



Republic of Zambia



**THE INTEGRATION OF WATER,  
SANITATION AND HYGIENE  
EDUCATION (WASHE) IN THE  
TEACHING OF ENGLISH,  
SOCIAL STUDIES,  
ENVIRONMENTAL SCIENCE  
AND MATHEMATICS**

**INFORMATION AND SUGGESTED ACTIVITIES**

**GRADES 1 - 7**

**Ministry of Education, P.O. Box 50093, LUSAKA**

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## **PREFACE**

The integration of Water, Sanitation and Hygiene Education in the teaching of English, Social Studies, Environmental Science and Mathematics guidelines has been done in conformity with our National Policy on Education of 1996.

The authors made reference to Syllabi of the stated subject areas and other reference books in order to guide teachers to integrate health issues accurately and appropriately.

It is hoped that these guidelines will help implement the integration of health across the curriculum.

C. E. Zulu

Chief Inspector of Schools

Ministry of Education

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M.N. Chibale

**Co-ordinator**

## **SECTION A INTRODUCTION**

The Zambia Basic Education Course (English, Social Studies, Environmental Science and Mathematics) has teaching and learning course books that have Units or Topics where health matters have been integrated. However, water and sanitation issues have not been tackled fully. Hence, the purpose is to suggest to the teachers the WASHE concepts that can be acquired by the pupils as they acquire knowledge and the various skills in these subjects.

The Units or Topics in which the WASHE concepts will be acquired have been carefully selected, the criterion being that these are the Units or Topics where health related matters can be integrated.

The scope of integration in each subject has been restricted to water and sanitation concepts so as to avoid other health related issues that have already been covered in the selected Units of Topics.

It is hoped that through these pieces of information and suggested activities, the pupils will learn the vital life skills that they will require in their daily life activities.

The WASHE concepts will be integrated in the following topics:

## **SECTION B ENGLISH**

- (a) Listening and Speaking
- (b) Writing (Formal and Personal)
- (c) Reading

## **SECTION C SOCIAL STUDIES**

- (d) Population
  - Community Participation
  - High Fertility Rate
  - Effects of Large Population
  - Medical and Sanitation Facilities

- (e) Hygiene

**Personal Hygiene**



**(f) Human Rights**

- Provision of Adequate Health Service
- Clean and Safe Water
- Clean and Safe Environment

**(g) Environmental Education**

- Clean and Safe Environment
- Pollution of Water
- Pollution of the Environment
- Sanitation

**(h) Education for Development**

- Provision of Knowledge and Survival Skills
- Creation of an Awareness on the Environment

**SECTION D ENVIRONMENTAL SCIENCE**

**(i) Human Being**

- Personal Hygiene
- Disease Survey
- Care for the Eye
- Care for the Ear
- Care for the Teeth
- Making Oral Rehydration Salts
- Excretion

**(j) Weather (Rain Water)**

- Safe Methods of Collecting Rain Water
- Making Rain Water Safe: Purification
- Rain Water Storage

- Uses of Rain Water
  - Dangers of Contaminated Water
  - Effects of Rain Water on Health
- (k) Matter (Water)
- Sources of Water
  - Uses of Water
  - Contamination of Water
  - Consequences of Using Contaminated Water
  - Managing Diarrhoea Diseases at Home
  - Hygiene Behaviour
- (l) Farming
- Common Farming Tools
  - Common Crops Grown
  - Application of Pesticides, Fungicides and Herbicides
- (m) Forces
- Drawing Water
  - Carrying Water
  - Types of Water Containers
  - Effects of Carrying Water
- (n) Sanitation

## **SECTION E MATHEMATICS**

- (o) Sets
- (p) Numbers
- (q) Time
- (r) Money
- (s) Measurements
- (t) Social Arithmetic
- (u) Ratio and Proportion
- (v) Shapes
- (w) Percentages
- (x) Statistic

These suggested activities are not to be used in isolation but along side the existing teaching and learning activities in the identified Units or Topics.

## **SECTION B ENGLISH**

### **Introduction**

English is one of the languages used in various aspects of communication. It is also one of the main subjects in schools. As a subject, English has the following skills: Listening, Speaking, Reading and Writing. WASHE examples can be used when teaching these skills.

For example, in teaching tenses, one can use WASHE examples in the following manner:

Present Simple: She cleans her teeth every day.

Past Simple: He cleaned his teeth yesterday.

Future: They will clean their teeth after eating

Reading and writing activities can be linked to WASHE related issues.

### **NOTE:**

Teachers should not allow WASHE issues to dominate the lesson but should ensure that the four skills (listening, speaking and writing) are taught.

## **GRADE 1: UNITS 12,13,17, 24 AND 29**

### **1. Workers, occupations, places of work (Nouns)**

Teacher should discuss, one at a time, the following workers:

- (i) Plumber
- (ii) Sanitary Orderly
- (iii) Environmental Health Technician (Health Assistant)
- (iv) Environmental Health Officer (District Health Inspector)

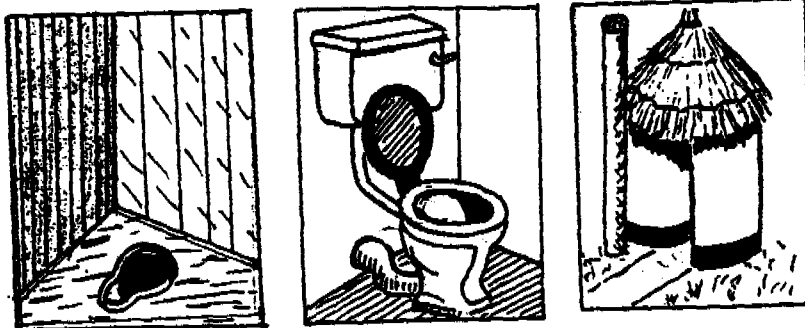
Pupils should be aware of who these people are and what they do in relation to water and sanitation. Where possible, use the exponents in the Units indicated above when discussing them.

#### **NOTE:**

Teacher should explain the meaning of the above terms.

### **2. Toilets**

#### **Types of toilets**



Teacher should discuss (using the exponents of the Unit at which toilets are being discussed) with the pupils.

- (i) The types of toilets they use at home and school and who cleans them;
- (ii) Why we should clean toilets;
- (iii) How toilets are used.

These areas of discussion should be spread over the five Units above and can be discussed before or after a given Unit.

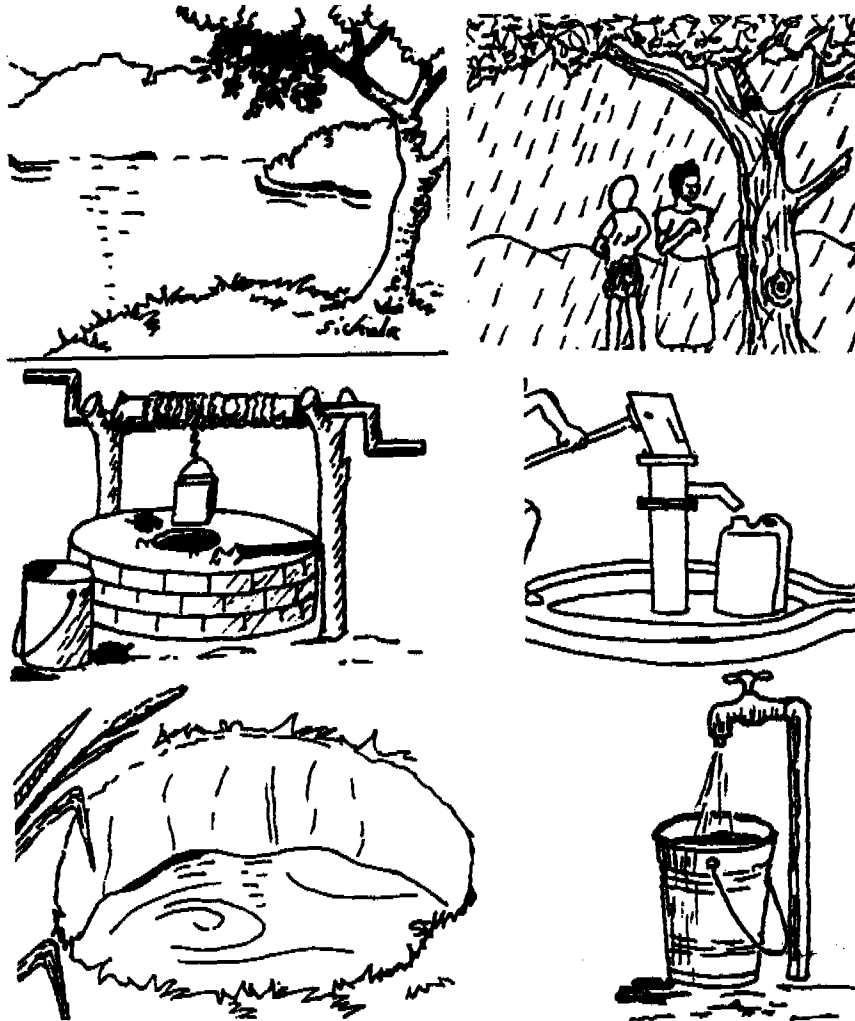
**NOTE:**

Use course books to show the picture of toilets.

**3. Sources of Water**

Dams, ponds, lakes, swamps, springs, wells, boreholes, taps

**Sources of water**



(i) Teacher should discuss with the pupils the:

- sources of water
- uses of water.

(ii) Teacher should discuss with the pupils:

- when they wash their hands.
- why they wash their hands.
- how they wash their hands.
- when they clean their teeth
- why they clean their teeth

#### **4. Stories for telling**

Teachers can use their stories that they know. Here are some samples.

(i) **Water: Friend or Enemy?**

If you drink dirty water, germs will go into your body. If you get germs, you will be ill. You may get diarrhoea. Diarrhoea can kill babies and young children. Boil your water before you drink it.

(ii) **A Clean Place**

It is good to keep our place clean. We should keep our home and school clean. Have a good place where to throw rubbish. Bury rubbish that cannot burn. We should cut the grass and keep it short. Use the grass and leaves for manure. A clean place is a healthy place.

(iii) **The Chair in the Latrine**

Remember to use the latrine when you want to urinate. You should use it when you want to defecate. You should not keep food, bicycles, chairs or other things in the latrine. Tell your sister or brother or mother or father not to keep things in the latrine. Use the latrine when you want to urinate. Use the latrine when you want to defecate.

#### **5. Role - Plays**

With the help of the teacher, pupils should perform role plays on:

- when to wash hands.
- how to wash hands.
- why we wash hands.
- how to use the toilets.

- why toilets should be cleaned and covered.
- keeping their school and home clean.

## 6. Riddles

Teachers can make their own riddles that deal with water and sanitation.

Examples:

- (i) You drink me  
You use me to wash your face  
Who am I?

Answer: Water

- (ii) I have a hole  
I have walls  
You use me  
Who am I?

Answer: Toilet

- (iii) You dig me  
You throw things in me  
You bury me after using me  
Who am I?

Answer: Rubbish pit

## 7. Songs

Teachers can also sing their own songs with the pupils to teach the WASHE concepts.

