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Understanding, Approaches and Comportments towards Environmental Challenges in South-Eastern Nigeria

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ABSTRACT

This study examines the understanding of scholars towards environmental challenges, as well as the connection between the environmental challenges, approaches and comportments in South-Eastern Nigeria. The Correlational Coefficient Analytical Technique (CCAT) was adopted in this study to ascertain the extent to which the three key variables (environmental understanding, approach and comportment), do correlate with one another and their possible effects on the sampled student population. Data was also elicited via environmental understanding test, environmental approach scale and environmental comportments scale. Furthermore, descriptive statistics and independent t-test were employed. The study among other things showed that environmental understanding did not have a higher correlation with environmental comportments (r = 0.21) than with environmental approaches (r = 0.46). However, environmental comportments were found to influence environmental approaches, by having a significantly stronger correlation (r=0.46) than environmental understanding (r = 0.21). The study, therefore, indicated a statistically positive correlation between the environmental understanding, approach and comportments on the surveyed environmental issues. Therefore, the environmental approach has a moderate relationship with the environmental understanding and comportments, although the relationship between the environmental understanding and comportments seems to be weak. The study, therefore, concluded that environmental understanding, approaches and comportments of participants do not have a significant difference. There is, therefore, the need to review extant curriculum to inquire into extant teaching practices with the hope to facilitate a clear-cut teaching approach geared towards sensitizing the students on the realities of environmental challenges, their consequences and measures to ameliorate, or at most, abating them.

Keywords: Environmental understanding, environmental enlightenment, environmental challenges, environmental approaches, environmental comportment.
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INTRODUCTION

Environment according to Yilin et al. (2018) is the platform where humans and other living things interactively carry on their biological, chemical, social, economic and cultural activities. Likewise, Yüce, (2019) submitted that an environment comprises all the physical, biological, chemical and social elements that directly or indirectly influence the biophysical organisms. However, from the works of Elgin et al. (2010) the environment is said to be destroyed in line with the rapid development of the industrial and commercial sectors through the consumption of natural resources for raw materials, thus heralding an increase in production and commercial wastes via man's conscious and/or unconscious activities.

With the improvement of living standards, many conditions are changing in our environment because of the substantive advancement in science and technology. If the environmental problems that arise in this way are not prevented, it will be the end of life on earth (Yılmaz et al., 2002; Jeffries et al., 2011). The most important threat to the environment is the environmental problems such as; the decrease in energy resources, agricultural challenges, desertification, aridity, reduction of forest areas, disappearance of living species, air pollution, water pollution, land pollution, global warming, greenhouse effect, ozone layer depletion, acid rain, nuclear pollution (Gomez, 2013; Hayat, 2016; Yard and Kylix, 2010). Both state and individuals have the responsibility in the formation and prevention of environmental problems (Ulna et al., 2011).

The main purpose of environmental enlightenment is to create environmental awareness by increasing environmental consciousness, as well as create pro-environmental comportments (Basal, 2013; Mantas et

al., 2020; Yokel, 2019). It has an important role to educate scholars consciously and sensitively about the environment to find a permanent solution to environmental problems (Uzi and Salaam, 2016). Teachers and scholars as the basic elements of the enlightenment process, thus require to be informed as with the intention to protect man from various environmental maladies and to encourage positive feasible developments by examining carefully the understanding, approaches and comportments of individuals towards the environment (Ulna et al., 2011). Awareness on the responsibilities of individuals is particularly important because individual activities, directly and indirectly, influence the emergence of environmental problems. The level of enlightenment accessible to individuals is fundamentally the secondary environmental enlightenment pattern (Sami, 2013). To this extent, the purpose of this study is to investigate the understanding of scholars and the relationship between approaches and comportments towards the environmental challenges in the South-Eastern Nigeria.

Findings from existing body of literature show that scholars have conceptual misconceptions about important environmental challenges such as global warming, ozone layer depletion and acid rain. For instance, Boyes et al. (2012) had found that from fifth grade to tenth grade, scholars had misconceptions about the greenhouse effect, ozone depletion, reduction of biological diversity, air and water pollution, nuclear power. It was also stated by Boyes and colleagues that scholars also had difficulty in establishing relationships between these environmental challenges. Groves and Pugh (2019) extended the study of Boyes et al. and worked with scholars from different departments such as enlightenment, pharmacy, science and fine arts. It has been reported that the results support the work of Boyes et al. and also found that the primary enlightenment is the effective factor on the misconceptions through the environmental challenges. Anderson and Wallin (2000) determine the understanding and the conceptual misconceptions of grade ninth and twelfth scholars regarding environmental and natural resources performed with open-ended questions. According to the results, although scholars could not completely explain the greenhouse effect and related concepts; though they were aware of the ozone layer depletion, which was a result of human activities and the consequences of global warming and climate change.

