

*Original Research*

# How Teacher's Climate Change Belief Influences Classroom Management Practices for Students' Climate Change Awareness In Nigerian Schools

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## Abstract

The growing recognition of the challenges of climate change has increased the research interest on how to address its issues and make the planet earth safer for human habitation. Man, unfortunately has remained at the centre of this debacle being the only ecological being that exerts the greatest influence on the environment. This study examined how teacher's climate change belief influences classroom management practices for students' climate change awareness. The study was conducted in nine senior secondary schools in Ebonyi State. It was a descriptive survey that adopted the *expost facto* research design. Data were collected through a structured questionnaire, administered to science teachers who accepted to participate in the study. The data collected were analyzed using descriptive statistics. Findings from the study revealed among other things that a teacher's perception of climate change is a significant predictor of students' perception of climate change. Based on the findings of the study, one of the recommendations is that Government and school administrators should encourage regular training and re-training of teachers on issues of CC in order to deepen their beliefs on the phenomenon and thus, increase their awareness levels which will seamlessly transcend to students.

**Keywords:** climate change, belief, classroom management and students' climate change awareness, teacher's

## Introduction

Climate change (CC) has emerged as the most threatening ecological problems of the present time [1]. Research, debates and high-level discussions

have been ongoing for decades on how to adapt to or mitigate the impact of the hard-felt reality of CC [2-4] Its brazen interference with economic development, industrialization, urbanization, consumption and lifestyle pattern, has become so manifest [5, 6] that [7-9], concur, it is the most expansive global, environmental, economic and political problems facing humanity right now and hence must be urgently tackled [10]. Man, since time immemorial has been confronted

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with the challenge of improving his living standard and thus, has used the environment as his primary laboratory, exerting untold influence on it; no wonder the argument continues to build that he is at the center of the CC saga. In the midst of the arguments, opinions still remain widely divided on its causes and this has certainly presented a somewhat disconnect between research-based evidence and public perceptions. For example, while [6-12], believe that climate change has been the consequences of man's activities on the environment; on the contrary, the majority of the adults in the world generally, believe that CC is a natural occurrence [13]. However, there are countless individuals who are still conflicted over their belief on climate change, but despite the partisan divides, all still find themselves confused over the social, cultural, economic and environmental dilemma they find themselves. [14] is of the view that researchers attribute this persistent disconnect between scientific consensus and public perceptions to individuals' dependence on worldview and political ideologies that drive individuals to seeking information from ideologically compatible sources. Perhaps not surprisingly, people who believe that climate change is human-induced tend to be more supportive of climate change mitigation actions than those who do not [15]. Correspondingly, belief in climate change has been connected with engaging in climate-friendly action among forest owners [16]. On the other way round, beliefs that global climate change is not occurring and that it is not caused by human beings have been linked with environmental apathy and a view that individual action has no significant effect on the large-scale outcome [17]. Very notably, the concern over the issues of CC, unlike other socio-scientific issues like air pollution and flooding, is that it portends a magnitude of danger that cannot be ascertained, and therefore people's understanding and consciousness of it [14].

The term "climate change" has been used by the scientific community in recent years to explain the phenomena caused by increased heat retention in the atmosphere, instead of "global warming" [18, 19]. CC is an issue which affects all parts of life and requires education to be considered as a whole without the boundaries of disciplines [11]. However, for the purpose of this study, the researchers tried to define the concept CC as an established situation in which the atmospheric condition changes from one particular state at a rapid and prolonged variation of climatic condition. Its casual variables have been identified, e.g. [19-22], to occur as variations in solar radiations or in the earth orbit in terms of deviation. Its impacts are felt on fresh water supply, food production, human health, animal health, security and economic development [14-23, 24]. By implication, the challenges of CC are no longer whether it exists but that of how to mitigate or adapt to it to ensure sustainable development.

The reality of CC and its effects have heightened the sense of urgency in the words of [25] that the need

of the hour is how to make people sensitive towards nature through a strong educational programme on climate change awareness. Research findings evidence that climate specific knowledge can predict acceptance of anthropogenic global warming as well as climate change belief among adolescents and adults [26]; hence, suggesting that education could influence belief and attitude towards CC.

