

Challenges to Environmental Education in Senior High Schools in Kumasi, Ashanti Region, Ghana

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Abstract

Purpose: The purpose of this study was to investigate barriers hindering successful Environmental Education implementation in Kumasi sub- region in Ghana.

Methodology: The descriptive survey design was used as it came in handy in describing the existing conditions. Data was collected using questionnaires. Data was analysed using the Statistical Package for Social Sciences version 16 computer package. The findings of the study were presented in tables.

Findings: The findings of this study revealed a positive relationship between independent and dependent variables. Specifically, it was noted that there was a positive correlation between teacher attitude, $r (.45)$, student attitude, $r (.53)$, administration support, $r (.62)$ and curriculum design, $r (.58)$ and implementation of Environmental education .

Conclusion: The study concluded that teacher attitude, student attitude, administration support and curriculum design were barriers to implementation of environmental education in public day senior high schools in Kumasi sub- region.

Recommendations: The study recommended the strengthening and clarity of policy guidelines towards environmental education and enhancement of mechanisms to enable administration support. The study also recommend training and empowerment of teachers in matters related to environmental education.

Keywords: *Education, attitude, administration support.*

1.0 INTRODUCTION

Environmental degradation has been identified as a major crisis across the globe. Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil, the destruction of ecosystems, habitat destruction, the extinction of wildlife and pollution. When natural habitats are destroyed or natural resources are depleted, the environment is degraded. According to UNESCO (2012), environmental degradation resulted due to growth of urban centers, rise in poverty levels, and surge in population. The need to create food security has led to deforestation, and depletion of water reservoirs. Moreover, industrialization resulted in increased chemical use hence air pollution (UNEP, 2012).

Majority of the African countries, Ghana included, rely on its national economy to propel growth. According to Kiprotich (2014), approximately two thirds of the Ghana population derives their livelihood from agricultural activities. However, Glackin (2017) laments that the natural resource base is shrinking at an alarming rate. Environmental degradation in form of all types of pollution and deforestation has been increasingly manifesting (UNEP, 2012). This spells doom for the future generations. Governments across the globe have been forced to come up with measures to counteract these environmental challenges.

Several authors identify Environmental Education (EE) as one of the remedies to escalating environmental challenges (Wolwick, 2014). According to Mutisya and Baker (2011), environmental education enables learners to acquire knowledge and skills for enhancing the right attitude towards environmental conservation. Environmental education as a tool enhanced awareness and comprehension of social the emerging social and physical environment including the natural, manmade, cultural, and spiritual resources. This is coupled with the national use and conservation of these resources for development. This implies that Environmental education enables individuals make sound decisions and individually formulated code of behaviour about issues concerning environmental conservation and quality.

Majority of the governments embraced Environmental education with the aim of nurturing environmental literacy among their populace. In response to the recommendations made in the 1977 Tbilisi and 1987 Moscow conferences respectively, Ghana has over the years made tremendous progress towards Environmental education. According to Glackin (2017), environmental education is guided by Agenda 21, Chapter 36 on Education and Sustainable Development. As such, the country implemented the National Environmental Action Plan (NEAP). Environmental education in Ghana encounters numerous challenges (Kabubo-Mariara and Mwabu, 2014). Currently, Environmental education is incorporated into other subjects, hence rated second in importance to those subjects. The Ministry of Education has made efforts to incorporate Environmental education across the existing subjects. Contrary to expectations, teachers' workload as a result of demanding curriculum makes it difficult for them to achieve the set targets in the various subjects. As a result, most teachers ignore Environmental education and hope that it will be covered in other subjects.

In the hope of Ghana being a fully industrialized country by the year 2020, Environmental education has to fulfill its role in provision of sustainable development (Mutisya and Baker, 2011). This calls for a balance between how natural resources are utilized and their contribution to economic growth. Environmental education in senior high schools is identified as an important key in the process of changing attitudes and values that are necessary in development of skills needed in management of a sustainable environment. However, Kabubo-Mariara and

Mwabu (2014) observed that are challenges faced in implementation of environmental education in Ghana.

