Social Science (34.5) and Human Nutrition (46.5) students in favour of Human Nutrition students.

Faculty of Science in pair with Other Faculties

There is no significant difference between the beliefs of Science and Veterinary Medicine Faculty students ($p > .05$). There is no significant difference between the beliefs of Science and Agriculture Faculty students ($p > .05$). There is no significant difference between the beliefs of Science and Law Faculty students ($p > .05$). However, there is a significant difference ($p < .05$) between the belief of Science (32.5) and Medicine (48.5) students in favour of Medicine students. There is a significant difference ($p < .05$) between the belief of Science (32.5) and Technology (48.5) students in favour of Technology students. There is a significant difference ($p < .05$) between the belief of Science (32.9) and Human Nutrition (48.2) students in favour of Human Nutrition students.

Faculty of Veterinary Medicine in pair with Other Faculties

There is no significant difference between the beliefs of Veterinary Medicine and Agriculture Faculty students ($p > .05$). There is no significant difference between the beliefs of Veterinary Medicine and Law Faculty students ($p > .05$). However, there is a significant difference ($p < .05$) between the belief of Veterinary Medicine (33.6) and Medicine (47.4) students in favour of Medicine Students. There is a significant difference ($p < .05$) between the belief of Veterinary Medicine (34.8) and Technology

(46.3) students in favour of Technology students. There is a significant difference ($p < .05$) between the belief of Veterinary Medicine (34.0) and Human Nutrition (47.0) students in favour of Human Nutrition students.

Faculty of Medicine in pair with Other Faculties

There is no significant difference between the beliefs of Medicine and Agriculture Faculty students ($p > .05$). There is no significant difference between beliefs of Medicine and Technology students ($p > .05$). There is no significant difference between the beliefs of Medicine and Human Nutrition students ($p > .05$). However, there is a significant difference ($p < .05$) between the belief of Medicine (49.0) and Law (33.0) students in favour of Medicine students.

Faculty of Agriculture in pair with Other Faculties

There is no significant difference between the beliefs of Agriculture and Technology Faculty students ($p > .05$). There is no significant difference between the beliefs of Agriculture and Law Faculty students ($p > .05$). There is no significant difference between the beliefs of Agriculture and Human nutrition Faculty students ($p > .05$).

Faculty of Technology in pair with Other Faculties

There is no significant difference between the belief of Technology and Human Nutrition Faculty students ($p > .05$). However, there is a significant difference ($p < .05$) between the belief of Technology (48.0) and Law (33.0) students in favour of Technology students.

Faculty of Law and Human Nutrition

There is a significant difference ($p < .05$) between the belief of Law (33.0) and Human Nutrition (48.0) students in favour of Human Nutrition students.

Research Question 4: Is there any significant difference between the intention of the students towards climate change according to Faculty?

To find the difference between the intention of the students according to faculty, the **Kruskal Wallis** test was first used to calculate the differences in the

mean rank for each pair of the faculty followed by the Mann Whitney-U to test the level of Significance.

Faculty of Art in pair with Other Faculties

There is no significant difference between the intentions of Arts and Education Faculty students ($p > .05$). There is no significant difference between the intentions of Arts and Social Sciences Faculty students ($p > .05$). There is no significant difference between the intentions of Arts and Sciences Faculty students ($p > .05$). There is no significant difference between the intentions of Arts and Veterinary Medicine Faculty students ($p > .05$). There is no significant difference between the intention of Arts and Agriculture Faculty students ($p > .05$).

However, there is a significant difference ($p < .05$) between the intention of Arts

(33.0)

and Medicine Faculty (46.2) students in favour of Medicine students. There is a significant difference ($p < .05$) between the intention of Arts (34.0) and Technology Faculty (46.0) students in favour of Technology students. There is a significant difference ($p < .05$) between the intention of Arts (46.0) and Law Faculty (34.0) students in favour of Arts students. There is a significant difference ($p < .05$) between the intention of Arts (35.0) and Human Nutrition Faculty (45.0) students in favour of Human Nutrition students.