Examples: Tune: London Bridge

- (i) Cholera is going round  
Going round, going round  
Cholera is going round  
Boil your water

Wash hands before eating  
Before eating, before eating  
Wash your hands before eating  
That's the cure

Don't eat food which is cold  
Which is cold, which is cold  
Don't eat food which is cold  
That's unhealthy.

### Boil Your Water



### 8. Rhymes:

In all the rhymes, let the pupils mime the actions being said as they read them.

#### Examples:

- (i) Banda, Banda  
Yes, mama  
Eat unwanted mangoes  
No, mama  
Telling lies  
No, mama.  
Wash your mango  
Yes, mama



- (ii) Sweep the floor  
Cut your nails  
Drink safe water  
Throw the rubbish

Go to the toilet  
Wash your hands  
Cook your food  
Cover it up

**Clean your surroundings**



- (iii) Look at me digging the rubbish pit  
Look at me throwing rubbish in it  
Look at me burning it.
- (iv) Mr. Banda is a sanitary orderly  
A sanitary orderly, a sanitary orderly  
Mr. is a sanitary orderly  
And this is what he does (pupils mime what he does)

Now use these names in place of 'sanitary orderly': clinical officer, nurse, teacher, plumber (mender of pipes).

## GRADE 2: UNIT 4,15,17 AND 24

### 9. Unit 4

#### Activity: "can' and 'can't'

The teacher should discuss with the pupils ways in which rubbish is disposed of. Then reads the passage below in which 'can' and 'can't' are used. Pupils listen.

Flies breed where there is rubbish. They can't find where to breed if the rubbish is burnt or buried. You tell your parents to dig a pit to throw in the rubbish. You can help them. Then you can bury it. Flies can't have a place where to breed. They can't bring diarrhoea if we bury or burn the rubbish.

### 10. Unit 15

#### Activity: Apologies

The pupils should practise the following dialogues:

A

Pupil 1: I'm sorry I did not bury the rubbish yesterday.

Pupil 2: Why didn't you bury it?

Pupil 1: The school has no rubbish pit.

Pupil 2: We can dig a rubbish pit today.

Pupil 1: Yes, we can.

#### Dig a rubbish pit



## B

- Pupil 1: I'm sorry I am late.  
Pupil 2: Why are you late?  
Pupil 1: I don't feel well.  
Pupil 2: What's the matter with you?  
Pupil 1: I have diarrhoea.  
Pupil 2: You should go to the clinic.

Teachers and pupils discuss the possible reason why Pupil 1 has diarrhoea. Teacher can construct own dialogues using phrases expressing an apology and WASHE issues.

### 11. UNIT 17

#### Activity 1: 'Must'

Teacher asks the pupils to say the things they must do at home and at school that are WASHE related.

Examples:

We must drink safe water.

We must use the toilets.

We must bury all the rubbish.

We must wash our hands before eating.

We must wash pots and plates.

### 12. UNIT 17

#### Activity 2: Adverbs of sequence

Teacher reads the passage and then discuss what should be done to avoid getting diarrhoea. The passage reinforces the use of the adverbs of sequence.

#### Maria Gets Diarrhoea

Sitali had diarrhoea. First he went to the toilet. Then he came out but did not wash his hands. Next he met Maria. He gave her a piece of bread. Maria ate the bread. Then she had diarrhoea too. Finally Sitali and Maria were taken to Hospital.

### 13. UNIT 24

#### Activity: Comprehension

Pupils read the passage below and answer the questions that follow.

**Remember** (Teacher can construct own passages with WASHE issues)

Remember to wash hands with water and soap.

Remember to wash hands in the morning

Remember to wash hands after using the toilet.

Remember to wash hands before eating food.

Remember to wash your body and look after your teeth

Remember to bury or burn the rubbish.

Remember to wash pots and plates.

Remember to use the toilet.

Remember to clean and cover the toilet

Remember to do these things if you want to be healthy.

#### Read and Answer

1. What do you use to wash your hands?
2. When do you wash your hands?
3. What other things must you wash?
4. The toilet must be:
  - (a) \_\_\_\_\_
  - (b) \_\_\_\_\_
  - (c) \_\_\_\_\_

**GRADE 3: UNITS 3, 4, 5, 17, 20, 21, 22 AND 29**

**14. UNITS 3, 4, 5 The Dog, the Goat and the well**

Discuss WASHE concepts before or during or after reading the story.

Suggested activities:

**UNIT 3**

**Activity:** With the help of the teacher, pupils in groups say:

- (i) things that might have made the water in the river dirty.
- (ii) the importance of clean water.
- (iii) other sources of water.

**UNIT 4**

**Activity:** Discuss the following with the pupils:

- (i) Is it good or bad to allow animals near our well? Give reasons  
Discuss the type of wells.
- (ii) Where should animals get their drinking water?

**UNITS 17, 20, 21, 22, 29**

Suggested activities to be done in these Units are:

**15. Activity 1: Scabies**

This is a water washed disease. Discuss with the pupils what

- (i) scabies is.
- (ii) causes scabies.
- (iii) to do to avoid scabies.

Use the exponents already taught (revision) or those that are to be taught.

Limit your discussion to:

- (i) over crowded insanitary conditions.
- (ii) regular bath with soap.
- (iii) washing and ironing clothes.

## 16. Activity 2: Worms

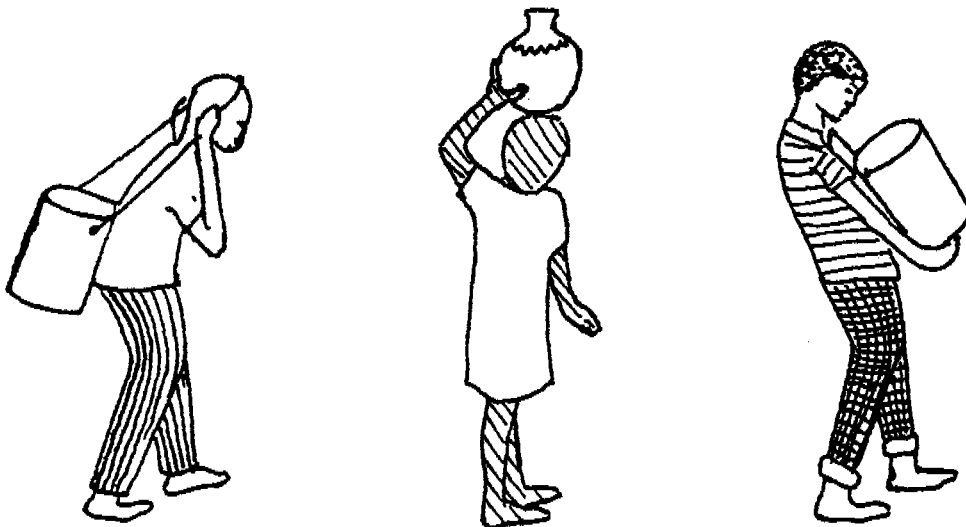
Read the passage to the pupils and then use some sentences from the story in your handwriting exercises.

Chongo was ill. He had worms. He did not use the toilet. The faeces with the worm eggs went into the soil. One day Mabvuto went to play in the soil with wet hands. The soil got to his hands. He did not wash them. He put his fingers in the mouth. He got ill. He had worms too.

**NOTE:** Include WASHE issues in your handwriting exercises.

## 17. Activity 3: Carrying water

### Ways of Carrying Water



Discuss with the pupils the following:

- (i) Who should fetch water, boy or girl?
- (ii) Do the pupils fetch water at their houses or school?
- (iii) Where do they fetch the water from? Is it very far? Are they safe sources?
- (iv) Which ways do they use when carrying water?
- (v) Which one is better for their spine?
- (vi) How do they lift a water container?

## **GRADE 4: UNITS 4, 15, 20 AND 21**

### **18. UNIT 4 Good Health**

#### **Activity 1: Food Hygiene**

Before Activity 4 is done, the teacher should reinforce the use of 'should' and 'must not', by reading out the story below to the pupils:

#### **Food Hygiene**

Good handling of food can keep away diseases. You should wash your hands with safe water before eating. You must not eat uncooked food and fruits without washing them with safe water. We should cook our food well. Cooking food kills germs. The pots and plates should be washed. You must not keep food in dirty pots and plates. Pots and plates with food should be covered.

### **19. UNIT 15 Mrs Banda's Baby**

#### **Activity 2: How Children Become Ill**

Before this activity is covered, discuss the following with the pupils:

#### **(a) Water**

(i) Teacher asks pupils to name the sources of water.

- rivers
- wells
- boreholes
- taps
- rain

(ii) Teacher asks pupils to say the sources where they can get safe water and explain how they know.

(iii) Pupils should say the sources that might give them dirty water.

(iv) Teacher to discuss with the pupil's the consequences of drinking dirty water.

**(b) Sanitation**

**(i) Teacher to discuss the methods of excreta disposal:**

- Pit latrines
- Water closets
- Rivers
- Bushes
- Bucket latrines
- VIP (Ventilated Improved Pit latrines)

**Some methods of excreta disposal**

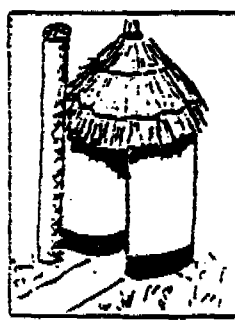
Pit latrine



Water closet



VIP



- (ii) Pupils say which ones are the best methods of disposing of excreta and give reasons.**
- (iii) Teacher discusses the consequences of using the bush and the river for disposing of excreta.**

After the pupils have done Activity 2, discuss with them measures that can be taken to prevent cholera and diarrhoea. Then, with your guidance, let the pupils write five sentences on the prevention of cholera.

**20. UNIT 20: Looking After Ourselves I**

**Activity 1: Are they clean?**

Before the pupils do Activity 1, let them sing a song on how to wash their hands and then talk about hand washing times.



### **Dialogue:**

**Teacher** How many times do you wash your hands?

**Pupil:** Two times/three times, etc.

**Teacher:** When do you wash your hands?

**Pupil:** Before eating/after using the toilet, etc.

**Teacher:** How do you wash your hands?.

**Pupil:** With water and soap, etc.

### **How hands are washed**



Then the teacher and pupils discuss why they should wash their hands and the advantages of each method of washing hands.

## **21. UNIT 21: Looking After Ourselves 2**

### **Milika Has Malaria**

#### **Activity 1:**

- (a) After pupils have read the passage, ask them the following questions:
- (i) What causes malaria?
  - (ii) Where do the mosquitoes lay their eggs?
  - (iii) What things can be filled up with water during the rainy season?
- (b) Discuss with the pupils how mosquitoes can be kept away. **Expected answers:**

- Putting screens on house windows and doors.
- Spraying breeding areas/houses.
- Filling or burying or draining breeding areas.
- Covering water pots and containers
- Burying old tins, buckets and drums
- Slashing grass.
- Using bed nets.
- Collected rain water (storm water)
- Cleaning the surrounding.

### **Activity 2: Handwriting**

Pupils copy paragraph 4 on page 3 of the Pupils Book 3. The title of the paragraph could be 'How to Keep Mosquitoes Away.'