According to Kiprotich (2014), there are several issues that hinder effective implementation of Environmental education in Ghana. These include the perception that there is inadequate pre-service and in-service training in issues related to Environmental education. It is important to note that Ghana has made several attempts to initiate actions geared towards environmental education, some which have yielded positive results. However, these initiatives are inadequate and more actions are required in order to achieve and maintain quality education (Kabubo-Mariara and Mwabu, 2014). The current study seeks to document these challenges and make recommendations on Environmental education implementation in Kumasi sub- region.

1.1 Problem Statement

In Ghana, environmental issues and in particular its destruction through by human activities is a major area of concern. The continuous depletion of the natural resources has been documented in several researches (Mutisya and Baker, 2011). In addition to this depletion of resources, environmental pollution, water, air and soil has also been reported to be on the increase in Ghana. As a result of inability of the environmental conservation authority to reduce the pollution of the environment and also destruction of the natural resources, efforts were directed to establishment of Environmental education programmes; formal and non-formal learning activities. Thus, as an educational programme Environmental education in Ghana, generally aims at increasing people's knowledge and awareness about the environment and associated challenges, In addition, Environmental education develops the necessary skills and expertise required to address challenges that threatens sustainability of the ecosystem (Kiprotich, 2014). Despite the importance of Environmental education in Ghana's quest for environmental sustainability, there seems to be problems in the implementation of the laudable objectives of senior high school Environmental education curriculum in Ghana (Mutisya, 2011). How to sensitize teachers to effectively implement the senior high school environmental curriculum and make government seriously involved in providing necessary environment for curriculum implementation remain daunting.

1.2 General Objective

The purpose of this study was to investigate Barriers to implementation of environmental education in senior high schools in Ghana.

1.2.2 Specific Objectives

The specific objectives that guided this study were;

1. To determine the effect of teachers' attitude towards environmental education implementation in senior high schools in Kumasi sub- region.
2. To examine the effect of students' attitude towards environmental education on environmental education implementation in senior high schools in Kumasi sub- region.
3. To find out the effect of administrative support on environmental education implementation in senior high schools in Kumasi sub- region.
4. To establish the relationship between curriculum design and environmental education implementation in senior high schools in Kumasi sub- region.

2.0 LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Constructivist Learning Theory

The main proponent of Constructivist learning theory was Jerome Bruner in 1966. The theory proposes the idea that learners construct knowledge and meanings for themselves individually and socially during learning process. Constructivism learning theory describes learning as an approach where the teacher provides learners' with an opportunity to construct their own sense and meaning in interpretation of what is being learned (Bruner, 1966). Borich and Tombari (2004) argue that constructivist learning theory emphasizes on learners' structure of internal connections and relationships with facts and ideas taught. Constructivist approach in teaching and learning emphasizes the use of learner centred approach such as discovery learning, knowledge building and active learning. These approaches help the learner in exploring freely within a given structure in order to create their own meanings and understanding of concepts.

Constructivism theory also helps the teacher in designing and utilization of learning materials that engage, stimulate and support meaningful learning of environmental education. This creates interest among students hence increasing enrolment and improve academic performance in environmental education. Constructivist views the role of a teacher as that of a facilitator and a mediator where learning process is supposed to be student centred. Constructivist approach in teaching and learning of environmental education improves the quality of learning Physics concepts (Tuwoso, 2016). Constructivist theory guided the study in understanding how teachers' ability to develop and utilize quality teaching and learning materials has affected learners' interest in environmental education during lesson observations.

2.2 Empirical Review

In England, Glackin (2017) observed that policy makers withdrew environmental education from the streamlined English Senior high National Curriculum in 2014. As a result, school administrations obliged to make decisions on how environmental education would be incorporated during Geography and Science lessons. In Sweden, Wolwick (2014) reported that environmental education is compulsory and incorporated into the curriculum. In Malaysia, Said, Yahaya and Ahmadun (2007) found that environmental education featured in the Malaysian senior high school curriculum in 1986. However, despite early incorporation, there have been challenges in its implementation up to date (Nor and Akinuoye, 2011). Among these challenges include lack of proper implementation procedures, inadequate resources and teachers' perception towards Environmental education.