Faculty of Education in pair with Other Faculties

There is no significant difference between the intentions of Education and Social Science Faculty students ($p > .05$). There is no significant difference between the intentions of Education and Science Faculty students ($p > .05$). There is no significant difference between the intentions of Education and Veterinary Medicine Faculty students ($p > .05$). There is no significant difference between the intentions of Education and Medicine Faculty students ($p > .05$). There is no significant difference between the intentions of Education and Agriculture Faculty students ($p > .05$). There is no significant difference Between the intentions of Education and Technology Faculty students ($p > .05$). There is no significant difference between the intentions of Education and Human Nutrition Faculty students ($p > .05$). However, there is a significant difference ($p < .05$) between the intentions of Education (51.0) and Law Faculty (30.0) students ($p > .05$) in favour of Education faculty students.

Faculty of Social Science in pair with Other Faculties

There is no significant difference between the intention of Social Science and Science Faculty students ($p > .05$). There is no significant difference between the intention of Social Science and Veterinary Medicine Faculty students ($p > .05$). There is no significant difference between the intention of Social Science and Agriculture Faculty students ($p > .05$).

However, there is a significant difference ($p < .05$) between the Intentions of Social Science (32.97) and Medicine (46.85) students in favour of Medicine students. There is a significant difference ($p < .05$) between the intentions of Social Science (33.65) and Technology Faculty (47.35) students in favour of Technology students. There is a significant difference ($p < .05$) between the intentions of Social Science (48.40) and Law Faculty (32.60) students in favour of Social Science students. There is a significant difference ($p < .05$) between the intentions of Social Science (34.69) and Human Nutrition Faculty (46.31) students in favour of Human Nutrition students.

Faculty of Science in pair with Other Faculties

There is no significant difference between the intention of Science and Veterinary Medicine Faculty students ($p > .05$). There is no significant difference between the intention of Science and Agriculture Faculty students ($p > .05$). There is no significant difference between the intention of Science and Human Nutrition students ($p > .05$).

However, there is a significant difference ($p < .05$) between the intention of Science (32.97) and Medicine Faculty (46.85) students in favour of Medicine students.

There is a significant difference ($p < .05$) between the intention of Science (34.19) and Technology Faculty (45.66) students in favour of Technology students. There is a significant difference ($p < .05$) between the Intention of Science (49.27) and Law Faculty (30.96) students in favour of Science students.

Faculty of Veterinary Medicine in pair with Other Faculties

There is no significant difference between the Intention of Veterinary Medicine and Medicine Faculty students ($p > .05$). There is no significant difference between the intention of Veterinary Medicine and Agriculture Faculty students ($p > .05$). There is

no significant difference between the Intention of Veterinary Medicine and Technology Faculty students ($p > .05$). There is no significant difference between the Intention of Veterinary Medicine and Human Nutrition Faculty students ($p > .05$). However, there is a significant difference ($p < .05$) between the intention of Veterinary Medicine (50.96) and Law faculty (30.04) students in favour of Veterinary Medicine students.

Faculty of Medicine in pair with Other Faculties

There is no significant difference between the Intention of Medicine and Technology students ($p > .05$). There is no significant difference between the intention of Medicine and Human Nutrition students ($p > .05$). However, there is a significant difference ($p < .05$) between the intention of Medicine (46.16) and Agriculture Faculty (34.81) students in favour of Medicine students. There is a significant difference ($p < .05$) between the intention of Medicine (52.33) and Law Faculty (28.68) students in favour of Medicine students

Faculty of Agriculture in pair with Other Faculties

There is no significant difference between the intention of Agriculture and Technology Faculty students ($p > .05$). There is no significant differences between the intention of Agriculture and Human nutrition Faculty students ($p > .05$). However, there is a significant difference ($p < .05$) between the intention of Agriculture (50.63) and Law Faculty (30.38) students in favour of Agriculture students.

Faculty of Technology in pair with Other Faculties

There is no significant difference between the intention of Technology and Human Nutrition Faculty students ($p > .05$). However, there is a significant difference ($p < .05$) between the intention of Technology (53.78) and Law Faculty (27.23) students in favour of Technology students.