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### **GRADES 5 - 7**

**GRADE 5:** UNITS 2, 5, 7, 8, 9, 24 AND 25

**GRADE 6:** UNITS 5, 8, 9, 20 AND 30

**GRADE 7:** UNITS 4, 13 AND 14

Here are some possible activities to be used in the Units that are on Health related matters in Grades 5 to 7. The teachers can use their own discretion in selecting the activities that best suits the grade.

### **22. Activity 1: Composition and Drama**

With the help of the teacher, pupils write stories and then dramatise the best ones. Here are examples of the stories (teachers are free to use own stories for pupil's to write as long as they are on water and sanitation):

#### **(a) The Water Dirtiers**

Imagine that your source of water has been made dirty by animals or by throwing rubbish in it. What can you do about this? How can you get help from the elders in the community?

#### **(b) The Filthy Flies**

Imagine that your village/town was at one time full of flies because the people never covered their food and latrines and they always kept their rubbish very near their houses. Write a story on how you drove the flies away.

### 23. Activity 2: Comprehension 1

The passage below can be used in teaching or revising 'should' and the 'likely conditional' sentences (the 'if' sentences).

#### Disposal of Faeces

Families have many important jobs to do around their homes. One of these is to prevent the spread of germs by disposing of the faeces safely. Many illnesses, mainly diarrhoea, come from the germs found in human faeces. If the germs get into water or onto food or hands or utensils, people can swallow them.

In order to prevent this families should use latrines. If it is possible, they should defecate well away from houses, paths, water supplies, and where children play.

After defecating the faeces should be buried. Faeces of babies and young children are more dangerous than those of adults. So small children should use latrines as well. If not, their faeces should be kept away from homes and water sources.

#### Read and Answer

1. True or False  
Germs found in faeces bring one illness called diarrhoea.
2. Where can the germs from faeces be found?
3. Complete the sentence below:  
We should not defecate near -----, -----,  
-----, -----, and-----
4. Write the two ways in which faeces can be disposed of.
5. Which word means the same as regularly?
  - (a) always
  - (b) often
  - (c) seldom
  - (d) never
6. List the three things have been said about latrines.

## 24. Activity 3: Comprehension 2:

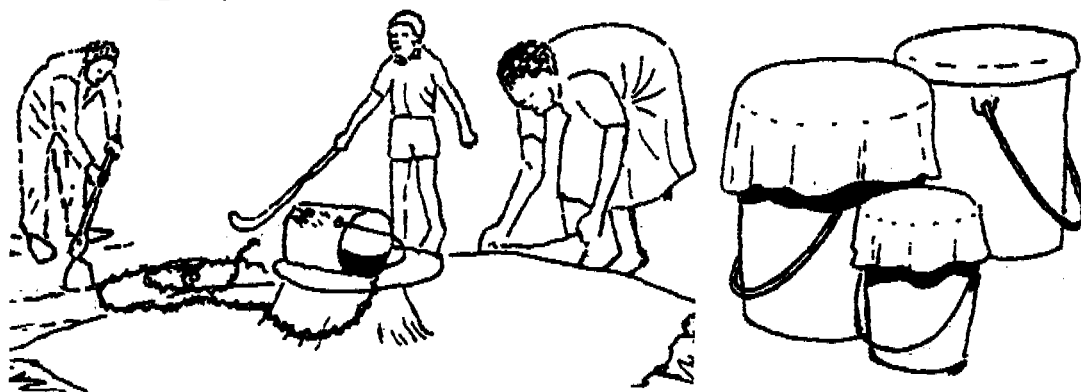
The passage below can be used in teaching "**must not**"

### How to Keep Water Clean

It is true that families who have safe pipe water, and know how to use it, have fewer illnesses than those that are without a safe piped water supply. However, such families can reduce illnesses if they protect their supply from germs.

There are a number of ways in which this can be done. The families must remember to keep their wells covered, and to keep faeces and waste water wells away from any water used for cooking, drinking, bathing or washing. They must keep buckets, ropes and jars used to collect and store water as clean as possible. Families must keep animals away from sources of water.

#### Keeping Water Clean



The water in home can be kept clean by storing drinking water in a clean, covered container, and by taking water out of the container with a clean cup. Families must not allow anyone to put their hands into the container or drink directly from it. They must not allow animals into their houses.

#### Read and Answer

List the ways of protecting un piped water supplies from germs and how the water in the home can be kept clean.

Use '**must**' from 1 to 7 and '**must not**' from 8 to 10. The first one has been done for you.

1. Well must be covered.
2. -----
3. -----

4. -----
5. -----
6. -----
7. -----
8. -----
9. -----
10. -----

## 25. Activity 4: Comprehension 3

### Worms

Many young people in our communities suffer from different worms that are a source of ill -health and prevent them from regular school attendance. Worms such as roundworms, can cause abdominal pains, diarrhoea and even obstruct the intestines when they are too many. They also retard growth. Roundworms eggs enter a person through eating raw vegetables such as cabbage which has been contaminated by faeces.

Hookworms are another type of worms that are common and feed on the blood of the person. Hookworms penetrate the skin or the body when one walks bare foot or eats improperly washed and uncooked vegetables.

Guinea worms are the result of drinking contaminated water and lead to ulcers or blisters, especially in the legs.

All worm infections are preventable. The transmission which takes place between faeces and a person, either through files or food and water, can be broken through a number of hygiene habits such as:

- boiling drinking water;
- covering food;
- regular cleaning of toilets;
- proper use of toilets;
- killing all germs from snails in rivers to prevent bilharzia.

Below are jumbled up sentences from the passages above. Pupils should rearrange them to make sensible sentences. They should punctuate them correctly.

Example:

you/ill/be/worms/will/you/get/if

If you get worms, you will be ill.

1. can/diarrhoea/cause/roundworms
2. eat/unwashed and uncooked vegetables/ if/hook /worms /get /you / will/you
3. if/can/contaminated/guinea worms/you/water/you/drink/get
4. prevent/proper/of/use/worm/can/infections/toilets
5. bilharzia/killing/prevent/can/germs from/snail/all

## 26. Activity 5: Comprehension 4

### Safe Waste Disposal Drainage

Still water and muddy places around houses and water collection points cause health risks such as hookworms infections. They can also attract mosquitoes. This is why safe waste water disposal from water points for domestic uses is very important.

Waste water from water points should be properly disposed of. This can be done by draining such water to soakaways. In order to facilitate these, drains should be clean to allow water to freely flow without stagnating to avoid mosquito breeding. Waste water can also be allowed to drain towards the vegetable or fruit gardens.

Communities should think about productive uses of waste water for income generating activities

### Read and Answer

1. They can also attract mosquitoes. What is 'they' referring to in the sentence.
2. Why should the waste water be properly disposed of?
3. Why should the drains be clear?
4. In what way can waste water be useful?

## 27. Activity 6: 'can' and 'if'

### A 'can'

Here is a list of words or group of words. Use them to make sensible sentences.

Examples:

Young brothers and sisters/ to/ take/ latrine/ the/ or/cover /or bury /faeces/ their/I

I **can** take young brothers and sisters to the latrine or cover or bury their faeces.

- (a) urinate/in/river/water/I/or/pass/near/water/faeces/and/children/other/do/so/not
- (b) wash/after/my/always/I/hands/latrine/using/the/before/and/eating
- (c) container/I/keep/the/in/water/house/my/clean/covered/and

**B 'if'**

Use 'if' to join the pairs of sentences below:

Example:

This water is from the well. I will boil it.

If this water is from the well, I will boil it.

- (a) Boiling water is not possible. Use sunlight.
- (b) Children defecate outside the latrine. Bury their faeces.
- (c) You cover pits that have water. Mosquitoes will not breed.
- (d) Mary washes her hands with soap and water. The germs will be removed.
- (e) The germs get into water. People can swallow them.
- (f) He covers the latrine. Flies will not get into it.

**28. GRADES 2-7 CROSSWORD PUZZLES**

The teacher can make crossword puzzles dealing with WASHE concepts. For Grades 2- 4; see the English workbooks for examples of crossword puzzles.

Here are examples of questions you can ask in the puzzles.

1. One of the sources of water.
2. You use it for throwing in rubbish.
3. A disease caused by mosquitoes.
4. It brings water in the house.
5. A diseases you can have if you don't wash your body and clothes.

## **SECTION C    SOCIAL STUDIES**

### **Introduction**

Social Studies is an interdisciplinary subject. It incorporates other subjects to form a broad-based subject. It deals with human relationships and social behaviour. Social Studies provides a good channel through which WASHE issues are disseminated to the school and community. The goal is to integrate WASHE into Social Studies. This will help to enrich and increase the teaching and learning of WASHE through.

The subject involves and enlightens every section of the community including school going pupils campaigning for increased responsibility and entitlement of their right to have a clean environment, good provision and care of social amenities such as schools, hospitals and good sanitation which raise the quality of life.

The Social Studies Teacher's and Pupil's course books have some units that deal with health matters but water and sanitation issues have not been adequately covered. The purpose of this guideline document is to help the teachers to integrate WASHE issues into Social Studies. The teachers are advised to emphasise on WASHE issues because the knowledge and skills will help pupils to improve their environment in terms of water and sanitation. The suggested activities may not be enough, therefore the teachers are advised to create more activities based on water and sanitation.



## **29. POPULATION**

Population is concerned with:

- Community participation
- High fertility rate
- Effects of large population
- Major world problems
- Medical and sanitation facilities

### **Background Information**

A Community is a group of people who live and work together. Community population refers to shared roles and responsibilities, i.e. building toilets, digging wells and so on.

Population is the total number of people in a given area at a particular time. High fertility rate has led to the growth of population. This has resulted in:

- inadequate social services such as schools, hospitals and water resources.
- epidemics of various diseases such as cholera, typhoid, dysentery and meningitis.

Teaching Health through population promotes:

- awareness on water and sanitation issues.
- the sense of responsibility on community property such as toilets and wells.

### **Teaching Population**

Pupils collect brooms, hoes, rakes, disinfectants, windolene, mutton cloth and mops.

#### **Activity 1:**

- (a) Invite an Environmental Health Technician to talk to the class about water and sanitation.
- (b) After the talk ask pupils to conduct a survey in class on the type of toilets they use in their homes.

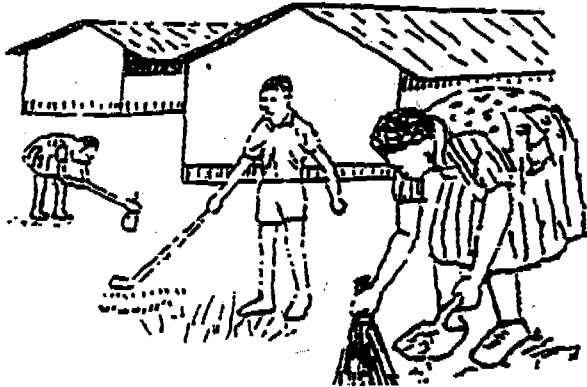
- (c) Invite a water engineer to talk about how water is made safe at the water works.

### Activity 2:

#### School Maintenance

The teacher should divide the class into groups according to the types of tasks to be performed, i.e. cleaning the surroundings, classrooms and toilets.

