



IMPACT OF ENVIRONMENTAL EDUCATION ON SANITATION PRACTICES IN SOME SELECTED SCHOOLS IN THE NEW JUABEN MUNICIPALITY, EASTERN REGION OF GHANA

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ABSTRACT

The study assessed the influence of environmental education on the Sanitation practices of pupils/students in some selected schools of the New Juaben Municipality of the Eastern Region, Ghana. Proportionate stratified random sampling method was used to select the sample. Data were collected between September and November, 2011 through questionnaires, interviews and observations from nine Basic and one SHS. Respondents included 67 Primary pupils, 33 Junior High School (JHS) students and 50 SHS students. Data collected were processed using SPSS v. 16 and the analysis toolpak for Microsoft excel. Descriptive and inferential statistics were used to analyse the data. Seventy percent (70%) of the respondents showed fair/average Sanitation Practices. No relationship existed between students Sanitation Practices and environmental knowledge ($r = -0.02$).

KEYWORDS: Environmental education, New Juaben Municipality, Sanitation

INTRODUCTION

Environmental sanitation is an essential factor that leads to a healthy environment and consequently promotes good health and productivity: also secures peoples' welfare (Ministry of Local Government & Rural Development, 2010). The environment provides the basis for humans' existence and its destruction ultimately leads to biotic extinction. Consequently, environmental sanitation is viewed as a major pillar upon for survival. Sanitation issues have increasingly become a national concern in Ghana. Various Governments have initiated different strategies to control the problem of poor sanitation especially in the major cities of the country. According to the Ministry of Local Government and Rural Development (MLGRD), about 78 % of Ghanaians lack access to standard places of convenience and the challenge of meeting the Millennium Development Goals (MDG) for sanitation are becoming increasingly difficult (Ministry of Local Government & Rural Development, 2010); generally, less than 15% of the population has access to improved sanitation in Ghana (WSMP, 2008). Indeed, it has been reported that about 20% of Ghana's population defecate in drains, fields, streams, the bush and beaches. Given the pace of development with respect to basic sanitation, there is no way the country can achieve the MDG targets by 2015 (Ministry of Local Government & Rural Development, 2010). The New Juaben Municipality of the Eastern Region of Ghana is faced with public health concerns such as poor sanitation and various forms of pollution. The situation is evidenced by unsanitary conditions such as unauthorised dump sites and choked drains, leading to the outbreak of cholera 2011. According to records from the Disease Control Unit/ Medical Field Unit (MFU) of the Regional Health Directorate of the

Eastern Region, the New Juaben Municipal alone recorded a little over half (51.4%) of cholera cases (321) in the Region between January and May, 2011 (Eastern Regional Health Directorate, 2011).

Importance of school in sanitation

Besides the family, the school is the major important place of learning for children. Promotion of personal hygiene and environmental sanitation in schools will help children to adopt good habits during their formative years. However, the learning potential of many children and adolescents is compromised by conditions and behaviours that undermine the physical and emotional well-being that make learning possible. In Ghana, schools are some of the most crowded places.

Children, especially in developing countries such as Ghana, often come into contact with both hazardous and non-hazardous waste as they move about and play. Some of such children can be observed playing with discarded electronic gadgets which are very detrimental to their health. These facilitate the spread of micro-organisms that cause diseases. It is therefore important that environmental education on health and hygiene has to go hand in hand with physically safe and well-kept hygienic facilities to make schools safe places for children's development. Safe and hygienic schools and effective environmental education require the participation of community members, parents, teachers and above all, children. At all ages, children and adolescents can be engaged actively in learning experiences that enable them to practise basic sanitation and advocate it at home and in their community. It is also important to focus on children because they are the parents of the future.