A high-level factor in the discussion of CC and education will always be the teacher. The significance of teachers and their teaching for students learning cannot be in contest because they implement the curriculum and manage the classrooms. The fundamental goal of any curriculum remains to develop an educational experience that enables the students to succeed in society [27]. Teacher belief and CC awareness had been the focus of attention in previous studies [5-28] but teacher CC belief and classroom management practices specifically for students CC awareness has received relatively very limited attention. This may be because CC awareness is often thought as the sole responsibility of environmental science teachers instead of a duty of all teachers [29]. However, the number of such teachers has always been very limited and students are somewhat left in the dark about the realities of climate change. With the devastating impacts of climate change, there is urgent need for mass awareness of this phenomenon among students. It has been argued that informed mass awareness on the causes, consequences and mitigation as well as adaptation strategies to CC is important to confront this largely believed human-induced phenomenon [30]. However, the question of how CC awareness could be achieved and which teacher characteristics might be most beneficial still remains largely unresolved [28]. In the search for answer to this, studies on teacher characteristics have been carried out on: enthusiasm, e.g. [31, 32], goals, e.g. [33, 34], personal beliefs, e.g. [35-40].

In this study however, teachers are examined as a bridge between the education and the students – citizens of the future as there appears a positive correlation between teachers' belief about CC and students' awareness of CC. This paper points to the possibility that teachers' beliefs about CC may influence their classroom management practices in creating CC awareness among students. [41] canvases that the "approach of teaching CC would need to balance between developing learners who can critically engage new information about the phenomena as well as being empathic individuals who are committed to taking action to make their living environment a better one. [42] argue that discussing climate change as a local issue is more appealing than discussing it as a global problem. They further maintain that one way in which teachers can leverage this fact is to focus on how climate change may affect their students, school community, neighborhood or cities. The necessity of CC awareness informs the need to design appropriate educational opportunities and ways of supporting and equipping

students to respond to CC. Consequently, along with the contribution of general media, the instructional guides provided by teachers in schools about climate change is important for the construction of young people's knowledge and beliefs in this field [43-45]. Teachers' beliefs about the causes of climate change are known to have influence on their pupils [40]. Although the role of the teacher in shaping students' CC awareness is well evident for example, [46, 47], nonetheless, the absence of proper instrumentation to measure the influence of teacher belief on students' CC awareness is difficult in the absence of an awareness index. [40] argues that the gap between teachers' knowledge about climate science and the scientific consensus of anthropogenic global warming are concerning when considering the importance of climate change education in schools. In view of the belief construct that domiciled this study, more searches were made into literature to find out what previous studies have done in this regard.

Results showed that a pool of studies have explored issues of climate change, see for example, [40-52]. [53] had earlier noted that numerous teachers who are literate in the field of CC are still avoiding teaching the topic or rather teach it from a skeptical point of view which does not contribute to students' environmental education as reported in the United States by [54]. According to [54], 13 to 16% of teachers in the United States still think that climate change is due to natural causes and many others say they are unsure. Other researchers like [53-56], differently argue that climate change has been accepted by many teachers as a controversial topic, and therefore not readily disposed to teach it even if they are literate in the field. Some teachers do however overcome their reluctance by choosing to teach the two opposite beliefs about the human responsibility in climate change, and this makes their teaching hide the actual problem [57-59]. Alternatively, many teachers teach the topic of climate change without linking it to the relevant economic and political issues [57] in the US or to the need for citizens' enticement [60] in Finland.

The teacher should be likened to the conveyor belt in this regard [61]. Therefore, the teacher's ability to stimulate and influence the student's belief will depend on a number of factors. Such components include, who the teacher is, his/her learning, worth of understanding and beliefs, all these form the characteristics of the mold [62-65]. Teacher's classroom behaviour and teaching is inadvertently non-linear, because he/she teaches the subject in a broader context. The make-up of a teacher is a composition of knowledge gained through learning, perception, experiences, and beliefs. Consequently, the teacher's belief will imperceptibly affect his understanding and his understanding affects his impartation to the students. The teacher must stand at the upper loop to create the difference. In other words, the mentor, mentee relationship still prevails [66]. The mentor, who is the teacher, must have strong conviction and belief on climate change

and should possess the capacity and ability to manage the classroom to be able to sway, stimulate and inspire the students for a favourable outcome. Hence, behavior is influenced by the perception and belief that a particular action will lead to desirable outcome [67].