#### Keeping Our Surroundings Clean

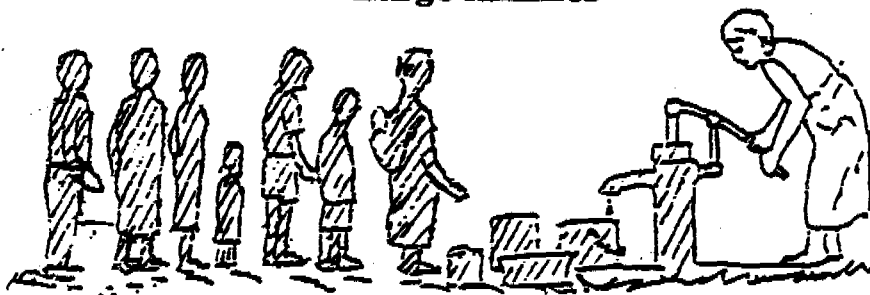


Written work: Why should we keep ourselves and surroundings clean?

### Activity 3:

Ask pupils to give the number of children in their families. Let them explain the advantages and disadvantages of a large family. For example, parents may fail to meet the basic needs such as food, water bills and so on.

#### Large families



Ask pupils to conduct a survey in the community on the ways of solving the water problem.

#### ACTIVITY 4:

#### Water and Sanitation Related Diseases

Pupils conduct a survey in the community on common water borne diseases. Let them make a table and indicate treatment and prevention of each diseases, e.g.

#### Water Borne Diseases

Disease	Cause	Effect	Prevention	Treatment
Diarrhoea				
Dysentery				
Typhoid				
Cholera				

#### Water Washed Diseases

Disease	Cause	Effect	Prevention	Treatment
Scabies				

#### Water Based Diseases

Disease	Cause	Effect	Prevention	Treatment
Bilharzia				

#### Water Related Diseases

Disease	Cause	Effect	Prevention	Treatment
Malaria				

## **30. HYGIENE**

Personal Hygiene is concerned with care of our bodies.

### **Background information**

A healthy community should:

- keep surrounding clean
- eliminate mosquito breeding places.
- communicate with Environmental Health Technicians.
- protect wells.

Personal hygiene is concerned with washing our bodies, cutting our nails and hair short, cleaning our teeth and ear. The purpose of personal hygiene is to keep ourselves free from diseases such as cholera, dysentery, typhoid and scabies.

Health issues have also been handled by organisations such as the World Health Organisation (WHO) which is involved in:

- prevention and control of diseases.
- drug distribution.
- improving water supplies and sanitation.
- providing training for doctors, nurses and teachers.

Teaching Health allows pupils to:

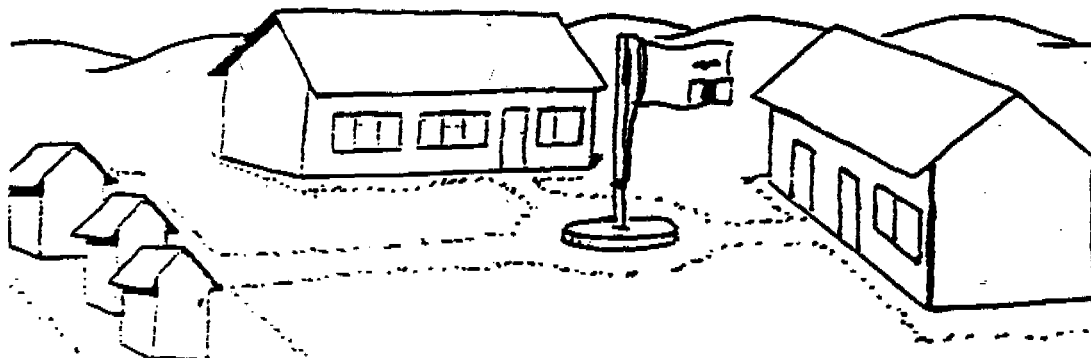
- practise personal hygiene.
- disseminate information on WASHE issues to the community.
- take correct measures on administering drugs.

## Teaching Health

Pupils bring hoes, spades, shovels, picks and buckets.

### Activity 1: Map of the School

#### Our School



Survey positions for rubbish pits, taking into consideration the administration offices, wind direction and distance from the classrooms. Let pupils dig rubbish pits.

#### Digging the Rubbish Pit



### Activity 2:

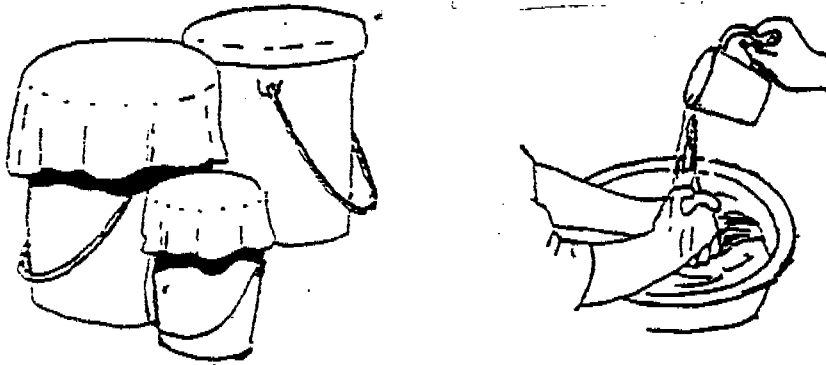
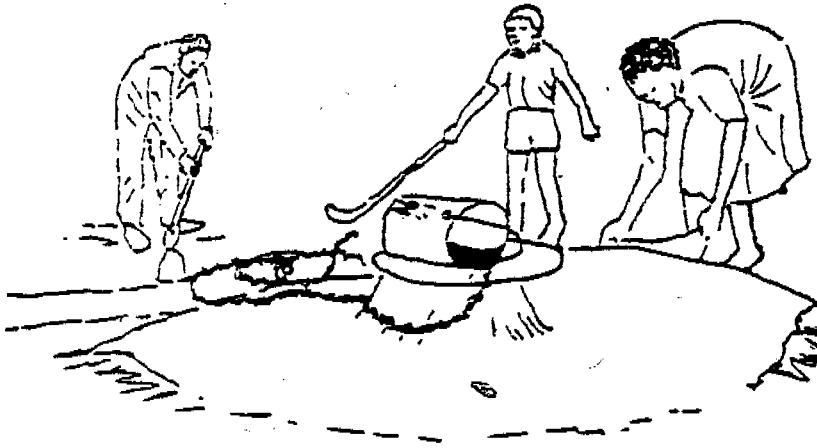
1. Identify organisations which help to improve health standards in Zambia.
2. What programmes are they involved in?

### Activity 3:

Sensitisation of the community through poems and drama on:

- the prevention and spread of diseases such as cholera and malaria;
- cleaning around the well or a borehole;
- boiling drinking water;
- washing hands after using the toilet.

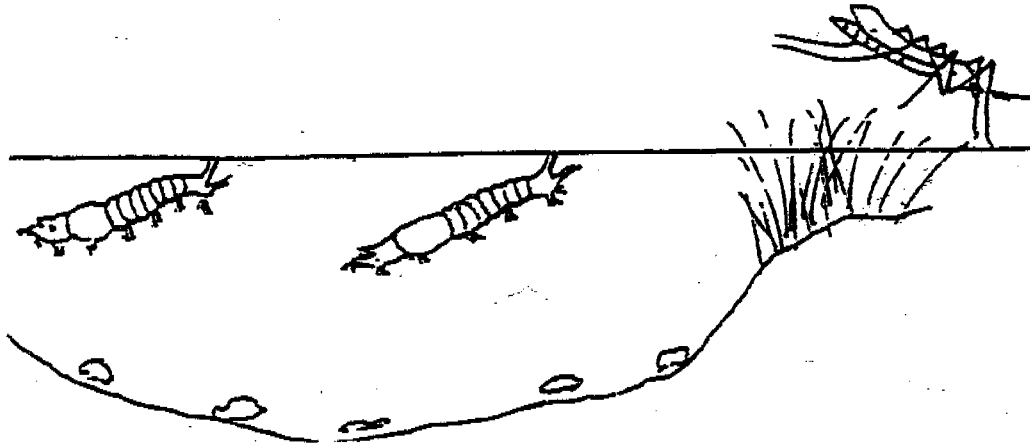
## Things We Should Do



### Activity 4:

Mosquitoes can be dangerous to human life and therefore their breeding places should be buried.

### Bury Mosquitoes Breeding Places



**Activity 5:**

Let the pupils dramatise and discuss the disadvantages of the activities shown in the illustration below, showing one of the sources of water:

**One of the Sources of Water**



**Activity 6:**

Let the pupils discuss the activities taking place at the market.

**At the Market**



### **Activity 7:**

Let pupils discuss the importance of visiting the hospital, clinic or health centre.

#### **At the Clinic**



### **Activity 8:**

Invite a health technician to talk about sanitation.

### **Activity 9:**

Invite a water engineer to talk about the water supply in the community.

---

## **31. HUMAN RIGHTS**

Human rights in WASHE are all about rights of the child in the provision of:

- adequate health services;
- clean and safe water;
- a clean and safe environment.

### **Background Information:**

A right is an entitlement. Every child has a right to services that make him or her live in a safe and healthy community.



Schools and communities should be sensitised on the need of health promotion. Sanitation can be treated as a fundamental right. This means that the provision of health services such as hospitals, clinics and schools,, clean and safe drinking water and clean and safe environment are entitlements of every child. Inadequate sanitation provision is a violation of the citizens fundamental rights. Therefore, government is obliged to provide sufficient water and sanitation facilities in all institutions of learning and public places such as markets and stations.

Teaching health through human rights allows pupils to:

- be aware of their rights.
- appreciate and protect their rights.

### Teaching Human Rights

Teaching human rights empowers children to claim their rights and duties of the child.

#### Activity 1:

Let pupils explain the activities taking place in the illustrations below.

#### Safe Water



### **Activity 2:**

Let pupils dramatise:

- (a) drinking unboiled water, some become sick and visit the toilet several times.
- (b) drinking boiled water is good because it is safe.

### **Activity 3:**

Let pupils discuss the importance of drinking clean safe water.

---

## **32. ENVIRONMENTAL EDUCATION**

Environment is all about the following:

- clean environment
- pollution of water
- sanitation

### **Background Information**

Environmental Education deals with the human relationships with the environment and its utilisation. It means an understanding and awareness of elements in the environment. Environmental understanding is the ability to apprehend the general relationship of particulars of the natural and built environment and its role in the community. It provides every person with opportunities to acquire the knowledge, rules, attitudes, commitment and skills needed to protect and improve the environment. It creates new patterns of behaviour of individuals, groups and society as a whole towards the environment.

Teaching Health through Environmental Education:

- promotes awareness, knowledge, attitudes, participation on skills required to improve the environment.
- encourages individuals and social groups to work towards resolutions of the environmental problems.
- makes people acquire basic understanding of the environment and its problems such as pollution and sanitation.

## Teaching Environmental Education

Pupils collect brooms, hoes, rakes, disinfectants, seedlings, shovels, spades, wheelbarrows, dishes and soap.

### Activity 1:

Let pupils study the illustrations below and answer the questions that follow.