Sanitation as a problem

In the 1960s, there was a resurgent environmentalism. However, the resurgence was limited to the industrialized countries (Pearce & Turner, 1990). In the United States, for instance, the concern over the environmental degradation reached a critical point in the 1970s. Thus, Erskine (1972) was able to characterise the unprecedented and urgency with which ecological issues have burst into American consciousness as a miracle of public opinion (Eskine, 1972). Most urban growth is taking place in informal settlements where Municipal governments are unwilling or unable to provide services such as treated water, sewerage, drainage and collection of garbage (Esrey, Gough, Rapaport, Sawyer, Simpson-Hebert, & Vargas, 1998). Effective garbage collection is expensive and is rarely achieved in practice in most developing countries. Poor sanitation is endemic in towns and cities across Ghana and exacts a heavy toll on public health. Environmental sanitation is a basic and powerful driver of human development as it affects quality of life. It cuts across all sectors of the economy including those that concern health, environmental protection, improvement of human settlements and services, and general productivity of all sectors of the economy (Environmental Sanitation Directorate, 2007). Consequently, different developing countries have initiated public policies presumably aimed at protecting the environment and maintaining its integrity. It is recognised worldwide that urban sanitation is dependent on a combination of sewerage and other on-site options and a great majority of urban residents are and will remain dependent on on-site sanitation facilities such as toilets and dump sites (Mehta, 2008). In addition, Municipal planners need to recognize that the worst sanitary conditions usually exist in areas inhabited by the poor, and the sanitation needs of these areas need to be addressed. Construction of toilet facilities is generally regarded as the householder's responsibility, but for poor households, investments in sanitation are often constrained by various issues including affordability and uncertainty over land tenure. The current status of environmental sanitation in Ghana is so poor that it is a sector already in crisis (Environmental Sanitation Directorate, 2007). The Growth and Poverty Reduction Strategy Programme (GPRSII) has emphasised the sector to be put on priority. The sanitation and Waste Management Department of Ghana has been recommended to use environmental sanitation on all aspects of services to address the problem of poor sanitation in the country and not to narrow sanitation only to hygienic disposal of human excreta. As Ghana aspires to middle-income status by 2015, a healthier and wealthier population will tend to generate more of all waste types (domestic, commercial, institutional, health-care, industrial and hazardous). It is therefore important to look at sanitation holistically. The management of environmental sanitation in Ghana has been confirmed to be in crisis (Environmental Sanitation Directorate, 2007). This is due to a long period of neglect of the sector and the lack of attitudinal change that did not allow for economic development. As a consequence, urbanization and non-adherence to planning schemes has resulted in unauthorized location of buildings along flood plains and reservations (Health Foundation of Ghana,

2009). Inadequate drainage facilities for sullage and storm water conveyance cause flooding in many localities every rainy season. This is made worse by the increasing area of the built environment which reduces percolation into the soil. The lack of effective refuse collection from premises has also led to the use of drains as refuse disposal receptacles further compounding the problem with drains turned into open sewers with putrid smells (Environmental Sanitation Directorate, 2007). The sight and smell of inadequately managed wastes constitute a major discomfort to citizens.

Within a period of a decade-and-half, food wrapping and packaging has changed from bio-degradable like leaves to paper, to thin-film plastics, and now to more dense styro-foam and plastics. Similarly, drinking water vending has evolved from bucket-and-cup, to thin-film plastics, and now to more dense plastics of sachet and bottled 'mineral' water (Environmental Sanitation Directorate, 2007). Thus, the environment is now in crisis as most of these wrappings are not readily degraded. According to the International Plastics Task Force, Plastic wastes can break down and release toxins such as bisphenol "A" that harm the environment, animals and the general public (Huebsch, 1999).

Environmental education to the rescue?

It has long been recognized that Environmental Science Education can play a central role in raising public awareness of anthropogenic impacts on natural systems (Diduck, 1999). Again, environmental education is considered an appropriate intervention for creating awareness and understanding of the challenges of environmental degradation (Ajiboye & Ajitoni, 2008). The present environmental problems in Ghana have resulted partly from population growth which outstrips the resources available. While it is thought that the main source of many environmental problems is irresponsible behaviours of people on the environment, it is important that human beings have awareness of environmental problems. Research shows that environmental concern depends on the values people uphold (Kempton, Boster, & Hartley, 1995; Dietz, Stern, & Guagnano, 1998). Individuals naturally place high value on things that affect them personally. Environmental concern is developed as individuals establish the link between ecological sanitation and their own well-being. Again, it may come from their concern about humanity (Dietz, Stern, & Guagnano, 1998). It could also be due to socio-economic reason in that it is the source of their livelihood.