In Nigeria, Nor and Akinuoye (2011) pointed out that Nigeria was among the first developing countries to acknowledge the significance of environmental education in achieving a sustainable environment. However, Bosah (2015) observed that even though a lot of resources have been channeled towards environmental education awareness programmes, there has been challenges in the implementation process. A tussle exists as to whether environmental education should be implemented at individual schools' level or at the national level (Adara, 2015).

In Tanzania, Ssozi (2012) observed that the Tanzanian senior high school curriculum had incorporated environmental education. Environmental education was integrated and taught during other subjects. However, URT (2013) argued that challenges experienced during implementation of environmental education in senior high schools in Tanzania was due to lack of properly spelt out implementation guidelines.

According to Omran and Adebukola (2015), an attitude is a mindset that affects how a person thinks and acts. Attitude can influence a person's performance positively or negatively. For instance, negative attitude towards one's job will result in negative performance. Similarly, personality traits of the teachers are more powerful and influential than the course content or instructional strategies used in the classroom. Attitude is determined by a number of motivational bases. According to David (2013) there are four motivational bases for attitude formation. These include utilitarian, value expressive, ego-defensive, and knowledge. Attitude formed on utilitarian base is associated with survival, safety and other social needs of individuals. This means that one's attitude towards teaching and learning of a subject is bound to be favorable if it improves one's survival needs.

Attitude can alter every aspect of a person's life, including their education. Student attitudes on learning determine their ability and willingness to learn (Bosah, 2013). If negative attitudes are not altered, a student is unlikely to continue his education beyond what is required. Student attitudes on learning, good or bad, affect their outlook toward learning throughout life. Their attitudes towards learning not only affect their amount of education but their desire for education (UNESCO, 2012). In a study, Tilmaz *et al.* (2009) investigated students' attitude towards environmental education in elementary schools in Turkey. Findings indicated that elementary pupils had a positive attitude towards energy conservation. As a result, they were ready to study environmental education. Therefore, the school integrated the study on pollution, soil erosion and environmental degradation in the curriculum. According to Mutisya and Baker (2011), students' awareness and attitude towards environmental education was a key factor in environmental education implementation in schools.

In Nigeria, Bosah (2013) studied the issues, prospects and challenges facing environmental education in Nigeria. The study sought to establish the relationship between schools' administration support towards environmental education and successful implementation of environmental education. Findings revealed that majority of the respondents (85%), felt that the management did not provide adequate financial and personnel resources in the implementation of environmental education in schools. Further findings indicated that school management had not provided mechanisms for integrating Environmental education topics in the course work. Moreover, findings indicated that there were forums for environmental issues in schools.

3.0 METHODOLOGY

The descriptive survey design was used as it came in handy in describing the existing conditions. Data was collected using questionnaires, school environmental checklists and analysis of thematic areas covered in the Ghanaian senior high school syllabi of the selected Environmental education related subjects. Data was analysed using the Statistical Package for Social Sciences version 16 computer package. The findings of the study were presented in tables. Correlation analysis to show the significance of the independent variables to the dependent variables was carried out.

4.0 DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Demographic Characteristics

The target population was 16 senior high schools out of a total of 41 senior high schools in Kumasi sub- region selected purposefully. They were all public mixed day schools, facing the same school-based challenges. The study chose 4 schools from each ward. The principals were asked to select a teacher each teaching Physics, Biology, Geography, Chemistry and

Agriculture to take part in filling the questionnaires. Two students, a boy and girl, were randomly selected from form one to four in each school. A total of 128 students were involved in the study. The sample size of the study consisted of 80 teachers and 128 students drawn from 16 mixed day senior high schools in Kumasi sub- region. Data was collected through hand delivered questionnaires which were collected within a period of one week.