#### Sources of Water



1. What is the source of the water?
2. What does the community use the water for?
3. How is the surrounding of the source of water?
4. Is the well or stream water source protected?
5. How can water be contaminated?

### Activity 2:

Ask pupils to role play a village where people use the bush as a toilet. Let pupils discuss the health hazards that may occur in this village.

### Activity 3:

Discuss the health habits being practised in this scene. After the discussion let them dramatise it.

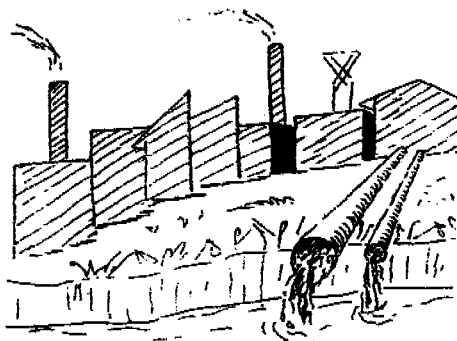
### Health Habits



### Activity 4:

Water pollution is when water is made dirty and harmful to people and animals by the discharge of liquids, solids and other substances likely to create a health problem. Study the illustration below and answer the questions that follow.

### Pollution by Industries

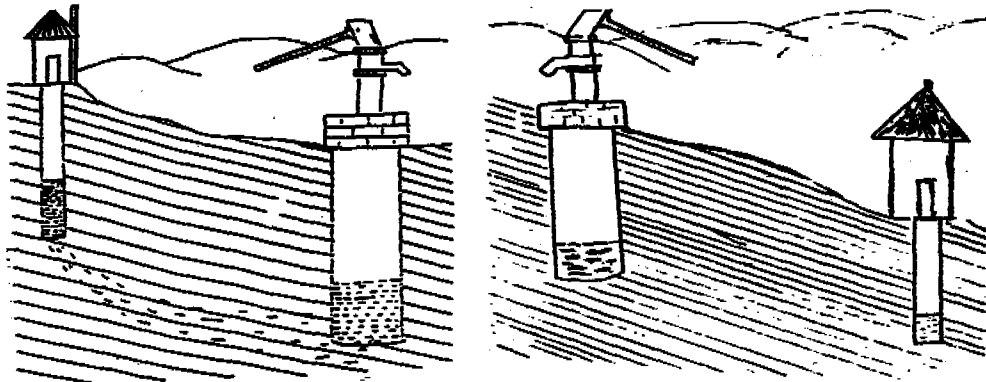


1. What types of pollution can industry cause to the community?
2. Where is the refuse from the industry discharged?
3. What kind of harmful substances are discharges?
4. Why is it not good to drink contaminated water?

**Activity 5:**

Study the illustrations below and answer the questions that follow.

**The Well and the Toilet**



1. Where is the position of the (a) toilet? (b) well?
2. Explain the advantages and disadvantages of this arrangement.

**Activity 6:**

Let pupils discuss the scene shown below.

**The Village**



### **33. EDUCATION FOR DEVELOPMENT**

Education for development is concerned with

- the provision of knowledge and survival skills;
- the creation of an awareness on the environment.

#### **Background Information**

Education for Development is oriented towards equipping individuals with survival skills. It builds confidence and creates strong appreciation of political, economical and social development in Zambia. It provides knowledge, attitudes, values and practical skills for individuals and communities to react to various situations. It enables individuals to gain practical skills such as observation, recording, analysis and problem solving. Pupils are able to notice hazards at home and school and take action, especially on garbage disposal, water sanitation by boiling drinking water. These are some of the situations that make pupils become responsible towards their environment, in order to combat diseases.

Some examples of life skills are

- Self - awareness - once they realise who they are and what they intend to achieve in life, they are able to avoid risk behaviour such as careless refuse disposal
- Critical - thinking is the ability to analyse issues and be able to choose the best alternatives and apply different problem solving skills.
- Copying is the ability to handle situations such as cholera outbreaks and garbage disposal.
- Assertive skills. This is the ability to say no or yes to some situations such as drinking unboiled water or using stagnant water.

Teaching WASHED through education for development allows pupils to:

- create an awareness of environmental hazards.
- improve social conditions without damage.
- learn and practise good living habits.
- disseminate information on good living habits to the community.

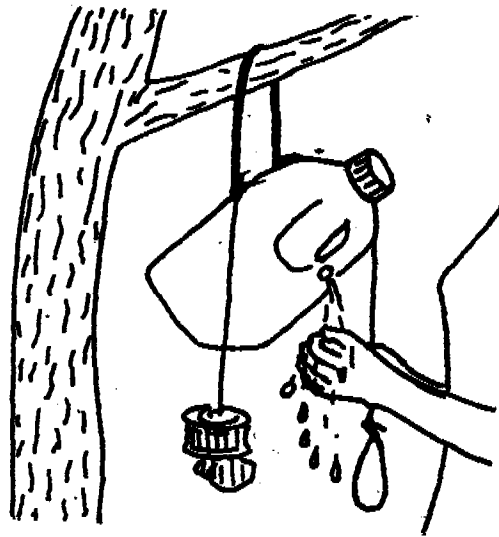
Teaching Education for Development requires the following:

- water;
- plastic containers (2.5l), drums, horsepipes;
- nails, strings;
- wheelbarrows, shovels, picks;
- poles, grass and iron sheets.

**Activity 1:**

Let pupils prepare a tippy - tap for school toilets for both pupils and staff.

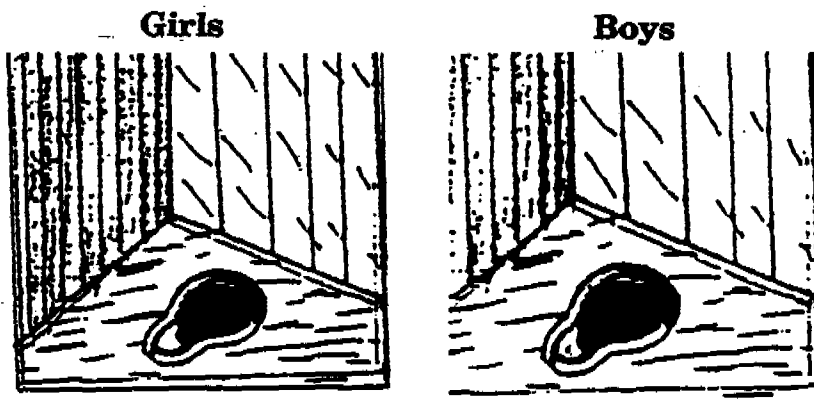
**A Tippy - Tap**



**Activity 2:**

Construct two pit latrines for boys and girls.

**Pit Latrines**



**Activity 3:**

Let pupils discuss the kind of sanitation ideas they can learn from the pictures above.



## **SECTION D ENVIRONMENTAL SCIENCE**

### **Introduction**

Science is a practical subject which integrates many aspects of health issues. The subject encourages learners to take responsibility for planning and carrying out their work. They develop more skills by doing simple experiments. Integration of WASHE in Science is one way of developing life skills in our everyday living.

This integration has been done generally for grades 1-7. The long terms skills and the objectives as provided for in the syllabus for Basic Education have been adopted.

The teacher is also free to choose WASHE concepts he or she feels should be integrated.

## 34. HUMAN BEING

The study of human being is basically concerned with the link between good health habits and water balance.

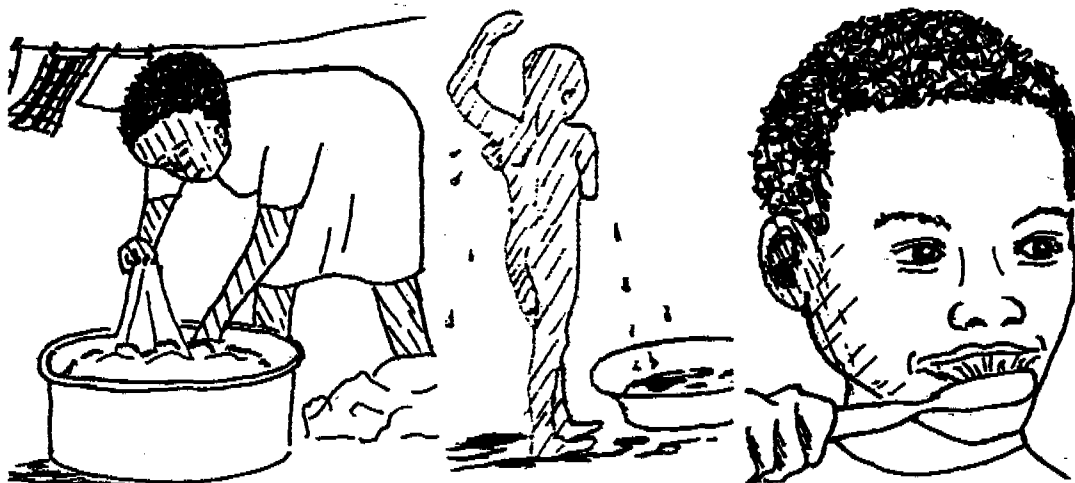
It deals with care for the body; especially personal hygiene. It also deals with the use of water for health purposes. Pupils are taught when and how to clean their parts of the bodies.

They should also be made aware of the consequences of poor personal hygiene.

Human beings should practise good habits such as washing of body regularly, washing of hands after using toilets and before handling food. They should maintain short hair and cut finger nails.

Diseases that result from bad habits of using no or insufficient water and poor health include tooth decay, scabies, ringworms, conjunctivitis (red eyes) and lice.

### Some Good Habits and Good Health



The pictures above show some of the good habits and good health. The activities that follow are meant to help increase pupils awareness of good habits and good health.

#### Activity 1:

##### Personal Hygiene

- (a) Let Pupils discuss different methods of caring for the parts of their bodies.
- (b) Discuss the number of times they should wash their bodies in a day.
- (c) What would happen if they stayed without cleaning their bodies?

- (d) What do they use in cleaning their bodies?
- (e) Discuss different ways of washing.

### Ways of Washing Hands



#### Activity 2:

#### Diseases Survey

Involve pupils in a disease survey of the locality to see what diseases have been prevalent. Find out the number of children who might have had:

- Diarrhoea
- Scabies
- Ringworms
- Red eyes
- Lice

Children can display the results of the survey in a chart. The results can better be obtained from the clinic or health centres to avoid class stigmatisation.

### **Activity 3:**

#### **Care for the Eye:**

Pupils should be made aware of the importance of the eye as an organ of seeing. Clean water should be used to clean eyes.

Divide the class into groups. Let each group draw the eye and label it, then state the:

- (i) importance of caring for the eye.
- (ii) different ways of taking away foreign bodies from the eye.
- (iii) effects of not washing their eyes/face daily.

### **Activity 4:**

#### **Care for the Ear**

The ear should be protected from external and internal substances that may block it.

Let pupils state the reasons for caring for the ear.

### **Activity 5:**

#### **Care for the Teeth**

- (a) Pupils collect local materials for cleaning teeth.
- (b) Where possible arrange for the dentist to come to school or pupils to go to the clinic for dental check up and discussions.

### **Activity 6**

Let pupils conduct a class survey to see the number of pupils who have suffered from eye, teeth and ear diseases. This activity (survey) can be extended to the local community.

