

# UGANDA

## Improving Solid Waste Management in Primary Schools in Kampala and Wakiso district, Uganda

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### 1. Introduction

Solid waste, also known as garbage is “organic and inorganic waste materials that have lost value in the sight of the initial user” NEMA (2007). These wastes are produced through households, commercial, institutional and industrial activities. Solid Waste Management encompasses generation, collection, transportation and disposal of waste but in this project, the focus was generation, collection and disposal. Specific aspect of disposal handled include sorting of waste and disposing them in separate containers. Since the project dealt with children age 3 – 12, the term ‘rubbish’ and ‘garbage’ were often used instead of solid waste were used when explained the idea to the pupils.

Management of solid waste is a major challenge in many cities in developing countries, Kampala inclusive. Solid waste management in Kampala and Wakiso Uganda is one of the poorest. Plastic bottles and papers are common sights in many parts of Kampala and Wakiso. Yet under the Solid Waste Management Ordinance, 2000, it is illegal and punishable to dump garbage in places where it may be or become a public health nuisance.

Water aid (2011) reports that out of 1,200–1,500 tons of garbage generated per day, only 400-500 tones are collected giving a collection efficiency of only 40%. This implies that 60% of Solid waste generated daily is not properly collected and disposed. This has resulted into indiscriminate disposal by the public Mukisa (2009). Moreover all the wastes collected are dumped together in the same container. They are not sorted. Other ways of disposing of waste in Kampala and Wakiso include burying, burning,

and the most common one is transporting waste to a designated site, also referred to as 'land filling'.

According to Kampala Capital City Authority (KCCA) the amount of Solid waste generated overwhelms the capacity of the Authority to collect and dispose it given the fact that cost of SW collection is enormous (UN-Habitat, 2010). Yet most of these wastes are decomposable. Water Aid (2011) reporting on the distribution of waste in Bwaise II, one of the suburbs in Kampala notes that 76% of the waste generated are biodegradable, 8% Polythene, 4% Plastics, 3% Metal and others (9%). This means when properly managed most of the waste could be reused.

Poorly managed solid waste can result in serious adverse impact on environment and public health. First silted drainages provide a breeding place for mosquitoes and other insects. It also leads to flooding, a common phenomenon currently in Kampala where majority settled in former wetlands and swampy ground. This means a high proportion of the urban poor live in flood prone areas. In addition to the negative effects on health, flooding also interrupts people's everyday lives. Schools are flooded and become inaccessible to pupils and teachers.

Secondly, burning and burying of solid waste lead to air, water and soil pollution, while landfills, if not properly managed can also cause environmental problems among others, the pollution of ground water and surface water, land degradation, poor general aesthetic quality of the surrounding environment (NEMA, 1999; Mukisa 2009). Solid waste management is therefore a critical component within sanitation.

As already mentioned, sorting rubbish is not practiced by the communities in Kampala and Wakiso and because pupils have grown up seeing and practicing such poor waste disposal practices, many participate in littering the school compound without knowing the effects. Consequently in many urban schools, a littered compound and unsorted waste is common site.

This project assumes that since children spend most of their life time at school, schools can mold and prepare them for better solid waste disposal practices. By teaching pupils how to sort waste and importance of sorting waste, pupils would build a culture of cleanliness. After all, Section 4(4) of the National Environment (waste management) regulation states that: A person who generates domestic waste shall sort the waste by separating hazardous waste from nonhazardous waste. Teaching pupils how to sort waste would be in line with the law. Additionally, if children are brought up as active participants, they can become change agents within their families and a stimulus to community development. Children are eager to learn and help, and if they consider environmental care and their role in it as important, they will take care of their own health and the health of others.

When children become partners in promoting hygiene and health they contribute something special to the partnership. Pupils have special advantages and roles in spreading health messages to others. Younger children often spend more time with older children than with adults. They admire them, copy them and listen to their advice. Groups of pupils, particularly influential and popular groups, can influence their peers in a way which adults may not. Additionally pupils, through their innocence, can often remind adults that their actions are unwise or unsafe. They can act as the conscience of a community.