Faculty of Law and Human Nutrition

There is a significant difference ($p < .05$) between the intention of Law (29.16) and Human Nutrition Faculty (51.84) students in favour of Human Nutrition students.

Research Question 5: Is there any significant difference between the beliefs of the students towards climate change according to grade?

There is no significant difference concerning grade as a variable for the beliefs ($p>.05$).

Research Question 6: Is there any significant difference between the intentions of the students towards climate change according to grade?

There is no significant difference concerning level as a variable for the intentions ($p>.05$).

Research Question 7: Is there any significant difference between the beliefs of the students towards climate change according to age?

There is no significant difference concerning age as a variable for the beliefs ($p>.05$).

Research Question 8: Is there any significant difference between the Intentions of the students towards climate change according to age?

There is no significant difference concerning age as a variable for the intentions ($p>.05$).

CHAPTER V

Discussion

This is quantitative survey research on beliefs and intentions of undergraduates of the University of Ibadan, Nigeria about climate/environmental change. The Climate Change Attitude Survey standardised questionnaire designed by Christensen & Knezek (2016) was adopted to elicit data from the sampled 450 undergraduates, 425 copies were retrieved, while 400 copies of the questionnaire were ok for data entry and analysis. Our study aims to identify the beliefs and intentions of the undergraduates of the University of Ibadan and test how the beliefs and intentions differ across gender and faculty.

Climate change beliefs of the undergraduates

Our study found that the surveyed undergraduates of the University of Ibadan, Nigeria believed that there is climate change, feel there is proof of anthropogenic climate change, believe climate change will have an influence on our environment during the next ten years, and believe anthropogenic global warming will have an effect on the population. Our findings affirm that a significant number of students acknowledged that global warming is in existence, which attests to the 2013 survey which reported that a large percentage of American adults believe that climate change exists (Leiserowitz, Maibach, Roser-Renouf, Feinberg & Howe, 2013). This shows that climate change is a global phenomenon and there is increasing awareness across populations.

The study established that the undergraduates of the University of Ibadan have high beliefs about climate change and this is consistent with findings of an American study which established that American adults have positive mindsets that drive higher values in beliefs on climate change (Duchi, Lombardi, Paas & Loyens, 2020). The beliefs, as identified among our respondents drive their positive intentions towards climate change and environmental issues.

Our study further established that Individuals' actions can make a positive difference in global climate change believe that human activities cause global climate change, that climate change harms our lives, that they can do their part to make the world a better place for future generations, that understanding environmental problems and issues is important to them, that they attested that they can give their quota to solving of environmental challenges through their actions, and that environmental issues can be resolved through collective action. Consistent with our findings, reported that climate beliefs influence the thinking of people about climate change, and those human actions are significantly responsible for climate change, and its implications are adverse on the human population (Ding et al. 2011; Weber 2016).

Furthermore, our findings on the high beliefs on climate change among undergraduates are corroborated by a study that reported that strong pre-existing values and climate change beliefs are pivotal to addressing environmental conditions (Kate, Emmanouil, Sally, Yasmina, 2021). Our finding also corroborates a 2015 survey which reported that respondents have high beliefs are concerned about climate change implications and are interested in addressing the implications for the

safety of all living things (Dienes, 2015). Also consistent with our findings, Dienes (2015) reported that students of the Faculty of Medicine, University of Nigeria possess a higher knowledge of climate change.

Climate change intentions of the undergraduates

Our study found that the undergraduates of the University of Ibadan, Nigeria intends to do everything it can to combat global climate change, and it intends to do a lot, and all they can do to solve environmental problems. This showed that this positive intention informs their concerns about environmental problems, that their actions affect the quality of the environment, and that working to solve environmental problems is not a wasteful effort. Our findings on the positive intentions of the undergraduates corroborate the 1991 Ajzen Theory of Planned Behaviour model which posits that favourable attitudes, by extension beliefs, drive strong and positive behavioural intentions and, in turn, pro-environmental behaviours that can help to address environmental challenges occasioned by climate change (Page and Page, 2014).