### **Activity 7:**

#### **Making Oral Rehydration Salts**

Provide pupils with salt, sugar, clean water, spoon and cup. Let pupils prepare O.R.S. drink. Half spoon of salt mixed with 4 spoons of sugar in one litre of water. What is the importance of O.R.S.?

## **Activity 8:**

### **Excretion**

- (a) Let pupils discuss different ways of excretion.
  - (b) Let pupils discuss causes of diarrhoea
  - (c) What role will the following play in the prevention of diarrhoea?
    - (i) Water
    - (ii) Latrines
    - (iii) Effective disposal system.
- 

## **35. WEATHER (RAIN WATER)**

Weather has an effect on the cycle that produces water in form of rain. This topic deals with how rain water is collected, stored and made safe for use. The topic attempts to teach pupils the importance of rain water in relation to health. This is done by studying safe methods of collecting rain water and looking at various ways of making it safe for domestic use. The topic also deals with ways of safe storage.

Rain water collection can be practised in a variety of ways in both urban and rural areas. Rain water collection is used as a short term measure following dry spells or when supplies have been contaminated.

Contaminated rain water when used can make us sick. It is important, therefore, that we keep rain water safe and clean. Collection systems of rain water should be inspected regularly to ensure that adequate and safe supply measures are maintained.

### **Activity 1:**

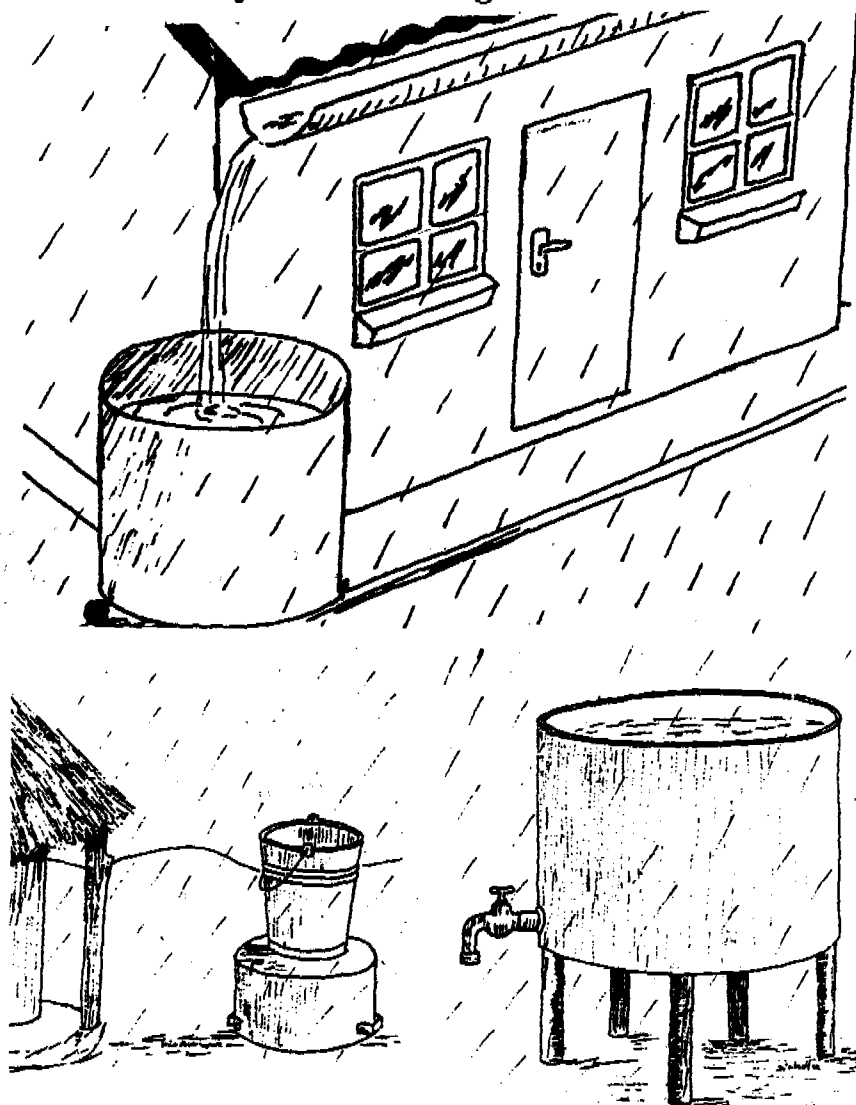
#### **Safe Methods of Collecting Rain Water**

- (a) Pupils should be made to mention, discuss and draw all possible ways of collecting rain water in their locality, e.g. rain water from corrugated or thatched roofs.

### **NOTE:**

Rain water from corrugated roofs in mining areas should not be collected because they may contain chemicals.

## Possible Ways of Collecting Rain Water



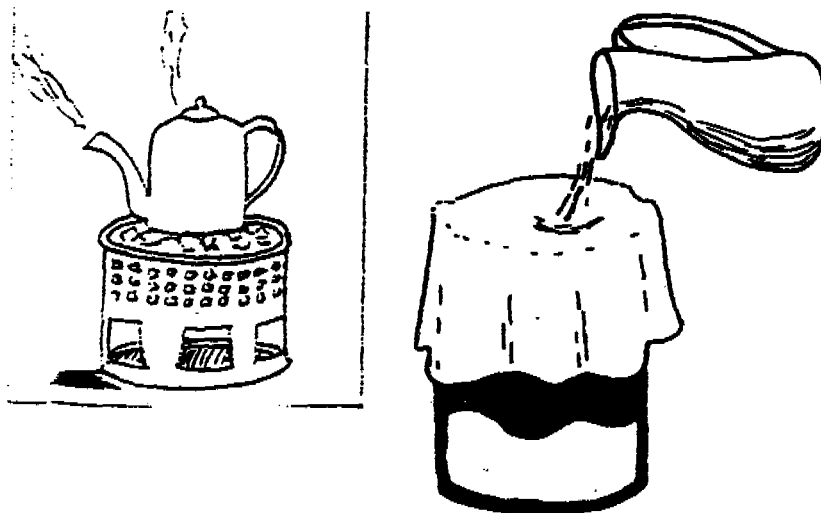
### Activity 2:

#### Making Rain Water Safe: Purification

Pupils should be aware that not all rain water is safe and clean.

- (a) Pupils to list various ways in which rain water can be contaminated (made impure).
- (b) Pupils to demonstrate and experiment different methods of purifying rain water in the home, e.g. boiling, filtration (if possible, let pupils state what they observe in each of the experiment).

### Some Methods of Purifying Rain Water



#### NOTE:

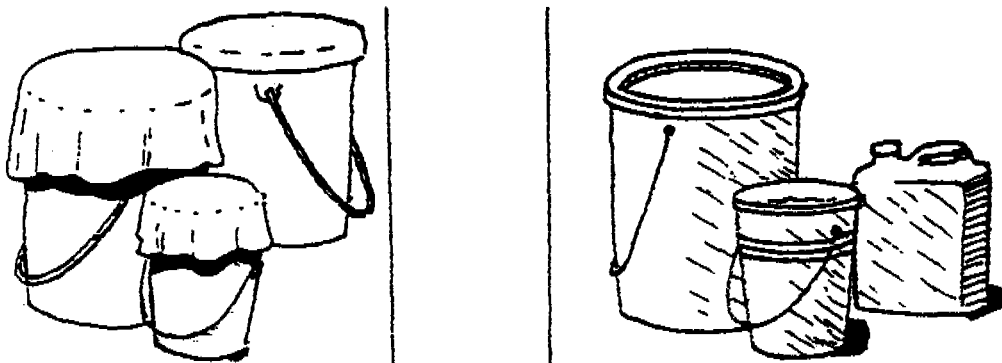
- (i) Boil water after filtration.
- (ii) Clean water may not be safe to drink because it may contain some germs. Therefore, it should be boiled before drinking it.

#### Activity 3:

##### Rain Water Storage

- (a) Pupils to discuss, in groups, methods used to store rain water in homes. Are these methods safe?
- (b) Children can draw the various containers used in safe storage of water.

##### Containers for Safe Storing of Water

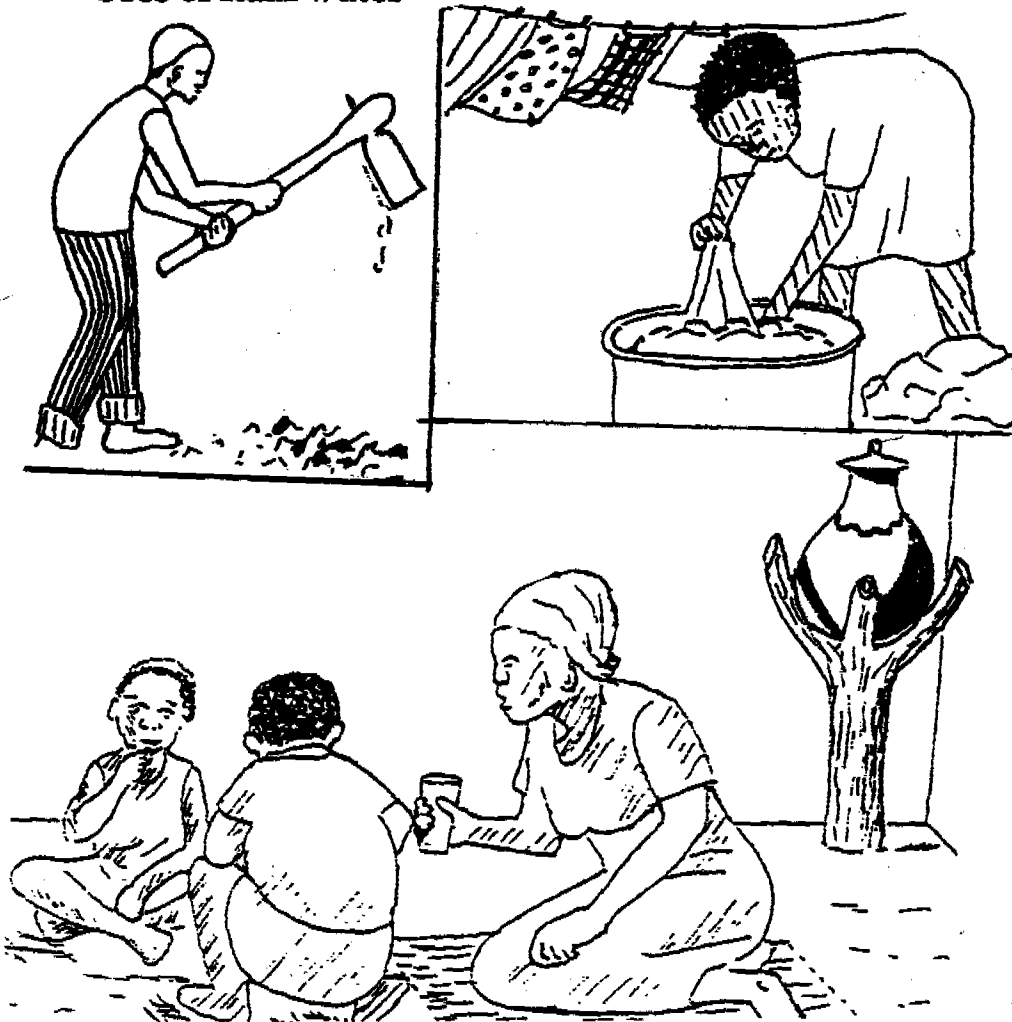


#### **Activity 4:**

##### **Uses of Rain Water**

- (a) Pupils should be made to discuss the uses of rain water, e.g. for drinking, washing, farming and construction.
- (b) Pupils to draw pictures on the uses of rain water, e.g. ploughing and washing clothes.