Many studies have assessed the impact of introductory environmental science courses on the values and attitudes of Senior High and undergraduate students about environmental issues (Leeming, Dwyer, Porter, & Cobern, 1993; Rickinson, 2001; Humston & Ortiz-Barney, 2007). The general consensus is that such courses tend to have positive impacts on environmental attitudes, including heightened awareness of environmental issues and greater commitment to mitigating their own impacts as revealed through their actions (Carpenter, 1981; Benton, 1993; Leeming, Dwyer, Porter, & Cobern, 1993; Zelezny, 1999; Rickinson, 2001). This study therefore assesses the influence of environmental education on the Sanitation

practices of pupils/students in some selected schools of the New Juaben Municipality of the Eastern Region, Ghana.

METHODOLOGY

Descriptive design-survey was used. The descriptive-survey study uses a survey to obtain a description of a particular group of individuals to gather large amounts of information on attitudes, opinions, personal characteristics and behaviours (Gravetter & Forzano, 2006). The eight public Senior High Schools and seventy two public Basic Schools in the New Juaben Municipality in Ghana were all accessible for the study. According to records at the Municipal Education Office, there were sixteen thousand, seven hundred and twenty-two (16,722) school children in the Primary level, eight thousand, one hundred and thirty-nine (8,139) school children at the Junior High School level and twelve thousand, six hundred and eighty (12,680) at the Senior High level (New Juaben Municipal Education Directorate, 2011). The method adopted for selecting the samples was the proportionate stratified random sampling. A total of one hundred and fifty (150) respondents were selected from the three levels of education (i.e. Primary, JHS and SHS). These were made up of 67 pupils from the Primary, 33 students from the JHS and 50 students from the SHS levels. Questionnaires, Interviews and Observation were used to collect data. The instrument for the questionnaire and interview consisted of a mix of Likert scale, close ended and open-ended questions. The set of questions elicited responses on issues regarding bio-statistics, information on actual sanitation practices, knowledge on environment and sanitation taught in school and recommendations in view of the issues raised. Certain parts of the school environment were observed without participating in the activities of the

pupils/students. An observation checklist was prepared to guide the process.

Data Analysis

The responses to the questionnaire, interview guide and observation checklist were pooled, edited and scored. Nominal values were assigned to the items according to scales. Certain information generated from the data was assigned ordinal values to help rate them. On sanitation practices, the responses were categorised into three: good, fair and poor. A good practice was scored 3, a fair practice was scored 2 and a poor practice was scored 1. To determine a respondent's overall practice, the mean was computed and their practices rated as:

- Good practices: 3 - 2.5
- Fair practices: 2.4 - 1.6
- Poor practices: 1.5 - 1

Thus, the upper limit for good practices was put at 3, fair practices at 2.4 and poor practices at 1.5.

Statistical Analysis

Data collected were analysed by cross-tabulating students' knowledge level to their practices to ascertain if a high level of knowledge would imply good practices. Data collected on the null Hypothesis was analysed using Pearson's correlation (two-tailed) to establish the degree of relationship between knowledge on the environment and sanitation to use of better sanitation practices.

RESULTS

Table 1 presents findings on the respondents' sanitation practices, with regard to solid waste disposal in the classroom, in a vehicle, on the school compound, at place of worship and household refuse.

TABLE 1: Sanitation Practice of Respondents on Solid Waste Disposal

Statement	Responses (%)		
	Floor	Under desk	Garbage Containers
Where do you dispose of waste in class?	12.0	10.7	77.3
During breaks, where do you drop waste?	16.7	beside vendor	4.7
At your place of worship, where do you drop waste?	10.0	Dump site	14.7
How do you dispose of your household refuse?	Bush	burn /bury	Zoomlion/Dumpsite
In a vehicle where do you drop waste?	Outside	take home	Vehicle floor
	14.0	46.0	40.0

N = 150

Table 1 indicates that most of the respondents (77.3%, 78.7%, & 75.3%), disposed of their solid waste generated in the classroom, the school compound and place of worship by using garbage containers respectively. Again, 10.7% of the respondents dropped their solid waste under their desks in the classroom, 14.7% of the respondents used dumpsites for wastes at their place of worship. The following percentages 12%, 14%, 16.7%, 10% & 18.7% of the respondents drop their waste in bushes or any place in the classroom, in vehicles, on the school compound, at their place of worship and also their

household waste respectively. Again, most of the respondents (76%) in the Municipality used authorised dump sites or containers left in their locality or collection by Zoomlion to dispose of their household waste. However, those that drop waste in bushes (18.7%) or unapproved places may account for scenes such as in Fig. 1 below The results indicate that close to half (46%) of the respondents in a vehicle, claimed they took their waste generated in the vehicle home and 40% also dropped their waste inside the vehicle. Lorry parks/Bus stations, from observation, are heavily littered.