4.2 Descriptive Analysis

4.2.1 Findings on Barriers to Environmental Education Implementation

4.2.1.1 Teachers' Attitude towards Environmental Education Implementation

The study found that respondents, as indicated by a mean of 3.2 said they were not adequately knowledgeable on environmental education issues including pollution, waste management and disposal, climate change, deforestation, soil conservation and water harvesting. Similarly, most of the respondents, as indicated by a mean of 3.5, said that they did not often integrate the above educational concepts in their day-to-day learning and teaching. In other findings, respondents agreed that they did not have adequate training on how to conduct environmental education as indicated by a mean of 1.83. These findings are in tandem with Kelani (2015) who found that most teachers assigned to teach environmental education had limited knowledge of environmental concepts.

Table 1: Teachers' attitude descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
I'm adequately knowledgeable about environmental education issues including pollution, waste management & disposal, climate change, deforestation, soil conservation and water harvesting	75	1.00	4.00	3.2533	1.38616
I often integrate (a) above in my day-to-day learning and teaching	75	1.00	4.00	3.5067	1.60551
I do not have adequate training to effectively conduct environmental education	75	1.00	4.00	1.8533	1.17051
I perceive environmental education as a waste of time because it is not adequately tested in the national exam	75	1.00	4.00	2.0533	1.45094
I am not knowledgeable on some environmental education concepts hence avoid teaching them in class	75	1.00	4.00	1.9067	1.29629
I do not prioritize teaching environmental education in class	75	1.00	4.00	1.9067	1.32719

4.2.1.2 Students' Attitude towards Environmental Education Implementation

Study findings indicated that majority of the respondents strongly agreed that students prioritized examinable subjects and concentrated less on environmental education as indicated by a mean of 3.81. These findings are supported by Mutisya *et al.* (2013) who found that though students had a positive attitude towards the environment and felt there was need to conserve it, they were not keen on embracing environmental education in class. This is because they concentrated more on the examinable subjects. Similarly, respondents agreed, as indicated by a mean of 3.63 that students found environmental education too tedious and associated it with manual work as indicated by a mean of 2.89. For this reason, they did not participate adequately in environmental education. These findings are supported by Kiprotich (2014) who argued that students, especially those from poor backgrounds and villages, considered environmental education as manual work hence had a negative attitude towards environmental education. These findings are as shown on table 2.

Table 2: Students' attitude towards environmental education

	N	Minimum	Maximum	Mean	Std. Deviation
I find environmental education boring	125	1.00	4.00	3.2000	1.16248
I consider environmental education tedious hence do not participate adequately	125	1.00	4.00	3.6333	1.35899
I tend to prioritize examinable subjects and concentrate less on environmental education	125	1.00	4.00	3.8133	1.28077
I associate environmental education with manual work hence have a negative attitude	125	1.00	4.00	2.8900	1.12898

4.2.1.3 Administrative Support and Implementation of Environmental Education

Study findings indicated that majority of the respondents admitted that the school administration did not involve teachers in environmental education workshops and seminar and that the administration did not facilitate trainings related to environmental education on regular basis as indicated by a mean of 3.5. Further findings indicated that the respondents disagreed that the administration allocated adequate time for environmental education activities in the school as indicated by a mean of 3.72. This findings are in tandem with those of Bosah (2013) who found that majority (85%) of the teachers under study felt that the management did not provide adequate financial and personnel resources in the implementation of environmental education in schools.

Further findings indicated that the school administration was not actively involved in the organization of environmental education as indicated by a mean of 3.20. This is contrary to Kiprotich (2014) argument that for successive implementation of environmental education, the school administration should be fully involved in programming, facilitation and training and funding environmental education. Other findings indicated that the school administration to a low extent evaluated how environmental education was integrated in the school's curriculum as indicated by a mean of 3.19. This is contrary to earlier findings from the principal that they evaluated integration of environmental education to a moderate extent. According to Okoth

(2014), the school administrations should be actively involved in the school environmental education activities. Findings indicated that respondents agreed that the school administration was involved in environmental education activities to a moderate extent. However, it is important to note from earlier findings that these activities were not often carried out in the schools under study. Findings are indicated in table 3.