In addition, a 2015 survey reported that respondents have high and positive intentions towards pro-climate change issues, and are likely to take actions that will address climate change challenges for a friendly environment (Dienes, 2015). This is in support of our findings which established that the intention of the undergraduates of the University of Ibadan, Nigeria is targeted towards addressing environmental problems occasioned by climate change.

Difference between the beliefs of the students towards climate change according to gender

Our study found that there is no significant difference between the beliefs of the students towards climate change according to gender among the undergraduates of the University of Ibadan, Nigeria ($p > 0.05$). Our finding is consistent with Falaye & Okwilagwe (2016) who reported no significant differences in students' beliefs-toward climate change according to their gender. Furthermore, in agreement with our finding, Christensen & Knezek (2015). reported that there was no significant ($p = .99$) difference between males and females demonstrated on the scale measuring beliefs at pretest time. Also, in agreement with our finding, Adenike Oladipo et

al.(2020) reported that there is no significant gender difference in attitudes toward climate change among pre-service STM teachers.

Also, our finding validates Ojo & Dimelu (2018) that beliefs-knowledge of climate change between gender is not significantly different. However, our findings in connection with Zawadzki & Bouman & Linda Ste & Bojarskich & Druen (2020) report no significant difference in gender across study samples. This indicates that the undergraduates, irrespective of their gender, have positive and high beliefs about climate change. Also consistent with our findings, Rosidin and Suyatna (2017) found that there is no difference in students' knowledge of global warming caused by gender.

Contrary to our finding, McMight (2010) reported a difference in concern about climate change across gender lines among the American population. Among other researchers, an American survey identified that female is more knowledgeable and show concern about the climate and the environment more than male (Ballew, Marlon, Leiserowitz, and Maibach, 2018). This aligns with which posits that there is a gender difference in adaption, concern, knowledge of climate change and environment, among the farming population in Ghana (Adzawla, Azumah, Anani & Donkoh, 2019). Also contrarily, Fakhruddin, Karyanto & Ramli (2017); Rahman, Shahriar & Tasmin, Sadeka & Maruf, Kawser & Islam, Mohammad & Sujauddin, Mohammad. (2014) reported differences in beliefs-attitude towards climate change across gender among high school students. Gökçe and Sarıyar (2019), as well as Gökmen (2021), also reported contrarily, a significant difference in beliefs-attitude towards climate change across gender.

Difference between the intention of the students towards climate change according to gender

We found that there is no significant difference between the intention of the students towards climate change according to gender ($p > 0.05$). Our finding corroborates the submission of Fakhruddin, Karyanto, & Ramli (2017) which reported no significant link between behavioural intention and gender among Indonesian students.

Contrary to our finding, Braksiek, Thormann, & Wicker (2021), (Dijkstra & Goedhart, 2012), (Archer, DeWitt, Osborne, Dillon, Willis & Wong, 2012), Tosunoglu, 1993). Leppanan et al. (2012) identified gender-specific differences in

intention, beliefs, and attitude towards climate change. These previous studies posit that females have a positive predisposition concerning the intention, belief, and attitude towards climate change.

Difference between the beliefs of the students according to faculty

Finding the difference between the belief of the students according to faculty, the survey took an approach comparing the different faculties in pairs with each other. Consequent upon this, findings were made concerning Science enclined Faculties and

Art Faculties, It was observed that there is inherently an evident gap between the students from the faculty of Medicine with other Faculties.

On the other hand, other faculties like Agriculture, Technology, and Human Nutrition

showed a relatively moderate belief in climate change. This however maybe be a result of the many related science courses taught in these Faculties. In contrast, faculties of Art and Law majorly have very little belief in climate change, which cause could be translated to the fact that these two Faculties have almost zero Science related courses. In line with our study, (Drebot Christina, Boehner Jenny, Butler Jodi, Smith, Michael Mason & Monica 2017) discovered that students in the faculties of science and architecture and planning had higher levels of climate change awareness, knowledge, and concern than students in other faculties.