FIGURE 1: Unauthorised Dump site near a school

Table 2 presents the findings on respondents' sanitation practices in picking litter, hand washing and educating their households on the need to keep the environment clean. The Table below shows 25.3% of the respondents picked litter in school without being told, 58.7% of the respondents sometimes did, while 16% out of 150 never do. The respondents numbering 65.3% out of the 150

claimed they always wash their hands after every use of the toilet/urinal while 32% sometimes did and 2.7% stated they never do. Again, 54.7% of the respondents sometimes educated their household on the need to keep the surroundings clean, while 30.7% did it always and 14.7% never do.

TABLE 2: Respondents Sanitation Practices (Continuation)

Statement	Responses (%)		
	Always	Sometimes	Never
In school, I pick up litter and place in garbage bin without being told.	25.3	58.7	16.0
I wash my hands after every visit to the toilet/urinal	65.3	32.0	2.7
Do you take a chance to educate your household on the need to keep the surroundings clean?	30.7	54.7	14.7

n = 150

Fig. 2 below presents the findings on overall sanitation practices of the 150 respondents according to the three categories discussed under methodology as good, fair or poor. Their sanitation practices in picking litter, hand washing, and educating others on the need to keep the

surroundings clean and solid waste disposal at various places (Tables 1 & 2) were scored and the means recorded for each of the respondents. The respondents were then categorized as having good, fair or poor sanitation practices.

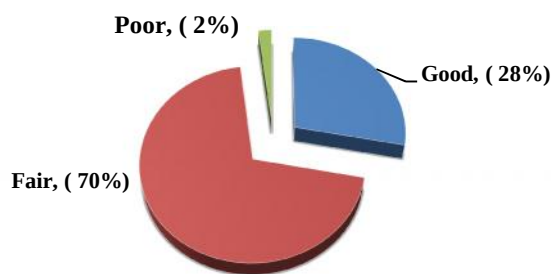


FIGURE 2: Respondents Sanitation Practices Rated

Fig. 2 gives a general assessment of all the respondents in their waste management and sanitation practices. It shows 28% of respondents rated to have good sanitation practices, a large majority (70%) rated as fair or average in their practices and a very small number (2%) with poor sanitation practices in terms of the variables measured such as, how solid waste is disposed of at various

locations/places, picking of litter in school, hand washing after every use of the toilet/urinal, and educating household members on environmental cleanliness. Table 3 presents results on findings on the "Perception of respondents on environmental and sanitation issues" from all the three levels. Respondents were grouped accordingly as having high, moderate or low level of perception.

TABLE 3: Perception of respondents on environmental and sanitation issues

Level	Level of Perception (%)		
	low level	moderate level	high level
Primary School	68.7	31.3	0
Junior High School	6.1	48.5	45.4
Senior High School	2.0	22.0	76.0

n = 150

Table 3 shows that two-thirds of the respondents from the Primary level (68.7%) had low perception on the environment and sanitation while 31.3% have an average or moderate perception. None of the respondents from the Primary level had high perception. The JHS respondents recorded 6.1% for low, 48.5% moderate perception and 45.4% had high perception level. The SHS level had 76% of the respondents had high perception on the environment and sanitation, 22% had average or moderate, and 2% low. Table 7.2 indicates that 32.7% of the respondents have low level, 32% had moderate level and 35.3% also had high perception on the environment and sanitation based on the Integrated Science syllabi for the levels.

The Table 4 looks at the comparison between respondents average sanitation practices and their level of perception. In comparing respondents' level of perception to their sanitation practices in terms of their levels, none of the Primary level respondents had high perception to good practices or fair practices or poor practices respectively as indicated in Table 4. Interestingly, 7.46% and 23.88% from the Primary level, who had moderate perception, corresponded to good and fair sanitation practices respectively making 31.34% of the pupils. Again, 22.39% from the Primary had perception on good sanitation practices, with 44.78% and 1.49% of the pupils rating fair and poor in sanitation practices respectively.