Shearson et al. (2018), performed open-ended questions, drawings and assessment tools for JSS 2 grade scholars. Similar to the previous studies, it has been determined that scholars have misconceptions about global warming, climate change, especially greenhouse effect and its relationship with global warming. Boyes and Stanisstreet (2020) reported that most of the 13 and 14 calendar-old scholars think that holes in the ozone layer cause the greenhouse effect rather than thinking that the greenhouse effect causes ozone layer damage. Similarly, pursuant to the literature review, scholars believe that the ozone layer depletion was the main cause of global warming (Meadows and Spaniel, 2019; Rye et al.,2020). According to the study results of Celica and Aksans (2014) which aimed to analyse pre-service science teachers' understanding and misconceptions about greenhouse effect by using drawing and writing; they reported that pre-service teachers had inadequate understanding and misconceptions about the greenhouse effect. However, Comet (2017) reported that some of the scholars from JSS 2 grade had misconceptions about acid rains, ozone layer and greenhouse effect at low levels.

Jeffreis et al. (2011) investigated the consequences, causes and cures of the greenhouse effect with biology scholars and compare the results with their studies from 10 calendars ago. They found that many scholars were unaware of the potential effect of global warming on the distribution of crop pests, or that ground-level ozone acts as a greenhouse gas. Also, results reveal that scholars had misconceptions such as global warming was caused because of the increased penetration of solar radiation which was connected with holes in the ozone layer (Kacey and Pekel2017); as a result of this, the risk of skin cancer increased and can be reduced by using unleaded petrol. They stated that despite media publicity and inclusion of the issue of global warming in the formal curriculum, the results were not better than the study which had been done before. Dargin et al. (2016), reveals that participants could answer the questions about the environment which were general and not detailed correctly but exhaustive questions could not. Most enlightenment interventions depend on the understanding transfer because understanding has an essential effect on the comportments of persons (Frick et al., 2014). Improving environmental understanding which is necessary as a requirement to ecological comportments, is viewed as a basic component of environmental enlightenment (Otto and Panini, 2017). Bradley et al. (2019), found a significant correlation between the environmental understanding and approaches of high school scholars.

Vicente-Molina et al. (2013) reported that while understanding influences pro-environmental comportments, approach and informal enlightenment were not relevant variables among the university scholars from countries with different levels of economic development such as; USA, Spain, Mexico and Brazil. Kossel (2010) and Safari (2012) concluded that in contrast with the approaches of secondary school scholars, the understanding, environmental protection comportments of their family, settlement area where they lived for the longest time; gender and level of enlightenment of their family was not influential. Akas (2017), reported a survey model study about environmental understanding in South-Eastern Nigeria. According to the results, there was no statistically significant relationship between environmental understanding and the variables such as age, level of enlightenment, area of residency, nationality and gender.

Figure 1: Map of Nigeria showing the study area (South-eastern Nigeria). Source: Department of Uban and Regional Planning, Abia State University, Uturu.

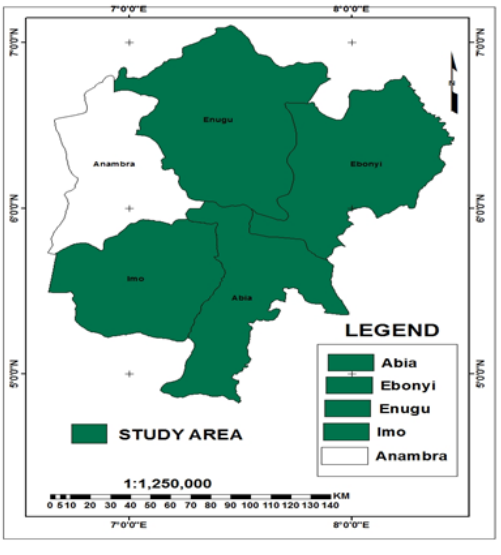

Figure 2: Map of South-eastern Nigeria showing the study area Source: Department of Uban and Regional Planning, Abia State University, Uturu

However, Şafaklı (2012) studied environmental approaches in the South-Eastern Nigeria and results reveal that respondents had a pro-environmental approach although environmental enlightenment and participation in environmental groups are not efficient. Kunduz et al. (2017), performed a study to determine the level of environmental citizenship of primary school scholars in South-Eastern Nigeria. Besides these studies, there is not any study about environmental understanding, approaches and comportments for the primary, secondary school, or university scholars in South-Eastern Nigeria.