Table 3: Views of teachers' on administration support

	N	Minimum	Maximum	Mean	Std. Deviation
The school administration is actively involved in the school environmental education activities in the school.	75	1.00	4.00	3.2000	1.31519
My school administration often evaluates how environmental education is integrated in the school's curriculum.	75	1.00	4.00	3.1867	1.58279
The school allocates adequate resources towards effective implementation of environmental education.	75	1.00	4.00	3.4133	1.24220
The school administration is actively involved in the organization of environmental education.	75	1.00	4.00	3.8933	1.21448
The school administration allocates adequate time for environmental education activities in the school.	75	1.00	4.00	3.7200	1.23201
I am facilitated to attend trainings related to environmental education on a regular basis.	75	1.00	4.00	3.5069	1.01839
The school administration involves teachers in environmental education workshops/seminars.	75	1.00	4.00	3.383	1.01839

4.2.1.4 Curriculum Design and Implementation of Environmental Education

Study findings indicated that majority (66.2%) felt that there were no clear guidelines on the implementation of the environmental education curriculum in their school, 16% agreed that there were no clear guidelines. On the other hand, 16.9% said that that there were clear guidelines on implementation. These findings are supported by (Nganga, 2016) who observed that Ghanaian schools lacked adequate provision of effective methods of integration. Findings are indicated in table 4.

Table 4: Guidelines on environmental education implementation

	Frequency	Percentage	Cumulative percentage
Strongly agree	51	68.0	68.0
Agree	10	13.3	81.3
Neutral	1	1.3	82.7
Disagree	13	17.3	100.0
Total	75	100	

Having established whether there were clear guidelines on implementation of environmental education curriculum, the study sought to find out whether implementation was affected by the workload. According to the findings, 39 and 32.5% respectively strongly agreed and agreed that their subject workload was too much hence inability to teach environmental education effectively. Other findings indicated that 14.3% said that their workload was not too much. This implies that majority of the respondents were overworked hence unable to deliver implementation of environmental education effectively. These findings are in tandem with KabuboMariara (2014) who found that environmental education is not taken as a separate subject. Due to congestion of the curriculum, it is at times difficult for teachers to achieve the targets of teaching environmental education. The findings in regard to subject workload are as indicated in table 5.

Table 5: Teachers workload and environmental education implementation

	Frequency	Valid percentage	Cumulative percentage
Strongly agree	30	40.0	40.0
Agree	25	33.3	73.3
Neutral	6	8.0	81.3
Disagree	11	14.7	96.0
Strongly disagree	3	4.0	100.0
Total	75	100.0	

Having established the effect of workload on implementation of environmental education, the study then sought to establish whether environmental education was adequately tested during national examinations and the effect of adequacy on emphasis during teaching. Study findings indicated that 41.6% of the respondents were none committal on whether environmental education was adequately tested during national exams and hence prioritization. In other findings, 4% strongly agreed and 22.1% agreed that environmental education was inadequately tested hence not emphasized in class. Further findings indicated that 24.7% disagreed and 3.9% strongly disagreed that environmental education was inadequately tested. Study findings implied that most respondents were not aware on adequacy of testing or were disinterested as indicated by a neutral response of 41.6%. The findings are indicated on table 6.

Table 6: Adequacy of testing environmental education

	Frequency	Valid Percent	Cumulative Percent
Strongly agree	4	5.3	5.3
Agree	17	22.7	28.0
Neutral	32	42.7	70.7
Disagree	19	25.3	96.0
Strongly disagree	3	4.0	100.0
Total	75	100.0	

The study further sought to find if there was inadequate provision of effective methods of integration. Study findings indicated that majority (66.2%) strongly agreed while 13% agreed that there was inadequate provision of effective methods of integration. On the other hand, 16.9% disagreed that methods of integration were inadequate. These findings are in tandem with Nganga (2016) who observed that implementation of environmental education was hampered by inadequate provision of effective methods of integration. Study findings are as indicated in table 7.