## 2. Frame of Reference

This project on solid waste management in schools is based on Article 24 of the CRC and the 3 Ps.

Article 24c of the Convention on the Rights of Child states that States shall strive to 'combat disease and malnutrition, including within the framework of primary health care, through, inter alia, the application of readily available technology and through the provision of adequate nutritious foods and clean drinking-water, taking into consideration the dangers and risks of environmental pollution'.

Article 24e also states that 'States shall strive to ensure that all segments of society, in particular parents and children, are informed, have access to education and are supported in the use of basic knowledge of child health and nutrition, the advantages of breast-feeding, **hygiene and environmental sanitation** and the prevention of accidents'.

Thus Article 24e requires that adults purposefully provide education to children for better hygiene and environmental sanitation.

In line with Article 24, the project looked at sorting solid waste/garbage, separating those that are degradable and those that do not rot. In this way the project increased pupils' knowledge about health, disease prevention through hygiene.

Aspects of the 3 Ps handled in this project included;

- **Provision:** Sorting solid waste has been ignored in many schools, home and in the community despite the importance of a clean environment in the promotion of hygiene. Therefore this project demonstrated to pupils the sorting of solid wastes, value of sorting wastes and the use of some the solid wastes. It is hoped that the project will result into provision of a clean environment for the children. Proper solid waste management resulted into provision of a cleaner environment for the pupils, staff and parents of the selected schools.

- **Participation of pupils in sorting solid waste:** There has been minimal pupils' participation in activities that concern them at school. Majority of urban schools hardly involve pupils in the cleaning of the school compound. This project provided opportunity for pupils to take part in sorting and disposing of solid waste generated at school.
- **Protection of pupils against environmental related diseases:** By improving environmental sanitation, this project protected pupils from environment related problems such as pollution and smell. This in turn protected the pupils and teachers against diarrhoeal diseases such as dysentery and cholera. The schools were able to control smell that result from inappropriately disposed leftover food. This in turn reduced vectors that breed on poorly disposed garbage.

### 3. Baseline

This project was conducted in selected schools under Kampala Capital City Authority (KCCA) and Wakiso district.

Kampala, the capital city of Uganda is under the management of Kampala Capital City Authority. KCCA is the legal entity, established by the Uganda Parliament. Through KCCA, the affairs of the city are under direct supervision of the central Ugandan government. KCCA is headed by an Executive Director answerable to the Minister for Kampala. The elected mayor becomes a Lord Mayor, a largely ceremonial position. Through its Directorate of education, KCCA, provides general administration and management of educational institutions. It covers the following components:

1. Development and provision of quality education services to all school going children
2. Ensuring conformity by schools to the set standards and policies.
3. Development and administration of extracurricular activities

There are 412 primary schools under KCCA, of these 81 are government aided primary schools. Kampala has close to 2,000 education institutions including pre-primary, primary, secondary tertiary and other higher institutions of learning.

Wakiso District, formerly part of Mpigi District became a district in 2000. Bordered by Luwero and Nakaseke districts in the North, Kampala in the East, Mpigi and Mityana in the west and Kalangala lying in Lake Victoria to the South, Wakiso district is the second-most populated district in Uganda with a total of 957,280 people. Wakiso district has a total area of 2,704 square Kilometres out of which 1710.45 square kilometres is land area while total of 994.10 square kilometres is covered with forest, water and

swamps. Wakiso has 1221 primary schools in Wakiso District. Of these, 249 are government aided.

All the selected schools except Mantopol Nursery are government aided schools.

### **a) Context:**

The Solid Waste management Project was conducted in 4 schools including Buganda Road Primary School and Bukoto Muslim Primary School both under the administration of Kampala City Council Authority (KCCA), Nkumba Primary School and Mantopol Nursery School in Wakiso District. A brief description of each school is presented below.