Students' capacity to adjust their learning habits and strategies enhances their ability to achieve a favourable outcome. Effective classroom management and interactions play a very crucial role in getting the attention of the students to achieve this purpose [66]. However, what defines the interactions between teachers and students (i.e. classroom behaviour) may be complex, especially on the issue of climate change, but a good perception and belief of the teacher on the subject matter, improves his communication and impartation skill, which tends to simplify and settle students' misconceptions quickly [68]. Good classroom management therefore, helps to deconstruct properly erroneous beliefs or misconception and opens the lid for broader and wider meaningful student climate change awareness [69-71].

Given the extensive research on CC and on how teacher's CC belief influences students' CC awareness, it is most surprising that none of these studies we have so far seen, was carried out in Nigeria. By the reasons of geographical and cultural differences in these areas of previous studies and the present study area, a gap in knowledge already exists and a study of this in the Nigerian context needs to be covered. Therefore, breaking from the previous studies to address this gap, this study sets out to examine, teachers' climate change beliefs, classroom management practices and CC awareness of students in Nigerian schools.

Ebonyi is one of the top ranked Nigerian States in the global climate risk index [14]. Already, the impact of CC is being felt all over the state with the increased severe drought, late onset of rain, early cessation of rainfall, flood disaster, tropical storms and heat waves and this is highly disturbing especially as the people are mainly farmers and depend on rain fed agriculture. And drawing on the above dangers of CC, there is more considerable concern on the poor attitude of the people of Ebonyi State towards the environment. For example, there are indiscriminate actions and activities on deforestation, bush burning, and domestic cooking with firewood, burning vehicle tyres even on the roads, smoke from exhaust pipes, and smoke from generators. Considering the populous senior secondary age group, secondary education could undoubtedly be the primary route to educating the population towards CC awareness. Against this background, the following research questions were stated to guide the study:

1. To what extent are students aware of climate change and its associated consequences?
2. What is the implementation level of teachers' classroom climate management practices?
3. Is there any significant relationship between teachers' beliefs about climate change and students' beliefs about climate change?

This study is a descriptive survey that adopted ex post facto research design. According to [72] an ex post facto design is a research that takes place after a fact has occurred without the interference of the researcher. Since no manipulation of variables occurred in this study, this design was deemed most appropriate for this study. Four variables were utilized in this research. They are; Teachers' beliefs about Climate Change, Students' beliefs about Climate Change, Teachers' Classroom Climate Management Practices and Students' Climate Change Awareness.

## Materials and Methods

The instrument used for data collection in this research is a compartmentalized questionnaire tagged; Climate Change Questionnaire (CCQ) developed by the researchers and made up of five sections. Section A consists of questions requesting demographic information from each of the respondents. Section B, C, D and E are Likert type instruments used to elicit information about Teachers' beliefs about Climate Change (TBCC), Students' beliefs about Climate Change (SBCC), Teachers' Classroom Climate Management Practices (TCCMP) and Students' Climate Change Awareness (SCCA) respectively. All questionnaires are on a four-point Likert scale. TBCC questionnaire is aimed at finding out teachers' perceptions concerning climate change. For example, item 1 states; I know that climate change is real and item 3 states; I feel humans are largely responsible for climate change. SBCC questionnaire elicits information on students' perceptions concerning climate change. Response mode for both TBCC and SBCC questionnaires ranges from very true of me (4), to very untrue of me (1). TCCMP questionnaire sought information on the extent of teachers' climate management practices in the classroom that can encourage climate change awareness.

Table 1. Reliability Statistics.

| Reliability Statistics |            |
|------------------------|------------|
| Cronbach's Alpha       | N of Items |
| .792                   | 20         |

SCCA questionnaire was intended to ascertain the extent of students' awareness of climate change through their teachers. For example, item 5 states; my students are aware of human activities that may likely cause climate change. Response mode for TCCMP and SCCA ranges from; to a very large extent (4) to a very small extent (1). The reliability for the total scale (CCQ) is 0.792 (see Tables 1 and 2) while that of TBCC (5 items), SBCC (5 items), TCCMP (5 items) and SCCA (5 items) questionnaires yielded respective reliability coefficients of 0.893, 0.888, 0.651 and 0.627 using Cronbach Alpha reliability analytical model in SPSS version 25 (see Table 3). These results are indicative of a fairly good reliability measure [73].