##### **Uses of Rain Water**



#### **Activity 5:**

##### **Dangers of Contaminated Water**

- Personal health
- Pupils should name diseases caused by drinking contaminated water, e.g. cholera, dysentery, typhoid.



- Pupils to collect data from a health centre to determine the number of children who may have suffered from any of the mentioned diseases.
- Pupils should prepare a chart for display.

#### **Activity 6:**

#### **Effects of Rain Water on Health**

- (a) Pupils should discuss the effects of rain on the environment, e.g. rain collects on the ground where mosquitoes breed.
- (b) Rain water washes away soil.
- (c) Children play in dirty water where they may get worms and bacteria and may become sick.
- (d) Rain water takes pollutants (Chemicals, pesticides, etc.) into the rivers, lakes wells, etc.

### **36. MATTER (WATER)**

The topic deals with the importance of water in relation to health. It stresses the importance of protecting water sources and ensuring that water is safe up to the point of use.

Pupils are made to understand that many people get their water supplies from rain, rivers, taps, streams, lakes, wells and springs. The topic makes pupils realise that contaminated water can transmit cholera, typhoid, dysentery and other diarrhoea diseases.

When water is contaminated during household storage, it presents added risks especially where members of the family do not practise good hygiene behaviours such as having and using latrines, regular hand washing after defecation and before preparing or eating food. It shows that even if water is purified or collected from a clean and protected source, it may become contaminated. The activities which follow attempt to make pupils aware of the various water sources, uses of water, how it is contaminated and what the consequences of using contaminated water are. The activities also provide the pupil with skills for preventing contraction of water related diseases.

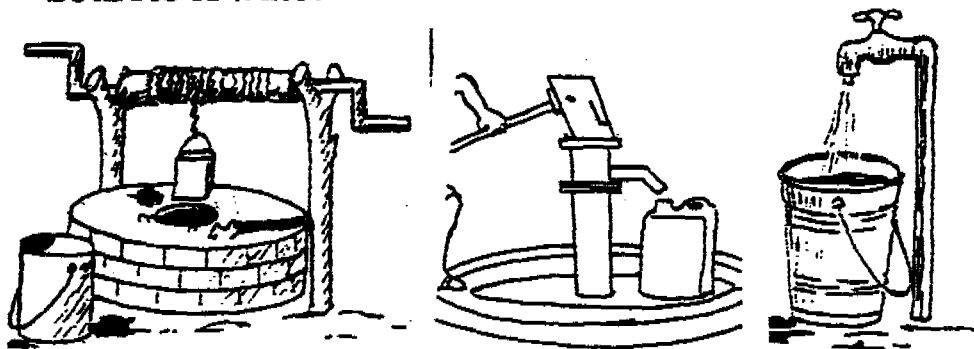
#### **Activity 1:**

#### **Sources of Water**

- (a) Let pupils name the different sources of water supply in their locality.

- (b) Ask pupils to draw a well, borehole and stand pipe or water tap.

### Sources of Water



- (a) Let children discuss where each of the water supply systems are usually found.
- (b) Children should discuss the advantages and disadvantages of each of the water supply systems drawn.

### Activity 2:

#### Uses of Water

- (a) Let children list various uses of water.
- (b) They should discuss whether they have enough water supply for bathing, washing and cooking.
- (c) Let the children suggest diseases which may occur if water was not enough (e.g. scabies and infant diarrhoea).
- (d) Children should be aware that diseases such as scabies are called water - washed diseases because they result from insufficient water for (bathing).
- (e) Children should dramatise a person suffering from scabies (careful not to stigmatise those who may have scabies in class).

### Activity 3:

#### Contamination of Water

The activity aims at making pupils understand that water can be contaminated at any point, i.e. source, distribution and storage, and that it is important to protect it.

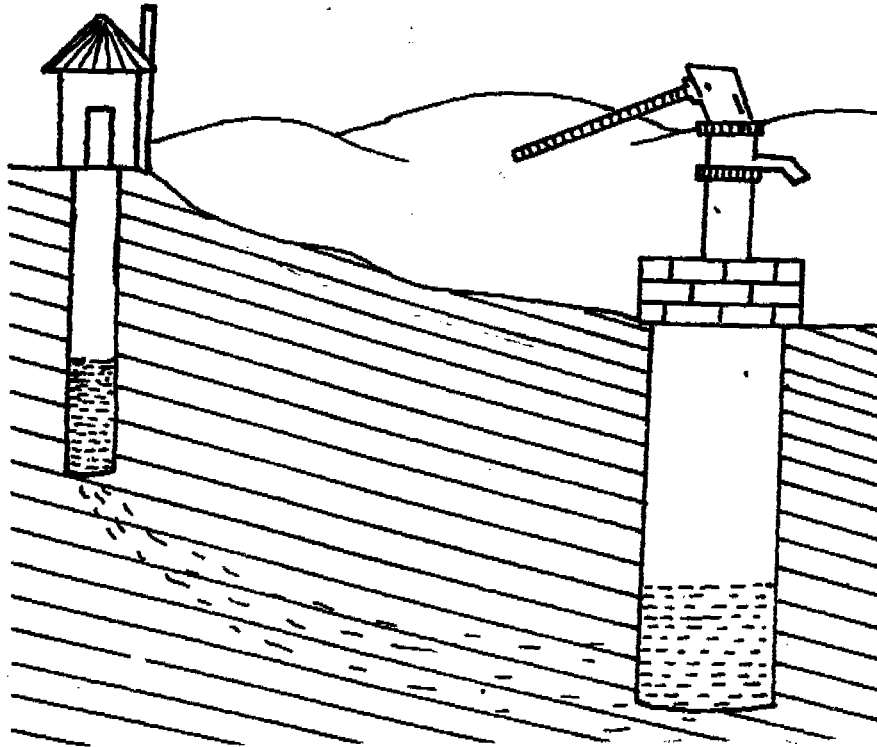
- (a) Let children conduct a field survey to look at water sources and collection points. Are these safe?
- (b) Children should discuss their observations in relation to distances to households and risks at each of the points.
- (c) Using a picture of a river or shallow well (showing animals grazing near the water, human beings bathing, and washing upstream with a pit latrine sited close to the source) let children identify sanitary risks.

#### **Contamination of Water**



- (d) Experimental activity will come for 'Social Science Group'.
- (e) Draw a communal tap, windless and borehole and ask children to identify sanitary risks around it.

### A Toilet and a Borehole



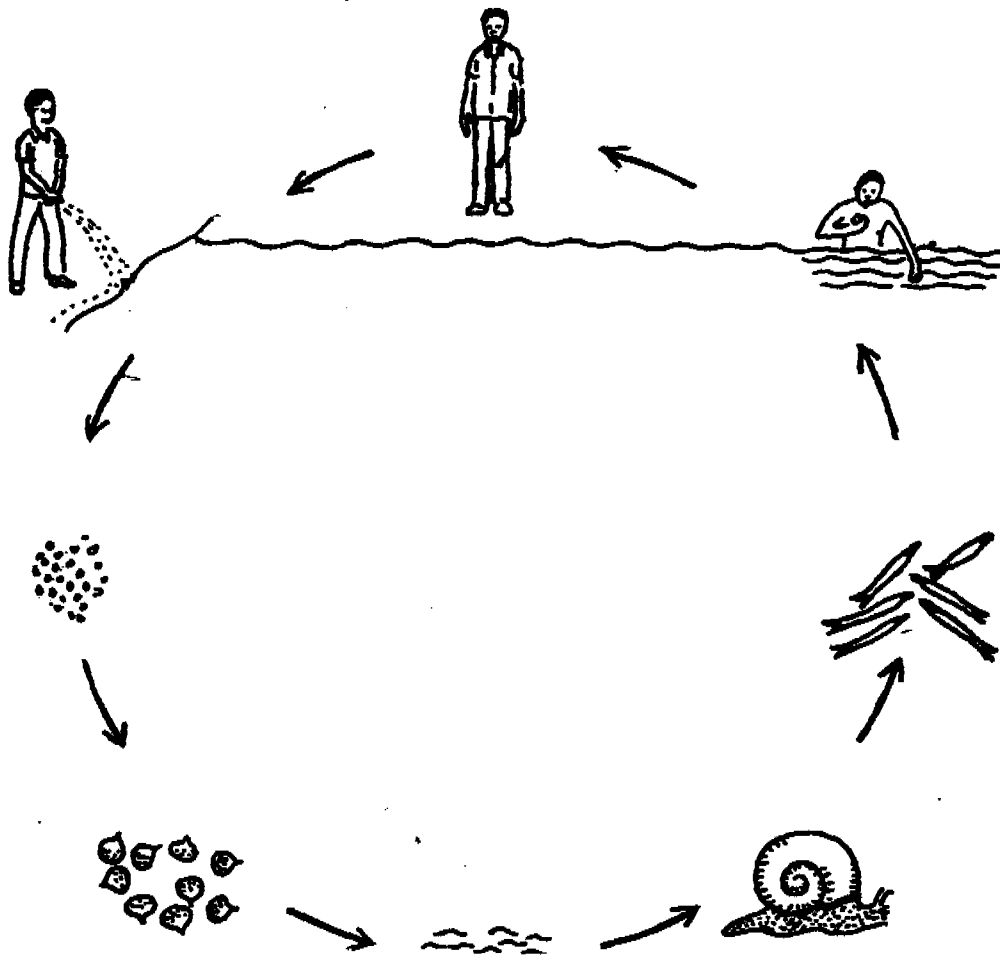
- (f) Using the above picture let children experiment how water may be contaminated at home, e.g. using dirty cups, washing hands before a meal, leaving the ladle or scoop lying outside the water container.
- (g) If there is a sewage or rubbish dump heap, let pupils explain how these can be possible sources of danger to health (e.g. to consumers, people collecting the waste for use and those working in the fields).

#### Activity 4:

#### Consequences of Using Contaminated Water

- (a) Let children state why contaminated water is bad, how water may be contaminated.
- (b) Let children classify cholera, bilharzia and malaria as waterborne, water based or water related.
- (c) Children should discuss the bilharzia life cycle.

## Bilharzia Life Cycle



### Activity 5:

#### Managing Diarrhoea Diseases at Home

The topic is a build up on the above activities.

- Let children discuss why patients with diarrhoea look like they do.
- Let the children state the main reason for giving a patient of diarrhoea plenty O.R.S. and other fluids.