#### **Buganda Road Primary School**

Buganda Road Primary School is a government school established in 1933 by the Goan Community. It is located in the centre of Kampala City on Buganda Road. Being in the centre of the city, most of the pupils come from semi urban areas where majority of Ugandans in Kampala reside. The school offers co-education and has enrolment of 1195 male and 1381 females and 59 teachers. All the teachers are qualified, majority with diploma. The school has 72 stances of water bone toilets. It has a small compound and with such a population littering on the compound is enormous. Plastic papers and polythene papers are the common types of litter always seen on the compound.

#### **Bukoto Muslim Primary School**

Bukoto Muslim Primary was founded in 1935 by the Africa Muslim Community – Bukoto Nateete, a local Muslim sect with an intention of teaching Islamic norms. The School was first run as a private institution until in the early 70s when it was granted a government – aid status. The School is situated on a three- acre piece of land co-shared with a community Mosque. It is located on Plot 300 along Bidandi Drive, off Old Kira Road in Nsimbiziwoome Zone, Bukoto II parish, Nakawa Division towards Ntinda Trading Centre. It is in a rural setting within an affluent community.

The school offers co-education, it is multi- denominational, and has a unit for the blind. Currently there are no pupils enrolled in this unit. It is under the Universal Primary Education Programme, with classes P.1 – P.7. The School enrolment is low. The current (February 2012) enrolment is 211 of whom 101 were female and 110 male.

There are ten teachers of whom six are female, and four are male. Nine of the teachers are on the Ministry of Public Service Payroll, while one is on the School Management Committee Payroll. All the teachers are suitably qualified, ranging from holders of Grade III teaching certificates to graduate teachers.

The school has sufficient infrastructure, in terms of buildings and furniture. However, all the buildings are dilapidated, which require renovation. All children have adequate sitting and writing space. The School has an eight stance latrine block which also requires renovations.

The school lacks play grounds and children use the little space there is, for playing. The school fence requires re-enforcing to minimize any form of trespassing.

The school compound is fairly spacious, trees planted all over the compound and a green belt covering the larger part of the compound. The trees usually generate a lot of waste in form of leaves shed off. This calls for regular and intensive efforts in cleaning the compound. In addition children bring other waste such as plastic bottles, plastic bags from home and litter the compound.

In Bukoto P.S the improvised boxes for collection of waste generated from the class were reported frequently washed out by water /rain drops in class.

## **Nkumba Primary School**

Located on Kampala Entebbe highway, Nkumba Primary School was established in 1952. It is found in Wakiso District. The school started with 21 pupils. Currently there are 780 pupils of whom 338 are girls and 23 teachers. Nkumba P.S is located near Nkumba University. It occupies a relatively a small area. The school provides lunch to the pupils. It also has a canteen that within the school compound that sells eats and drinks. The food leftover and papers and polythene bags from the canteen are some of the waste generated by the school.

While the food left over are collected in a containers near the kitchen, the waste from the canteen are thrown anywhere in the compound. There is a box provided near the canteen for rubbish, pupils throw all the rubbish such as polythene bags, plastic juice containers, water bottles in it. These are then emptied in a rubbish pit near the kitchen.

***Mantopal Day care and Nursery School*** by Mr. Kamwesiga James in 2009 and his wife Madam Alvera Kamwesiga has been its Headmistress since then. It started with 05 pupils 04 classrooms with 07 teachers (01 male, 06 females) and 02 support staff.

By December 2012, it had 128 pupils, with 07 classes, 10 teachers, all females and 11 support staff. It has expanded from ½ acre of land and it has 2 acres in the same locality.

Common methods of solid waste disposal reported were the use of dustbins for collection and open burning. Major problems perceived with current refuse disposal methods were odors, pest infestation, and spillages. Littering and spillages of solid waste were also common features reported.