TABLE 4: Respondents level of practices on sanitation

Level	N	Level of Perception	Average Sanitation Practices Rating (%)		
			Good	Fair	Poor
Primary	67	High	0.00	0.00	0.00
		Moderate	7.46	23.88	0.00
		Low	22.39	44.78	1.49
JHS	33	High	12.12	30.30	3.03
		Moderate	3.03	42.42	3.03
		Low	0.00	6.07	0.00
SHS	50	High	26	50	0.00
		Moderate	8	14	0.00
		Low	0.00	2	0.00

n = 150

Out of the JHS students, (45.45%) had high level on sanitation practice, 12.12% had good sanitation practices, and 30.03% of them had fair for their sanitation practices with one person (3.03%) rating as poor in sanitation practices. Again, 48.48% of the JHS respondents who had moderate level of knowledge, had 3.03% each, getting good and poor for their sanitation practices with 42.42% getting fair for the practices. Only 6.07% from the JHS level had low level of sanitation practice (Table 4).The

respondents at the SHS level had 76% of them with high sanitation practice. Out of this, 26% had good sanitation practices with the rest (50%) getting fair in their sanitation practices with none scoring poor in practices (Table 4). However, 22% of the respondents from the SHS level who were moderate in their practices had 8%, and 14% getting fair with none scoring for poor. The only SHS respondent who had low level of sanitation practices was fair.

Table 5 presents the results to answer the null hypothesis.

TABLE 5: Correlation between Respondents Level of Practices and Perception

Variables	students level	sanitation practices	level of Knowledge
Students level	1		
Sanitation practices	-0.038	1	
level of Knowledge	0.771**	-0.016	1

**Correlation is significant at the 0.01 level (2-tailed).

The following perimeters: no significant relationship, moderately significant relationship and highly significant relationship were used to describe Table 5. Table 5 shows a highly significant relationship using Pearson's correlation (r , two-tailed) between students' level of practices and their perception ($r=0.771$, $p<.01$). However the results of the table indicate no relationship between the

level and sanitation practices ($r=-0.038$, $p<.01$) and between perception and sanitation practices ($r=-0.016$, $p<.01$).

DISCUSSION

This study found that higher level of perception in science does not necessarily mean one would have good sanitation

practices (Tables 3 & 4). This finding agrees with the theory of reasoned action, theory of planned behaviour and the technology acceptance model propounded by Venatesh and Davies (2000). According to Venatesh and Davies, “people may choose to perform certain behaviour (practice), even if they are not themselves favourable towards the behaviour or its consequences, if they believe one or more important referents think they should, and they are sufficiently motivated to comply with the referents” (Venatesh & Davies, 2000, p 187). The general practice in the society is for people from various walks to drop waste indiscriminately. Since the pupils and students live in the community, their practices might be informed more by what they see others do than what they have learned in school. Thus, though their perception on the environment in science was high, it did not translate in their sanitation practices. The finding supports the findings of Ifegbesan’s study of secondary school students’ practices in waste management at Ogun State, Nigeria where it was noted that the students’ practices were generally negative and that waste management was a serious environmental problem though, students at the secondary school level have a fair amount of environmental science and had a high awareness of the problem of solid waste management and the cause (Ifegbesan, 2010). The finding is however at variance with Mansaray and Ajiboye’s study on “Environmental education and Nigerian students’ knowledge, attitudes and practices” in which the students were noted to have low environmental knowledge, poor attitudes and practices which were generally harmful to the environment (Mansaray & Ajiboye, 1997). The study found no relationship existing between sanitation practices and students’ level, and sanitation practices and the level of perception. However, a significantly high relationship was found between students’ level and perception. These findings of a significant relationship existing between students level/class and knowledge support other findings in studies of similar nature (Andrews, 1978; Ramsey, 1987; Ifegbesan, 2010). The finding that no significant relationship exists between sanitation practices and the other variables which are students’ level, and perception is at variance with Ifegbesan (2010) study that found a negative relationship between practices and knowledge in a study on “Exploring secondary school students’ understanding and practices of waste management in Ogun state, Nigeria” involving 650 respondents in six secondary schools using survey.

CONCLUSION

The common purpose of science and environmental education is to educate students to be responsible citizens. Scientific knowledge about the environment affects environmental behaviour. The present environmental problems have resulted partly from irresponsible behaviours of people on the environment in Ghana. Environmental education is therefore considered an appropriate intervention for creating awareness of, and an understanding of the challenges of environmental degradation so as help reduce the problem of unsanitary surroundings.

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