Generally, our study found that Medicine Faculty amongst many others has a significant difference between the belief of students towards climate change, which makes this a major finding regarding the Medicine Faculty concerning the climate change belief of undergraduate students in the University of Ibadan, Nigeria.

Difference between the intention of the students according to faculty

Finding the difference between the Intention of the students according to faculty, the survey took an approach comparing the different faculties in pairs with each other.

Consequent upon this, findings were made concerning Science enclined Faculties and

Art Faculties, It was observed that there is inherently an evident gap between the students from the faculty of Medicine in relation to other Faculties.

On the other hand, Other faculties like Agriculture, Technology, and Human Nutrition showed a relatively moderate Intention in climate Change. This however may be as a result of the many related science courses taught in these Faculties. In contrast, Faculties of Art and Law majorly has very little intention in climate change, which cause could be translated to the fact that these two Faculties has almost zero science-related Courses. In line with our study, (Drebot Christina, Boehner Jenny, Butler Jodi, Smith, Michael Mason & Monica 2017) discovered that students in the faculties of science and architecture and planning had higher levels of climate change awareness, knowledge, and concern than students in other faculties.

Generally, our study found that Medicine Faculty amongst many others has a significant difference in the intention of students towards climate change, this is a major finding regarding the Medicine Faculty in relation to the climate change Intention of undergraduate students in the University of Ibadan, Nigeria.

Difference between the belief of the students according to grade

Our study found no significant difference between the beliefs of the students towards climate change according to grade level ($p > 0.05$). Contrary to our finding, reported that the beliefs of students differ according to grade level as respondents with higher education report higher values of personal responsibility for climate change (Dias, Vidal, Sousa, Dinis & Leite (2020).

Difference between the intention of the students according to grade

Our study found no significant difference between the intentions of the students towards climate change according to grade level ($p > 0.05$). Contrary to our finding, reported that the intention of students differ according to grade level as respondents with higher education report higher values of personal responsibility for climate change (Dias, Vidal, Sousa, Dinis & Leite (2020).

Difference between the belief of the students according to Age

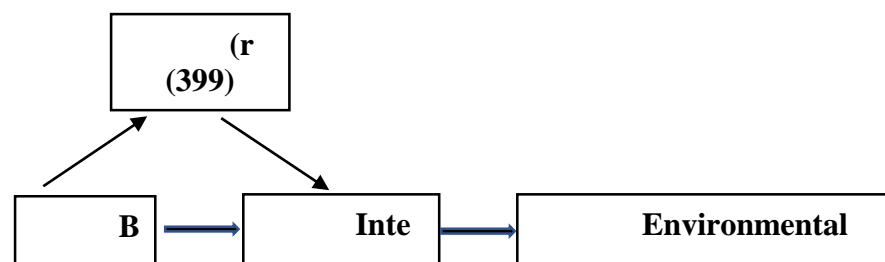
Our study found no significant difference between the beliefs of the students towards climate change according to grade level ($p > 0.05$). Contrary to our finding reported that the beliefs of students differ according to Age (Milfont, Zubielevitch, Milojev, et al).

Difference between the intension of the students according to Age

Our study found no significant difference between the intention of the students towards climate change according to grade level ($p > 0.05$). Contrary to our finding reported that the beliefs of students differ according to Age (Milfont, Zubielevitch, Milojev et. al). Generally, from the discussion of findings above, it can be stated that the belief and Intention of the students are moderately high. However, the faculty of medicine showed a significant difference which indicates that Medicine students inherently have a higher level of belief and intention towards climate change.