The school is located in Busiro County of Wakiso District, Nsangi S/C, Katale Parish in Jomayi Estate of Mayanja village. It's a private Day school.

## **b) Status of implementation of CRC Article 24 in Uganda**

Uganda ratified CRC and has domesticated it in its 1995 Constitution, the Children's Act of 1996, the Children's Statute 1996 and the Education Act 2008.

In respect to Article 24, Uganda has included into the primary school science curriculum topics on water, sanitation and hygiene. Specifically areas covered include human behavior, prevention and treatment of disease. This means children who complete primary school education should have some knowledge of sanitation and hygiene. Unfortunately, teaching of these topics has not translated into behavioral change and practice. It is common to find solid waste thrown everywhere in the community, the school inclusive. In schools solid waste consists mainly of organic compostable matter but there are also some non-compostable ones including plastic paper, bags and tin waste.

According to UNICEF (2008) three factors have to be addressed if lasting solutions in hygiene behavior are to be achieved. These include:

- i. Predisposing factors – knowledge, attitude and belief;
- ii. Enabling factors – availability of resources like latrine facilities and safe water supply, enabling students to transform newly acquired knowledge, attitudes and beliefs into desirable behaviors;
- iii. Reinforcing factors – factors affecting the students' ability to sustain certain behavior, like support and cooperation received from parents, guardians and peer groups.

Through active pupils' participation, this project will address the predisposing factors by giving pupils knowledge which in turn should impact their attitude and behavior.

## **Purpose and stakeholders**

This project aimed at creating awareness and positive change in behaviors and attitudes of the pupils in the area of hygiene with a possible effect on their practice at home. Pupils' knowledge improved and they acquired the skills of sorting rubbish. Children were able to respect the use of waste bins and the indiscriminate throwing of rubbish

reduced. The teachers also realized that they could use waste to prepare teaching learning materials.

### **Target Group:**

The main focus of this project was the pupils in primary and nursery schools. However, since teachers are important in passing this information to the pupils; the project also targeted them. In addition, the school head teachers, SMC, PTA executives and support staff were included. The teachers and the prefects (pupil leaders) helped with the monitoring and supervision of the project.

## **3. Methodology/Activities**

The project was implemented during the period of October 2011 – December 2012. Although the project was introduced to the schools in October, implementation could not start because of national and end of year examinations. Hence introduction of the project to the pupils was done in February 2012 at the beginning of the new school term started.

After selection of schools, each team member took charge of one school but all were involved in the fourth school. Betty Ezati was in charge of Nkumba Primary School; Around Ntungwa took lead of Buganda Road Primary School and Twine Said Mantopol Day Care and Nursery School. Implementation of the project at Bukoto Muslim Primary School was undertaken by all the three. This arrangement was to ease monitoring of the project. Overall, introduction and implementation of the project followed these steps.

**Step 1 (October – November 2011) Meeting school administrators:** All the three members of the team visited each of the four selected schools. This was to introduce the whole team to the school administrators. During this meeting the head teachers, deputy head teachers and members of the school management committees were briefed about the project. The team also sought their permission and support during implementation. School leaders of all the four schools welcomed the project and pledged to cooperate with the team to ensure successful implementation of the project.

**Step 2 (February 2012) Briefing teachers:** Each of the team members visited their schools and briefed the teachers. This was to enlist their support in guiding the pupils and in monitoring the project in the absence of the team. In Nkumba Primary, Bukoto Muslim Primary and Mantopol Nursery Schools all the teachers attended the briefing.

The content of the briefings included informing teachers about children Rights specifically the right to a clean environment and how pupils could participate in the creation of that clean environment. The 3Ps and Article 24 were also introduced to the teachers. During the briefing in Nkumba P.S, the teacher in charge of prefects and head of science department were identified as lead teachers for the project. They were assigned the responsibility of continuously reminding the prefects and the pupils to sort waste and dispose them off properly.