## Sample and Procedures

The study population comprised of senior secondary schools (SSS) science teachers from all the public secondary schools in Ebonyi State Nigeria. Multi stage sampling procedure was employed to select eighty-one (81) SSS teachers from nine sampled schools. Since the State is naturally stratified into 3 educational zones, the first stage involved the use of simple random sampling technique to select 5 schools from each of the education zones totaling 15 schools. The reason for using simple random sampling technique is to give all schools equal chance of participating in the study. The second stage involved the use of purposive sampling technique to eliminate every school that did not have up to 9 science teachers from participating in the study and this left a total of 9 schools; 3 each from the zones. The same method was further applied to eliminate all teachers whose teaching experience was not up to 5 years. This resulted in a total number of 81 teachers comprising of fifty-eight males and twenty-three females. The ethical consent of the respondents to freely participate in this study was obtained through a letter of introduction to them, explaining the purpose of the study and making a firm promise of assurance that their responses will be treated anonymously and used specifically for the purpose of this study. The research instrument was administered on teachers and students by the researchers in all the sampled schools and data collected was analyzed using descriptive statistics and correlation.

Table 2. Item-Total Statistics for Climate Change Questionnaire (CCQ).

| Item-Total Statistics |                            |                                |                                  |                                  |
|-----------------------|----------------------------|--------------------------------|----------------------------------|----------------------------------|
|                       | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
| SBCC1                 | 62.17                      | 60.312                         | .566                             | .770                             |
| SBCC2                 | 62.33                      | 60.142                         | .519                             | .772                             |
| SBCC3                 | 62.38                      | 62.154                         | .416                             | .779                             |
| SBCC4                 | 62.17                      | 60.227                         | .541                             | .771                             |

Table 2. Continued.

|       |       |        |      |      |
|-------|-------|--------|------|------|
| SBCC6 | 62.31 | 60.049 | .508 | .773 |
| TBCC1 | 62.33 | 60.184 | .503 | .773 |
| TBCC2 | 62.40 | 63.351 | .268 | .790 |
| TBCC3 | 62.38 | 59.941 | .469 | .775 |
| TBCC4 | 62.08 | 60.631 | .505 | .773 |
| TBCC5 | 62.13 | 60.622 | .523 | .772 |
| SCCA1 | 62.27 | 67.308 | .121 | .795 |
| SCCA3 | 62.04 | 65.743 | .255 | .788 |
| SCCA4 | 62.21 | 62.466 | .331 | .785 |
| SCCA5 | 62.08 | 63.099 | .319 | .786 |
| SCCA6 | 62.31 | 67.666 | .096 | .796 |
| TCMP1 | 62.06 | 65.847 | .247 | .789 |
| TCMP2 | 62.19 | 66.539 | .175 | .792 |
| TCMP3 | 62.13 | 66.580 | .227 | .789 |
| TCMP5 | 62.40 | 66.031 | .178 | .793 |
| TCMP6 | 62.15 | 66.808 | .151 | .794 |

Table 3. Item-Total Statistics for TCMPQ, SCCAQ, TBCCQ and SBCCQ.

| Item-Total Statistics |                            |                                |                                  |                                  |                                    |
|-----------------------|----------------------------|--------------------------------|----------------------------------|----------------------------------|------------------------------------|
|                       | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted | Cronbach's Alpha for each variable |
| TCMP1                 | 13.15                      | 4.127                          | .494                             | .556                             | 0.651                              |
| TCMP2                 | 13.27                      | 4.457                          | .337                             | .630                             |                                    |
| TCMP3                 | 13.21                      | 5.020                          | .256                             | .657                             |                                    |
| TCMP5                 | 13.48                      | 3.872                          | .437                             | .583                             |                                    |
| TCMP6                 | 13.23                      | 3.968                          | .505                             | .548                             |                                    |
| SCCA1                 | 13.35                      | 6.234                          | .274                             | .620                             |                                    |
| SCCA3                 | 13.12                      | 6.920                          | .090                             | .688                             |                                    |
| SCCA4                 | 13.29                      | 3.743                          | .685                             | .368                             |                                    |
| SCCA5                 | 13.17                      | 4.142                          | .627                             | .418                             |                                    |
| SCCA6                 | 13.40                      | 6.329                          | .259                             | .625                             |                                    |
| TBCC1                 | 13.02                      | 11.978                         | .852                             | .844                             | 0.893                              |
| TBCC2                 | 13.08                      | 14.248                         | .438                             | .937                             |                                    |
| TBCC3                 | 13.06                      | 11.677                         | .813                             | .852                             |                                    |
| TBCC4                 | 12.77                      | 12.606                         | .800                             | .857                             |                                    |
| TBCC5                 | 12.81                      | 12.496                         | .849                             | .847                             |                                    |
| SBCC1                 | 12.81                      | 11.773                         | .653                             | .881                             |                                    |
| SBCC2                 | 12.98                      | 10.702                         | .762                             | .856                             |                                    |
| SBCC3                 | 13.02                      | 11.255                         | .720                             | .866                             |                                    |
| SBCC4                 | 12.81                      | 10.836                         | .782                             | .852                             |                                    |
| SBCC6                 | 12.96                      | 10.722                         | .730                             | .864                             |                                    |