Taking all these into consideration, there is no specific study or analysis on environmental understanding, approaches and comportment of scholars in South-Eastern Nigeria. Moreover, the determination of this study on the understanding of scholars and the relationship between approaches and comportments towards the environmental challenges makes this study significant in relation to environmental enlightenment.

The research is aimed at analysing the understanding of scholars, in relation to their approaches and comportments towards meeting and coping with environmental challenges in South-eastern Nigeria (Figures 1 and 2).

The following research questions guided the study:

. What is the level of understanding about the environmental challenges for JSS 3 scholars who were

Table 1: Descriptive statistics for environmental understanding of JSS 3 scholars.

Environmental understanding range of scores	Number of scholars	Percentage of scholars
0-7	66	45.5
8-15	71	49.0
16-23	8	5.5

Table 2: Correlation analysis on the relationship between environmental understanding, environmental approach and environmental comportment.

Correlation Coefficient			
Analytical Tool (level of significant)	**1**	**2**	**3**
Pearson Correlation			
Sig. (2-tailed) 0.01	1.00	0.46*	0.21**
Pearson Correlation			
Sig. (2-tailed) 0.05	1.00	0.26**	0.47*

Note: Variable (1): environmental understanding. Variable (2): environmental approach. Variable (3): environmental comportment. *Correlation is significant **Correlation is insignificant.

educated in South-Eastern Nigeria?

- Is there any significant difference between approaches, comportments and understanding about environmental challenges for JSS 3 scholars?
- Is there any significant difference between the environmental understanding, approach and comportments of JSS 3 scholars based on gender?

MATERIALS AND METHOD

The Correlational Coefficient Analytical Technique (CCAT) was adopted in this study, to ascertain the extent to which the three key variables (environmental understanding, approach and comportment), do correlate with one another and their possible effects on the perceived sampled student population. The sample of the study consisted of 145 JSS 3 scholars from a public school in South-Eastern Nigeria during the second half term of 2019/2020 semester. In the present study, the school was selected conveniently. All scholars have nearly the same curricula and have taken science and technology courses.

In South-Eastern Nigeria, environmental enlightenment has started with fourth-grade scholars at primary enlightenment level.

The science and technology curriculum aims to develop scholars with prerequisite skills for their future learning (MEB, 2016).

At secondary enlightenment; JSS 1 to JSS 3 scholars have science and technology courses that include several topics about environmental challenges. For the science and technology course for the JSS 3 scholars, the enlightenment manual has been written by Unver (2014) and contain topics which through the environmental challenges, such as renewable and unrenewable energy resources, acid rains, the chemicals which contaminating the land, water and air, water pollution, air pollution and land pollution.

The understanding test developed by Comet (2017), was used to determine the level of understanding about environmental problems and their effects on scholars. The understanding test consisted of 23 multiple choice questions and the reliability coefficient was found as 0.75. The distribution of the questions based on the environmental topics shows that a question for each was about air pollution and nuclear contamination, eight questions on global warming and greenhouse effect, three questions each on acid rain, ozone layer and water pollution and four questions on land pollution. The environmental test questions which aim at determining the understanding scholars have towards environmental challenges were as well utilised.

RESULTS AND DISCUSSION

Table 2 shows that correlation is significant (0.46) between understanding and approach at 0.01 level (2-tailed), but insignificant with comportment (0.21) at the same level). Similarly, ** correlation is significant between understanding and comportments at the 0.05 level, but insignificant with approach at 0.05 level of significance (2-tailed). This implies that possessing a clear understanding of the environmental challenges is more dependent on comportment than approach since it takes determination to approach and resolve any environmental issue.

Environmental approach scale

The environmental approaches measured through the questionnaire which was prepared by Comet (2017), consisted of four-point Likert type 32 items. 18 items were positive and 14 items were negative. Negatively worded items were scored in the reverse order. The reliability of the scale was high and Cronbach alpha coefficients were calculated as 0.85. The scale contains 3 sub-factors. The first sub-factor consists of 9 items that explain the requests of scholars to be informed about the environment; the second sub-factor consists of 16 items

Table 3: Classification of scholars based on gender.

Gender	Frequency	Percentage(%)
Female	66	45.5
Male	79	54.5

Table 4: Independent t-Test result relating to gender-based scores on the key variables of study.

Environmental Understanding						
Gender	**N**	**Mean**	**S**	**Sd**	**T**	**P**
Female	66	8.80	3.72	143	0.39	
	79	8.56	3.75			0.69
Environmental Approach						
Female	66	94.89	14.51			
Male	79	91.47	12.29	143	1.53	0.13
Environmental Comportment						
Female	66	63.65	10.57	143	0.34	
Male	79	63.03	11.69			0.74

that explain the environmental awareness, and the third one consists of 7 items that declaratory desire to participate in environmental activities.