**Step 3 (February 2012 – October) Introducing the Project to pupils and implementing it:** the approach used in each of the schools varied. In Nkumba and Bukoto Muslim primary schools, the team introduced the project to the prefects who in turn introduced to the rest of the pupils. In Mantopol Nursery School, the team met all the pupils. However given the pupils in the nursery schools were young (3 to 5 years old), we had to introduce one thing at a time. Hence during the first meeting, we only talked to them about the types of garbage produced at their school. A second meeting was held to show them how to sort garbage.

The pupils were introduced to the 5Rs as outlined below.

**Recycling:** Pupils were told that waste can be recycled. Recycling involves processing the solid waste to make new products. The pupils were informed that some companies and individuals were recycling plastic bottles and paper. They administrators were encouraged to sell such waste to companies that recycle them.

**Re-use of waste:** Pupils were told that some waste can be reused to make new products. For example, straws can be used to make mats, baskets, bags and hats among others. Similarly papers (such as those from their exercise books) can be used to make necklaces and other materials that teachers can use to teach.

**Reduce:** Pupils were told that another way of keeping their schools clean and in turn protecting the environment in to reduce on waste they generate. They were told not to unnecessarily tear papers from their exercise books. They were also advice to pack some of the snacks in containers instead of polythene papers.

**Return:** pupils were told that some bottles and container that can be returned should be taken to the shops and canteen where the products were bought. In this line, school administrators were urged to put in place mechanism that would allow pupils return bottles that are brought at schools.

**Refuse or reject:** Pupils were sensitized to refuse solid waste materials that are difficult to get rid of such as plastic bags, polythene papers. Pupils were told that Uganda Government had rejected the use of very light polythene bags because such bags are dangerous to the environment. They were encouraged to reject such polythene bags.

Question and answer approach was utilized. The pupils were asked questions on types of rubbish generated at school, how they dispose of garbage at school, to identify those that decompose and non-decomposable once. They were then shown how to sort waste and waste that could be reused, recycled, rejected and returned.

Pupils were also told that organic wastes are managed by composting in a compost pit and the compost produced used as organic manure. Other organic waste such as papers could be used to make teaching learning materials. Pupils were told to collect inorganic wastes such as plastic papers and polythene bags in separate bins. These could be recycled or reused. Pupil leaders were then guided on how they should pass the information to others.

**Step 4 (Continuous activity) Improvising/buying waste disposal materials:** In Nkumba Primary School, the school could not afford waste disposal bins.



As a result together with the head teacher and teachers we improvised gummy bags for disposing off the rubbish as shown in the picture. These bags were those the schools brought with food such as beans and 'posho' (maize meal) for the pupils. After using the food, the bags were categorized as waste.

Pupils were taught how to prepare these bags and hang them up. In Bukoto and Buganda Road Primary schools, KCCA provided the garbage bins (a green one for decomposable waste and Red for non-decomposable ones. In Mantopol, the Director bought the dust bins.

In all the schools, each class was provided with boxes such as those in the picture for collection of waste generated in the class.

In Buganda Road and Bukoto Muslim Primary schools, the wastes from the boxes were sorted into the KCCA bins.



In all the schools, teachers played a key role in continuously reminding the pupils about sorting waste.

The team constantly visited the school to meet teachers and pupils for the success of the project. By the time of the mentors' visit in Nov. 2012, the pupils were conversant with the project ideas.

## 4. Results

Observation showed that generally the project outcomes were achieved. Pupils could sort waste and dispose them off properly. They could also reuse some of waste. As a result the schools were cleaner than before. There was also a noticeable change in behaviour among pupils. They were no longer littering the compound as they used to do before the project. As a routine, pupils collected waste and sorted them in a daily basis. These are further elaborated on below

### **Pupils able to differentiate types of solid waste produced at school**

Outcome 2 required that pupils know the different types of solid waste produced at school. Questions to the pupils at the end of the project showed that they could identify the types of solid waste produced at school.