## Results

### Research Question 1

To what extent are students aware of climate change and its associated consequences?

The researchers used the weighted average value as a benchmark for decision making. This value was derived by dividing the sum of the individual mean values by the total number of items, which was calculated to be 3.22. i.e.  $3.38 + 3.14 + 3.22 + 3.19 + 3.15/5 = 3.22$ .

Considering Table 4, with a weighted average (WA) of 3.22, item 1 (My students understand what climate change is) with a mean of 3.38, attained the benchmark for the variable; Students' Climate Change Awareness (SCCA). This implies that majority of the students have a good conceptual understanding of what climate change is. For example, 49.4% (n = 40) of the respondents are aware of what climate change is, to a large extent while 44.4% (n = 36) respondents are aware of what climate change is, to a very large extent, making a total of 93.8% (n = 76) for the two continuum. The remaining 5 respondents representing 6.2% are aware of what climate change is, to some extent as indicated on the table. This information is also presented in Fig. 1 below.

Similarly, item 3 (My students are aware that climate change is caused by human activities and natural changes in the environment) also attained the benchmark based on the weighted average of 3.22. To sum

up, 82.7% of the respondents admitted they are highly aware of the causes of climate change, out of which 37% (n = 30) affirmed this statement to a large extent and 45.7% (n = 37) affirmed it to a very large extent. Items 2, 4 and 5 did not attain the stated benchmark.

### Research Question 2

What is the implementation level of teachers' classroom climate management practices?

Table 5 and Fig. 2 present the level of classroom climate management practices implemented by teachers. The decision made was based on the value of weighted average of 3.28. It is indicated that out of the five items responded to, three attained the weighted average benchmark. The items are: item 3 (I take students on field trips to hazard sites caused by climate change – 3.32), item 4 (I invite guest speakers periodically to talk to students about possible climate change effects – 3.30) and item 5 (I encourage the use of trash bins for proper disposal of synthetic and organic waste – 3.35). In essence, there was an excellent implementation of these three items by the classroom teachers in the researched area. Further analysis shows that for item 3, 35.8% (n = 29) of the participants asserted true of me while 48.1% (n = 39) of the participants asserted very true of me. This sums up to be 83.9% (n = 68).

Similarly, 32.1% (n = 26), and 50.6% (n = 41) of the participants asserted true of me and very true of me

Table 4. Students' Climate Change Awareness Level.

| Variable                                  | Items  | To a Little Extent N (%) | To Some Extent N (%) | To a Large Extent N (%) | To a Very Large Extent N (%) | Mean | Decision             |
|---|--|--------------------------|----------------------|-------------------------|------------------------------|------|----------------------|
| STUDENTS' CLIMATE CHANGE AWARENESS (SCCA) | My students understand what climate change is  | NONE                     | 5 (6.2)              | 40 (49.4)               | 36 (44.4)                    | 3.38 | High awareness level |
|   | My students are aware that climate change is an issue of concern globally                                      | 4 (4.9)                  | 10 (12.3)            | 38 (46.9)               | 29 (35.8)                    | 3.14 | Low awareness level  |
|   | My students are aware that climate change is caused by human activities and natural changes in the environment | 5 (6.2)                  | 9 (11.1)             | 30 (37.0)               | 37 (45.7)                    | 3.22 | High awareness level |
|   | My students are aware of the possible effects of climate change on teaching and learning                       | 5 (6.2)                  | 10 (12.3)            | 31 (38.3)               | 35 (43.2)                    | 3.19 | Low awareness level  |
|   | My students are aware of human activities that may likely cause climate change                                 | 2 (2.5)                  | 11 (13.6)            | 41 (50.6)               | 27 (33.3)                    | 3.15 | Low awareness level  |
| WEIGHTED AVERAGE                          |  |                          |                      |                         |                              | 3.22 |                      |