Table 7: Provision of effective methods of integration

	Frequency	Percent	Cumulative Percent
Strongly agree	51	66.2	68.0
Agree	10	13.0	81.3
Neutral	1	1.3	82.7
Disagree	13	17.3	100.0
Total	75	100	

4.3 Inferential Statistical Analysis

4.3.1 Hypothesis Testing

In order to test the significant relationship between environmental education implementation and how it's affected by teacher attitude, student attitude, administration support and curriculum design, the Spearman Rank Order Correlation was used. The research data was combined and analysed to check the strength of the relationship. The analysis was as presented below in Table 8. Findings revealed a positive correlation between teacher attitude, student attitude, and administration support and curriculum design. Specifically, it was noted that there was a positive correlation between teacher attitude, r (.45), student attitude, r (.53), administration support, r (.62) and curriculum design, r (.58) and implementation of environmental education.

Table 8: Correlation analysis

		EE implementation	Teacher attitude	Student attitude	Administration support	Curriculum design
EE implementation	Spear man Correlation Sign (2- tailed)	1.00	0.45	0.53	0.62	0.58
Teacher attitude	Spearman Correlation Sign (2- tailed)	0.45	1.00			
Student attitude	Spearman Correlation Sign (2- tailed)	0.53		1.00		
Administration support	Spearman Correlation Sign (2- tailed)	0.62			1.00	
Curriculum design	Spearman Correlation Sign (2- tailed)	0.58				1.00

Based on these findings we accept the hypothesis that teacher attitude, student attitude, administration support and curriculum design acted as barriers to implementation of environmental education in public day senior high schools in Kumasi sub- region.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

From the study findings, it can be concluded that teacher attitude towards acquisition of knowledge on environmental education matters has a bearing on how the teachers effectively carry out the implementation of environmental education. Among the matters related to Environmental education, teachers had moderate to limited knowledge on environmental matters implying that the teachers do not have the ability to implement environmental education effectively. Students' attitude moderately impacted on environmental education implementation. This is based on the findings that the students prioritized examinable subjects and concentrated less on environmental education. The students were also said to have an opinion that environmental education was too tedious and associated with manual work. Administration support was one of the major barriers to implementation of environmental education. This is because lack of training on environmental education, lack of teacher involvement and inadequate organization of environmental activities in schools all affected teachers' attitude and morale towards implementation of environmental education. Moreover, findings that most teachers did not indicate whether environmental education was inadequately tested during national examinations implied that the curriculum was not clear on this issue.

5.2 Recommendations

Policy recommendations that may be derived from this study include: Ministry of Education needs to sensitize teachers on the importance of environmental education. Training on components of environmental education should also be carried out. This is because a knowledgeable workforce would be in a position to implement environmental education more effectively. On students' attitude, teachers should strive to have a positive attitude towards environmental education. This is because their opinion and actions the teachers take towards environmental education are adapted by the students. Teachers should also adequately test environmental education during continuous assessment tests in order to emphasize on importance of environmental education. This will change the attitude of the students that environmental education is a less important subject.

On administration support, study findings indicated that administration support was a major barrier to implementation of environmental education in senior high schools in Kumasi sub-region. As such, the study recommended that the schools' administration show support towards environmental education be actively participating in organization and funding, and evaluation of environmental activities in schools. Moreover, the school administration should ensure that teachers receive adequate training and orientation towards implementation of environmental education.

On curriculum implementation, policy makers should ensure they come up with clear guidelines on how environmental education should be implemented. There should be a balance between all the subjects including environmental education, to minimize teacher fatigue and lack of prioritization of environmental education.

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Conflict of Interest

Authors declares no conflict of interest.

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