The main waste produced at the four schools included leaves, dry grass, leaves, papers, plastic papers and plastic bottles (used by the pupils to carry snacks and drinks to school) and food leftovers. Nkumba and Bukoto Primary schools generated a lot of leaves because of the large numbers of trees in the compound. In Buganda Road Primary schools there were more papers and plastic papers in the schools compound. These wastes are mainly from the two canteens located in the school compound.

In Mantopol Nursery School, for instance, by close of term III early December of 2011 the School Director had bought all the required dustbins for the school. He bought small once for classrooms and 2 for compound collection in categories of decomposable waste container and non-decomposable waste container.

### **Pupils sort and disposed off solid waste correctly**



This was in response to Outcome 3. The team provided boxes to each of class to enable the children collect and sort waste. The solid waste collection bins are appropriately used by most pupils.

The pupils correctly deposited garbage into the boxes and properly sorted them into the KCCA garbage skip and the gummy bags as shown in this picture.

They are able to put waste papers, leaves, grasss, left over food in one container of the decomposable waste bins and plastic bottles, polythene papers, nylon clothes, old shoes into one non-decompsable container.

Even in the nursery school, the pupils were able to pick garbage and sort it properly in the main 2 containers of decomposable and non-decomposable wastes in the school compound.

In Buganda Road Primary School, Bukoto Muslim Primary School and Nkumbda Primary school, there was a big collection of plastic bottles waiting to be picked by the recycling companies. Some of the pictures is captured below



Through the project, pupils understood the dangers of littering the compound. Throwing the waste in the right container both in class and outside is slowly becoming part of the culture of the school. Particularly, the prefects are constantly reminding the rest of the pupils to correctly disposal of waste.

### **Pupils and teachers reuse waste**

Although the team did not have an outcome on reuse of solid waste, this was the most successful aspect of the project. Pupils learned that some of the waste could be reused. Specifically pupils were able to use the polythene papers to make ball and skipping ropes, straws to make mats and bags, papers to make necklaces, among others.



## Pupils making bags and mats out of straws



The project has also shown that waste is a good source of teaching learning materials. Given that Ugandan schools are in unending shortage of fund for teaching learning materials, reuse of waste is one of the ways of bringing reality into the class. This in turn would help teachers to create a motivating learning environment for the pupils. Together with the teachers the pupils were able to use papers to make several food items for teaching and learning.

Some of the items made included cassava, oranges, tomatoes, cabbages as shown in the pictures. These were made to teach primary one pupils types of food such as protein, carbohydrates and vitamins.



Another important item that the teachers were able to make from waste is briquette. Charcoal briquette is an alternative source of fuel. Since the demand for fuel is increasing by the day, alternative sources of energy such as briquette would help meet this demand. This would in turn save the environment.



As a way of encouraging pupils to conserve the environment, the team together with the mentor planted a tree in one of the schools.

## 5. Discussion and Reflection

This project has shown that pupils' practices and attitudes can effectively be changed by schools. It was clear from the project that pupils love to do things on their own. They love to do things outside the curriculum.

The project enabled the pupils to learn and live the issues that ordinarily they would have covered theoretically in the syllabus. The project enhanced pupil's knowledge on garbage collection, sorting of solid waste, dangers of poor sanitary environment and how to reuse waste. The schools appreciated the project, especially reuse of waste to make teaching and learning products.

In Buganda Road and Bukoto Muslim Primary Schools, plastics bottles were being collected and stored for sale to recycling companies. As a result schools are making some little money from waste. This has motivated the pupils to collect all the plastic bottles and dispose them in the collection centers.

In Buganda Road, the pupils formed Environment Club that is actively passing the knowledge of the 5Rs to the rest of the schools.

The team noted that pupils are generally careless with handling materials like waste bins. A continuation of monitoring is expected to help staff and pupils to maintain solid waste bins.