Environmental comportments scale

The Environmental Comportment Scale (ECS) as prepared by Comet (2017), is useful in data collection. The ECS represents a popular format for a four-point Likert-type scale that consists of respondents who can be asked to write down X in one box of four possible options: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The scale consisted of 22 positive items and 3 negative items. In summation, there were 25 items and 3 sub-factors marking the ECS: 10 items (1, 5, 6, 9, 12, 13, 14, 18, 19, 22) to determinate the understanding of scholars in explaining the level of comportments; 9 items (2, 3, 4, 7, 8, 20, 21, 24, 25) to describe the level of informing of entourage; 6 items (10, 11, 15, 16, 17, 23) to explain their support to recycling.

Descriptive statistics as related to the first research question of the study is shown in Table 1.

The study classified the scholars into three main groups which belong to the possible range scores for the environmental understanding test. Distribution of scores for the Environmental Understanding Test (Table 1) shows that approximately 45% of scholars get a high score from the environmental understanding test. Almost half of the scholars, roughly 49%, had an average score from the test.

In terms of the second research question, the correlation analysis was used to determine the relationships between environmental understanding, approach and comportments (Table 2).

From Table 4, it can be deduced that if the correlation coefficient is 1, the relationship between that variables is perfect; if the correlation coefficient is 0; there is no relationship. Explication of the correlation coefficient depends on its magnitude; if the absolute value of the correlation coefficient is between 0.70-1.00, the relationship is high; 0.70-0.30 is moderate; 0.300.00 is week (Bellini, 2017). The environmental understanding did not have a higher correlation with environmental comportments (r=0.21) than with environmental approaches (r=0.46). However, environmental comportments which are responsible for the environmental approaches had a significantly stronger correlation with environmental approach (r=0.46) than environmental understanding (r=0.21). The study indicated a statistically positive correlation between the environmental understanding, approach and comportments of scholars on the surveyed environmental issues. Therefore, the environmental approach has a moderate relationship with environmental understanding and comportments. However, the relationship between environmental understanding and comportments is weak.

According to the third research question, we firstly classified scholars based on gender (Table 3). From Table 3, a total of 145 scholars; 45.5 % were females and 54.5% were males, completed the data collection tools. Independent t-test results related to comparison of the understanding test, approach scale and comportments scale scores based on gender as shown in Table 4. Comparison of the scores on the understanding test, approach scale and comportments scale with gender showed that there was no significant difference ($p>0.05$).

There are several studies about the influence of gender on environmental understanding, approach and comportments. Similar to our result, gender is neither an effective variable on the environmental understanding, approach nor comportments, Kossel (2010), reported that gender does not influence the environmental approaches. In contrast, Uzi (2015) relieved that the environmental comportments and understanding of scholars were not found to be statistically significant and also depends on the gender environmental comportments and understanding of female scholars were found to be higher than male scholars. Asante (2014) reported that media and science teachers were the most important environmental sources and besides that, the environmental comportments and understanding of girls were more positive than the boys. Besides this, Kacey and Pekel (2017) had research with prospective teachers who were from different branches

such as; biology, chemistry, physics, sociology, geography, history and primary science and established that gender in the branches were not an efficient factor throughout the environmental awareness and the environmental sensitivities.

Similar with this study, Kumar et al. (2019), reported that all relations between environmental comportments, approach and understanding were substantial. Although the relations between environmental attitude and understanding found were quite higher than other studies (Hines, 1987). According to the results of the study performed by Somme and Yerlikaya (2017), there was a relation between the environmental comportments and understanding of JSS 3 scholars. His findings, however, do not corroborate with the findings of this study, he also reported that female scholars had a better understanding of environmental challenges than males. On the other hand, Evans et al. (2015) proved no correlation between environmental approaches and comportments, this has a bearing on the treatise of the study.

CONCLUSION

This study has established that environmental understanding, approach and comportments of JSS 3 scholars in secondary enlightenment were insufficient in South-Eastern Nigeria. Environmental understanding has moderate relation with the environmental approach. Thus improving curriculum at secondary enlightenment in expression to the environment will facilitate environmental approaches, and comportments as well.

Result from the study suggests that environmental understanding has relation with environmental approach and comportments. Even so, the environmental problems keep increasing from day to day, this makes the study significant in relation to more environmental-related challenges to school curriculums. There is, therefore, the need to review extant education curriculum to ensure an improved curriculum to impart into the students on the realities of environmental challenges, their consequences and current measures that meet with global best practices, with the intention to address present environmental challenges.

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