\*Decisions were made based on the value of weighted average = 3.22

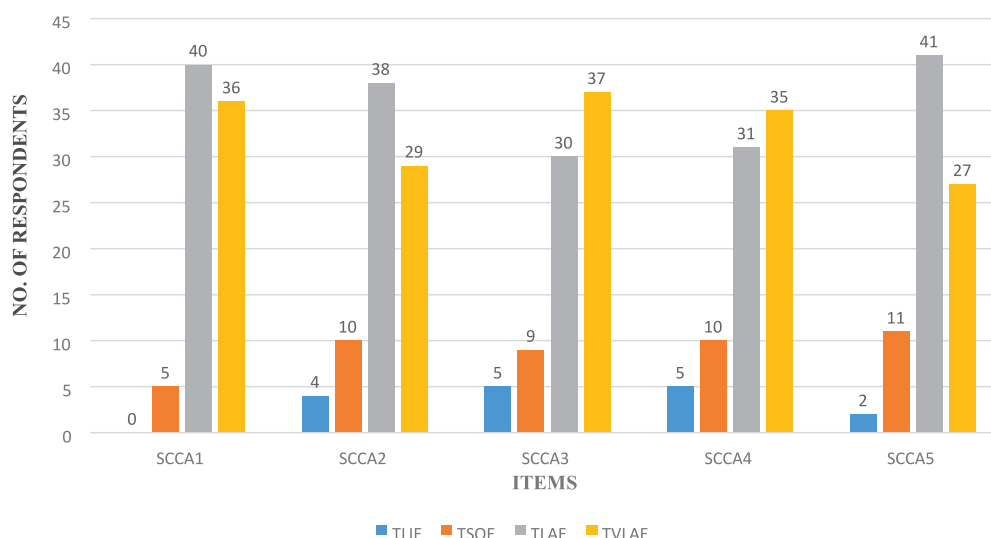


Fig. 1. Students' climate change awareness level.

respectively for item 4, with a sum of 82.7% (n = 67). In addition, 34.6% (n = 28) and 50.6% (n = 41) of the participants asserted true of me and very true of me respectively for item 5, with a sum of 85.2% (n = 69). Items 1 and 2 were poorly implemented.

### Research Question 3

What kind of relationship exist between teachers' beliefs about climate change and students' beliefs about climate change?

The relationship between Teachers' beliefs about climate change and Students' beliefs about climate

change was investigated using Pearson product Moment Correlation Coefficient. Results as presented on Table 6 indicates a positive, high and significant correlation between the two variables. ( $r = 0.702, n = 81, p < 0.01$ ).

Again, an overview of Tables 7 and 8 indicates that teachers and students generally had strong and positive belief on the reality, causes and consequences of climate change. Majority of them believe that climate change has negative effect on teaching and learning. For example, item 5 on Teachers' Beliefs Questionnaire and item 5 on Students' Beliefs Questionnaire addresses the school as a major recipient of the effects of climate change and a high percentage of the teachers (84.3%,

Table 5. Teachers' Classroom Climate Management Practices.

| Variables  | Items   | Very Untrue of Me N (%) | Untrue of Me N (%) | True of Me N (%) | Very True of Me N (%) | Mean | Decision                  |
|--|---|-------------------------|--------------------|------------------|-----------------------|------|---------------------------|
| TEACHERS' CLASSROOM CLIMATE MANAGEMENT PRACTICES | 1<br>I facilitate discussions on climate change issues among students                               | 6 (7.4)                 | 6 (7.4)            | 35 (43.2)        | 34 (42.0)             | 3.20 | Low implementation level  |
|  | 2<br>I lead my students to trees planting within the school environment                             | 2 (2.5)                 | 13 (16.0)          | 30 (37.0)        | 36 (44.4)             | 3.23 | Low implementation level  |
|  | 3<br>I take students on field trips to hazard sites caused by climate change                        | NONE                    | 13 (16.0)          | 29 (35.8)        | 39 (48.1)             | 3.32 | High implementation level |
|  | 4<br>I invite guest speakers periodically to talk to students about possible climate change effects | 3 (3.7)                 | 11 (13.6)          | 26 (32.1)        | 41 (50.6)             | 3.30 | High implementation level |
|  | 5<br>I encourage the use of trash bins for proper disposal of synthetic and organic waste           | 1 (1.2)                 | 11 (13.6)          | 28 (34.6)        | 41 (50.6)             | 3.35 | High implementation level |
| WEIGHTED AVERAGE                                 |   |                         |                    |                  |                       | 3.28 |                           |