## 6. Conclusions

Overall, this project taught pupils how to sort waste, how to management decomposable and non decomposable waste, how to reuse waste to make playing materials and teaching learning materials, how to earn cash from waste. Above all pupils gained better understanding of conserving and preserving the environment

## 7. Way Forward and Sustainability Plans

Since the beginning of the project there are many developments that have taken place especially in Kampala and would enhance the sustainability of the project. Among them are;

- a) Keep the City clean campaign: This is a monthly campaign initiated by KCCA in which the local leaders and the community come together to clean the city. This campaign could be adopted by Wakiso local leaders.
- b) Radio programmes on waste disposal
- c) The arrest of people who litter the city by KCCA. This is a point of reference when talking to pupils about littering and sorting waste.
- d) Distribution of waste disposal bins to all schools under KCCA. Since December, KCCA has been distributing two types of waste bins (one for non degradable and another for degradable waste) to enable schools sort waste. The pupils in the project schools were able to use these waste bins correctly.

Further, the Solid Waste project has been taken up by the Uganda Network. A proposal has been written to solicit for funds that can help the expansion of the project to other districts. This will in the long run reduce the spread of poor waste disposal related diseases from the schools and the community.

Since the teachers and school administrators willingly participated in the project, it is hoped that they would continue with the project such that correct disposal of waste become part of the pupils' way of life. SMC (School Management Committee) led by the school Director assured us of the sustainability of the project through constant funding and encouragement of teachers

Through members of CRC network Uganda, the team will dialogue with the local leaders to encourage them to take up this campaign to the community so that what the children learn at school can also be practiced at home.

It was also clear that all the Ministry of Education and Sports officials including those from National Curriculum Development center, Directorate of Education Standards

and Sanitation desk in the Ministry of Education would want to follow up the project. As a way forward, the team plans to present the project results to the Ministry of Education officials at an appropriate time.

## Acknowledgement

We are grateful to all the head teachers and members of the school management committees of the Buganda Road P.S; Bukoto Muslim P.S; Nkumba P.S and Mantopol Nursery School for allowing us to implement the project in their schools.

We also appreciate the willingness and cooperation of all the pupil leaders, pupils, teachers and the support staff towards implementation of the project. The prefects played an important role in passing the information on solid waste management to the rest of the pupils. The teachers and support staff were key in monitoring and supervising the project.

To our mentor, Agneta W. Flinck thank you for the guidance right from the initiation of the project to its completion.

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## 10. Appendices

### Appendix 9.1 A Poem on Garbage Disposal

Global Warming  
A threat to the universe  
Land degradation  
People lament  
Landslides and floods a problem at hand  
For ozone layer  
Will soon be no more.

Oh Gosh!  
You and me are part of the cause  
Day and day we generate garbage  
We litter the garbage as we so wish  
In so doing we destroy the environment

Thanks be to God  
We have a solution  
We need to be quick  
Before it is too late  
Begin with sorting according to the kind  
Plastic together and metallic together  
Those which can rot and good for manure

It is our duty to educate others  
Using the 5 Rs  
Recycle the garbage collected  
Re-use containers that can be reused  
Return containers to be recycled  
Reject some of them by carrying your own  
Remember to remind people around you.

## Appendix 9.2 A Poem on effects of poorly disposed rubbish

Oh what happiness we have today  
You have taught us new things  
We thank you

We appreciate the project on solid waste management project in our school.  
Now we can classify and sort garbage in its categories,  
Our parents also can do the same.

Oh what happiness we have today  
You have taught us new things  
We thank you

Managing solid waste our dear friends,  
Is the only way to sustain a disease free environment and cleanliness in our schools and communities

Oh what happiness we have today  
You have taught us new things  
We thank you

The common diseases caused by littering the compound includes; Trachoma, dysentery, cholera and diarrhea.

So be aware my dear friends,  
Lets' come together and manage garbage.  
Then with education high we can go forward and backward never.

Oh what happiness we have today  
You have taught us new things  
We thank you