Theoretical Discussion

Our study found a significant correlation between the Beliefs and the Intentions at 0.01 level ($r(399)=0.265$ and $p=0.000$). Thus, there is a positive and weak relationship between the two ([Rakesh Aggarwal](#) & [Priya Ranganathan](#) 2016). An increase in the intentions causes an increase in the beliefs or vice versa. Our findings further substantiate the Theory of Planned Behaviour as a fit model for understudying human behavior-beliefs and intentions in behavioural study. According to Ajzen (1991), belief is connected to intentions as it presents an anticipated intention to do an action or exhibit a behaviour. Here, we found that the undergraduates of the University of Ibadan have high beliefs and positive intentions about climate change and the environment, thus they have positive intentions toward required positive environmental change which is geared towards environmental preservation and protection (Lawrenz, 1988).



CHAPTER VI

Results and Recommendations

Our study aimed to investigate the beliefs and intentions of the undergraduates of the University of Ibadan, Nigeria about climate change and its implications on the environment.

Summary of Findings

Based on the research questions of this research, the following conclusions are reached;

- i) The majority of the surveyed undergraduates of the University of Ibadan, Nigeria believed that there is climate change, are concerned about global climate change.
- ii) The undergraduates believed that climate change across the globe is mostly human-induced.
- iii) The undergraduates believed that climate change has adverse implications on human (our) lives and future generations, and only through human actions can there be a positive global climate change difference and development for significant environmental protection.
- iv) The undergraduates intend to contribute their quota to address global climate change and domesticate these plans to address climate change implications to address immediate environmental challenges.
- v) There is no significant difference between the beliefs of the students towards climate change according to gender, no significant difference between the intention of the students towards climate change according to gender, no significant difference between the beliefs and intention of the students towards climate change according to grade, no significant difference between the beliefs and intention of the students towards climate change according to grade, no significant difference between the beliefs and intention of the students towards climate change according to grade, no significant difference between the beliefs and intention of the students towards climate change according to some non-sciences related faculties while there is a significant difference between the belief and intention of the students towards climate change according to Science courses related faculties in comparison with Art

related faculties, leaving Medicine Faculty with the most distinguished faculty with both high belief and intention towards climate change.

Implications for Practice

The findings of this study are essential for environmental education curriculum development to contain environmental knowledge which will be imparted to undergraduates before they graduate. Also, the findings of this study are trajectory for policy formulation for best environmental practices by individuals and the government to ensure the environment is safe through climate change best practices.

The following are recommended based on the study's findings.

- i) The undergraduates should be more conscious of their actions and inactions towards the environment in relation to climate change.
- ii) The students should be taught to be more aware of the danger of Climate Change; This however can be achieved through formal incorporation of climate change-related topics to the GST course for all Faculties.
- iii) A more effective aware new program should be adopted in Nigerian Universities to Inform all students.
- iv) The University of Ibadan should design a climate change curriculum/course into General Education Studies which must be compulsory for all undergraduates at the early years of the University education. This will enable the gown to influence the town, and a friendly environment.
- v) Faculty of Law and other Art related faculties should put keen interest to knowing more about Climate change; this is because the effect of climate change on the environment can not be overemphasized as its effect will rain on everyone and not just individuals who have studied science-related courses, everyone should put in their quota to driving a more sustainable climate through the right belief and Intention.
- vi) Faculty of Medicine should adopt more measures in creating awareness on the effect of climate change on both humans and the environment at large.

Recommendations for Further Research

Further studies should focus on the informal sector to understand the environmental behaviour of artisans, and road users- transporters in cities across the nation.

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APPENDICES**Ethics Approval**

**NAER EAST UNIVERSITY
SCIENTIFIC RESEARCH ETHICS COMMITTEE**

15.02.2022

Dear Peters Rebecce Nzubechukwu

Your application titled “**Beliefs And Intentions To Enact Positive Environmental Change: A Study Of Undergraduates; University Of Ibadan, Nigeria**” with the application number NEU/ES/2022/793 has been evaluated by the Scientific Research Ethics Committee and granted approval. You can start your research on the condition that you will abide by the information provided in your application form.

Assoc. Prof. Dr. Direnç Kanol

Rapporteur of the Scientific Research Ethics Committee

Note: If you need to provide an official letter to an institution with the signature of the Head of NEU Scientific Research Ethics Committee, please apply to the secretariat of the ethics committee by showing this document.

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