\*Decisions were made based on the value of weighted average = 3.28

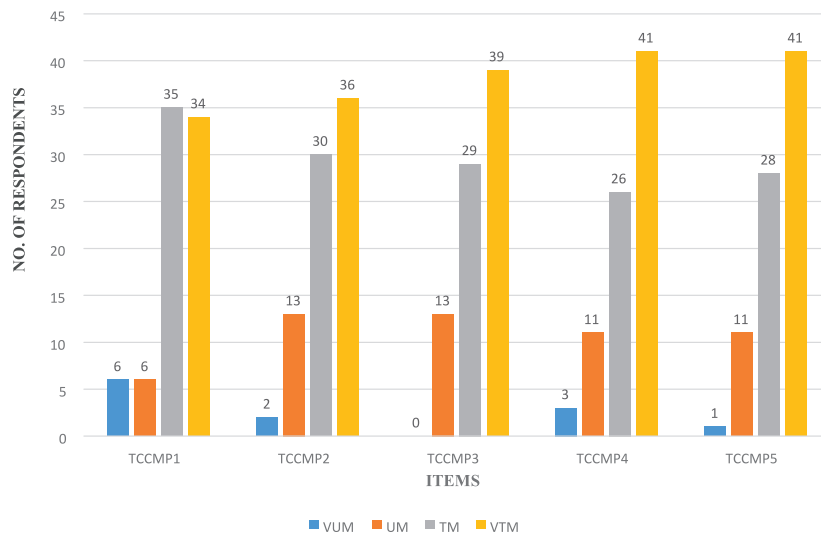


Fig. 2. Teachers' Classroom Climate Management Practices.

Table 6. Pearson moment correlation between teachers' beliefs and students' beliefs on climate change.

| Variables                              | N  | Std  | Mean  | R     | Sig  |
|--|----|------|-------|-------|------|
| Teachers' beliefs about climate change | 81 | 2.49 | 16.00 | 0.702 | 0.00 |
| Students' beliefs about climate change | 81 | 2.07 | 16.04 |       |      |

Table 7. Students' Beliefs about Climate Change.

| Variables                              | Items      | Very Untrue of Me N (%)   | Untrue of Me N (%) | True of Me N (%) | Very True of Me N (%) | Mean      | Decision |                       |
|--|------------|---|--------------------|------------------|-----------------------|-----------|----------|-----------------------|
|  | I believe, |   |                    |                  |                       |           |          |                       |
| STUDENTS' BELIEFS ABOUT CLIMATE CHANGE | 1          | Climate change and its consequences are real  | NONE               | 11 (13.6)        | 40 (49.4)             | 30 (37.0) | 3.24     | High acceptance level |
|  | 2          | Humans alters the climate through bush burning and industrialization                      | 5 (6.2)            | 13 (16.0)        | 40 (49.4)             | 23 (28.4) | 3.00     | Low acceptance level  |
|  | 3          | Climate change poses a great threat to humanity   | 3 (3.7)            | 15 (18.5)        | 39 (48.1)             | 24 (29.6) | 3.04     | Low acceptance level  |
|  | 4          | Excessive heat makes school environment non conducive for effective teaching and learning | 3 (3.7)            | 11 (13.6)        | 25 (30.9)             | 42 (51.9) | 3.31     | High acceptance level |
|  | 5          | The school is the worst hit by the effects of climate change in the society               | 4 (4.9)            | 7 (8.6)          | 36 (44.4)             | 34 (42.0) | 3.23     | High acceptance level |
| WEIGHTED AVERAGE                       |            |   |                    |                  |                       | 3.16      |          |                       |

\*Decisions were made based on the value of weighted average = 3.16

n = 68,  $\bar{x}$  = 3.19) and students (86.4%, n = 70,  $\bar{x}$  = 3.23) admitted this assertion to a high level. i.e. true of me plus very true of me. In addition, the weighted mean for TBQ is 3.19 and that of SBQ is 3.16. This shows

no major variance but congruence between the two variables in descriptive terms. By implication, teachers' beliefs about climate change has some connection with students' beliefs about climate change.



Table 8. Teachers' Beliefs about Climate Change.

| Variables                                     |   | Items   | Very Untrue of Me N (%) | Untrue of Me N (%) | True of Me N (%) | Very True of Me N (%) | Mean | Decision             |
|---|---|---|-------------------------|--------------------|------------------|-----------------------|------|----------------------|
|   |   | I belief  |                         |                    |                  |                       |      |                      |
| TEACHERS' BELIEFS ABOUT CLIMATE CHANGE (TPCC) | 1 | Climate change is real  | NONE                    | 12 (14.8)          | 32 (39.5)        | 37 (45.7)             | 3.31 | High acceptance rate |
|   | 2 | Climate change poses a great threat to humanity                             | 6 (7.4)                 | 12 (14.8)          | 33 (40.7)        | 30 (37)               | 3.07 | Low acceptance rate  |
|   | 3 | Humans are largely responsible for climate change                           | 3 (3.7)                 | 16 (19.8)          | 35 (43.2)        | 27 (33.3)             | 3.06 | Low acceptance rate  |
|   | 4 | Industrialization causes global warming and climate change                  | 3 (3.7)                 | 11 (13.6)          | 25 (30.9)        | 42 (51.9)             | 3.31 | High acceptance rate |
|   | 5 | The school is the worst hit by the effects of climate change in the society | 4 (4.9)                 | 9 (11.1)           | 36 (44.4)        | 32 (39.9)             | 3.19 | High acceptance rate |
| WEIGHTED AVERAGE                              |   |   |                         |                    |                  | 3.19                  |      |                      |

\*Decisions were made based on the value of weighted average = 3.19

### Discussion of Findings

Responses elicited from Students' Climate Change Awareness Questionnaire (SCCAQ) indicates that their awareness of the reality of climate change in our society are near optimal. This is encouraging. However, their awareness concerning the various human activities that can cause climate change and its ripple effects on teaching and learning are below the stated benchmark. Surprisingly, from the Students' Beliefs Questionnaire (SBQ) and Teachers' Beliefs Questionnaire (TBQ), responses on item 5 which attained the benchmark weighted average of 3.16 for students and 3.19 for teachers shows that, both teachers and students had strong belief that the school (teaching and learning) is mostly affected by climate change. This inconsistency is not grievous when we consider the mean difference between these items which is relatively small (i.e., for item 4 in SCCAQ, mean is 3.19, for item 5 in SBQ, mean is 3.23 and for item 5 in TBQ, mean is 3.19). Their means range between 3.19 and 3.23 giving a small difference of 0.04. Results from correlation analysis between TBQ and SBQ indicate that there is a strong, positive and significant relationship between the two variables. There is therefore the likelihood of using one to predict the other. Thus, it may be logical to admit that teachers' beliefs about climate change can influence their students' belief about climate change. This places the teacher at the fulcrum of behavior modification on various climate change mitigation practices. This result corroborates with that of [26], who posited that teachers' beliefs about the causes of climate change influences their students' beliefs.

Again, it was also indicated that the classroom teachers excellently implemented 60% of the items in the variable' Teachers' classroom Climate Management Practices. This will enable students to easily generate adaptive measures and act in an environmentally friendly way. The classroom teacher plays a very significant and central role in creating awareness in students through resourceful classroom climate management practices. Hence, any efforts geared towards harnessing and improving these practices will have positive and lasting impact on our students' climate change awareness and consequent adaptive and mitigation measures. This finding is supported by that of [66].

### Conclusion

Based on the findings, the researchers concluded that teachers are prime factors in creating Climate Change awareness in students. Also, teachers' beliefs about climate change may influence their students' beliefs. Teachers' classroom management practices are very important in creating Climate Change awareness and consciousness in students. Only diligent and climate-conscious teachers can guarantee the inculcation of sustainable practices in students for the protection of the planet earth for human safety. The study suggested that:

1. Government and school administrators should encourage regular training and re-training of teachers on CC issues to deepen their beliefs on the phenomenon and increase their awareness levels which will seamlessly transcend to students.

2. Government should create opportunities for teachers' professional development and capacity building to update their knowledge and skills with modern classroom management practices for CC awareness creation.
3. School administrators should apply the measure of rewards to bring out the best positive environmental actions and practices in classroom management among teachers.

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