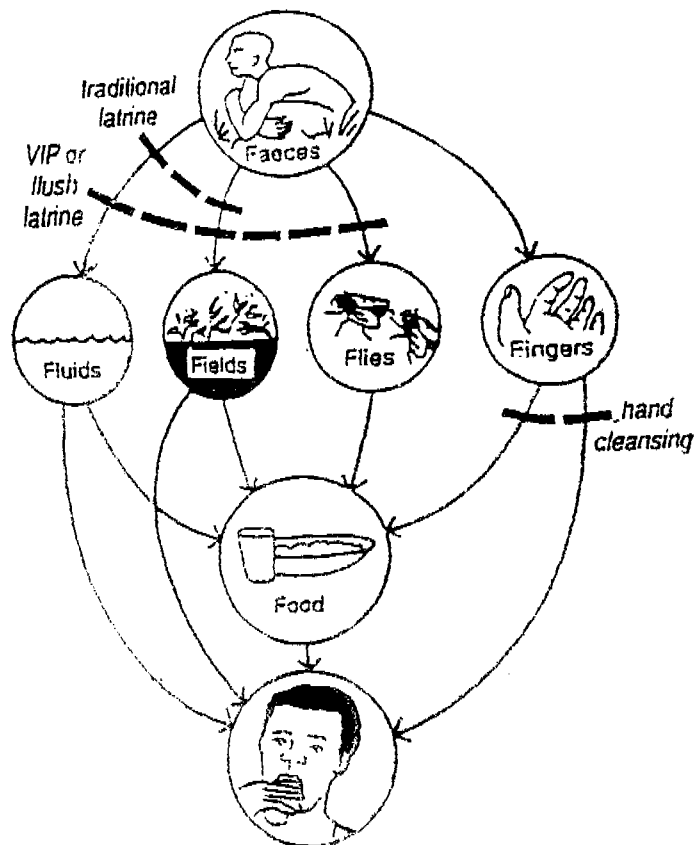
### Activity 6:

#### Hygiene Behaviours

There are many transmission routes for diarrhoea diseases, all of which are influenced by different hygiene behaviour.

- (a) Let children identify hygiene behaviour such as: everyone should use safe water, water should be efficiently used and not wasted, waste water should be properly disposed of; drinking water should be collected in clean vessels, water should be transported in covered containers, adequate water should be available (30-40 litres per person), hands should be washed with soap or ash before preparing or eating food, waste water (spillage) should be (drained) disposed of effectively.
- (b) Pupils can draw some of the practices especially those that are most beneficial for the locality.
- (c) Let children draw the five finger route of transmission as shown below and state health behaviours for breaking the transmission cycle.

**Faecal - oral route Transmission**



## **37. FARMING**

Improved farming methods have improved the life of people in many ways. People now live longer because of improved diet and high quality of life. Farmers are able to grow more resistant crops to diseases thereby increasing yields. This is so because farmers have been able to use fertilisers and protect crops by the use of chemicals, such as pesticides. However, all these chemicals disadvantage the health of human beings.

During the rainy season these chemicals are washed away into water sources such as wells, lakes, rivers and dams. The result is contamination of the sources and in the process making the water source unsafe. This 'poisoning' of water has bad effects on people's health resulting in diseases and death in some cases.

Some farmers may use sewage water as manure in their fields. If the water is not properly treated, it could cause great health problems. Some problems caused include the following:

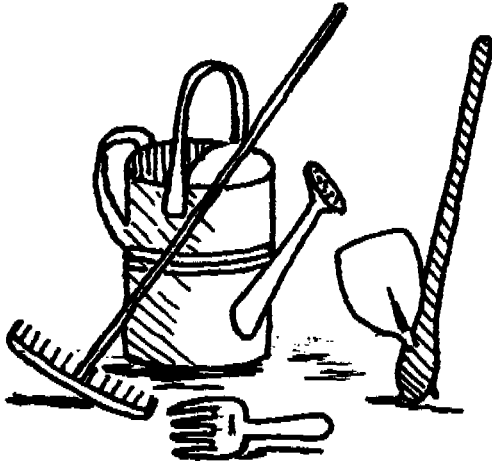
- The risk to health caused by germs in waste water.
- Some chemicals could be taken in by plants. These chemicals usually stay in the plants and are eaten by humans in the food produced.
- There is a great risk to health, especially to field workers from worms called helminths.
- There is also the risk to health from chemical contaminants in waste water. This is particularly the case in urban areas where factory wastes are discharged into the sewage system or directly into rubbish heaps. The discharge find their way into the water sources and contaminates the water.

However, if and when correctly treated, these effluents can be used to irrigate trees, industrial and fodder crops, fruit trees, food crops, sports fields and public parks.

### **Activity 1: Common Farming Tools**

- (a) Pupils in groups to discuss and draw the commonest farming tools in their locality.
- (b) Let children discuss the uses of the various garden tools.
- (c) Can these tools be used to dig wells for water. If so, how?

## Some Farming Tools



### Activity 2:

#### Common Corps Grown

- (a) Children to mention different kinds of crops grown in their locality.
- (b) Pupils can discuss where or what is used to grow these crops.
- (c) What consequences are there if these crops were irrigated with contaminated water.

### Activity 3:

#### Application of Pesticides, Fungicides and Herbicide

#### NOTE:

Insecticides are chemicals that are applied to plants to kill pests, e.g. Aphids.

- (a) Children draw a diagram of a garden and a man/woman spraying pesticide.
- (b) Pupils to list various ways of making crops sprayed with pesticides/fungicides/herbicides safe to eat.
- (c) Pupils to suggest safe ways of disposing of left over insecticides, etc.



## Crop Spraying

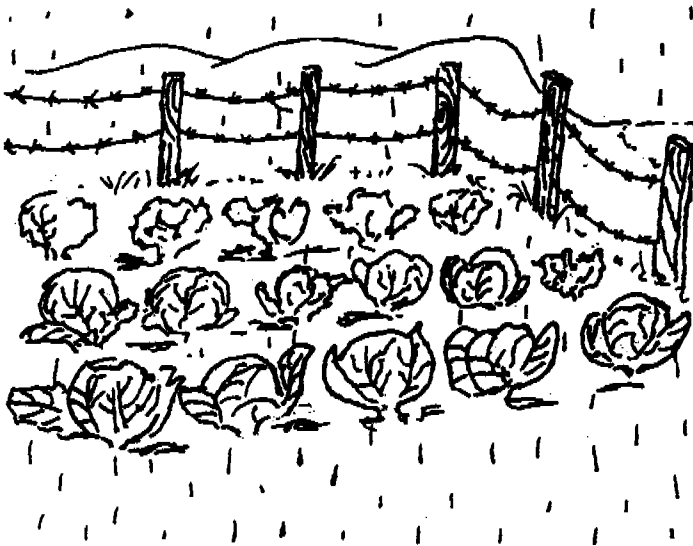


### Activity 4:

#### Contamination of Water by Pesticides

- (a) Let pupils discuss, in groups with the help of a diagram, what would happen if rain fell after spraying crops with insecticides.
- (b) Let children suggest other ways in which the garden would be a possible source of environmental contamination.

#### A Vegetable Garden



## 38. FORCES

Forces as they apply to simple levers assist human beings in a variety of ways. A wheelbarrow, a simple machine using forces (first degree levers) assist to move with ease, a heavy load. The same forces help us in obtaining water from different sources. For example, obtaining water from a shallow well (first degree levers); from a windlass (second class levers) and from a hand operated borehole (third class levers).

Pupils should also understand forces well to enable them carry water containers with ease and without doing harm to their bodies. For example, they should have the finish and full factors involved in moving a drum full of water from source to point fuse. Pupils should also experiment and decide on safer methods of carrying various sized water containers. For instance, effect gravity has on bucket/calabash of water on head; hanging in one/two hands; one/two ends of stick and many others; and effect these forms have on the healthy space of an individual.

### REMEMBER:

When forces are applied correctly they make some house chores easier and interesting .

### Activity 1:

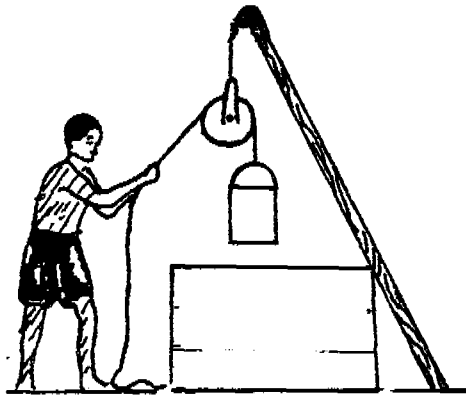
#### Forces: Drawing Water

#### NOTE:

The activity attempts to make pupils aware of the various methods of obtaining water from different sources using a variety of levers (Forces).

- (a) Let pupils identify types of levers and collect (draw) water from a
  - (i) Shallow well (easy work - unsafe water)
  - (ii) "windlass" (difficult/hard work - safe/unsafe water)
  - (iii) Borehole - hand pump (easy/easy work - safe water)

#### Pulley



### Activity 2:

#### Balance: Carrying Water

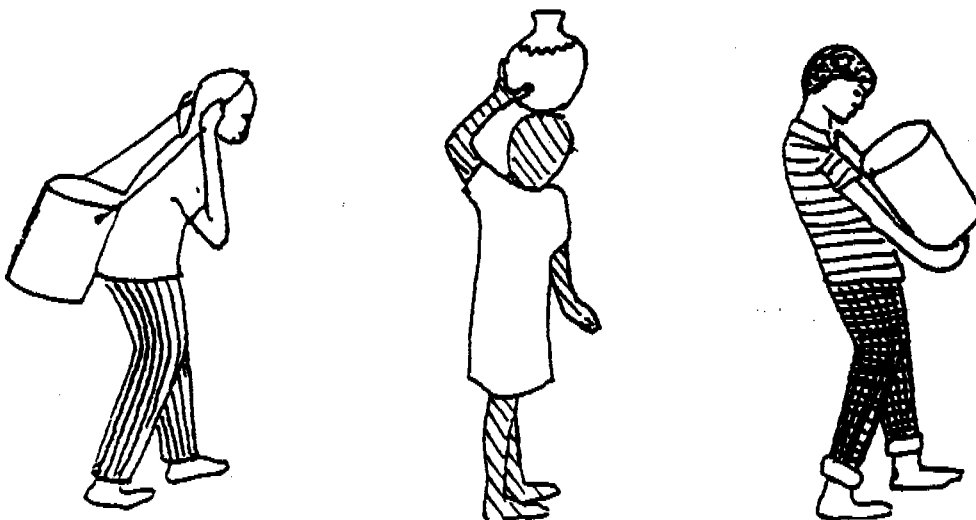
Pupils should be made aware of the different methods of carrying water and the effects of exacting gravity on the health of the people.

- (a) Pupils to draw diagrams of different ways/methods (used in the locality and neighbourhood) practised in carrying water.
- (b) Of the methods drawn above, let pupils list methods of carrying water in order of (user-friendly) preference.
- (c) Pupils to discuss effects of the methods on the body of a person.

### Activity 3:

#### Gravity: Types of Water Containers

- (a) Pupils to draw/list different types of containers used in the collection of water and possible ways of carrying these.
- (b) Pupils to discuss effects of gravity on the body of the carrier.
- (c) What are the advantages and disadvantages of
  - (i) Pushing or pulling a drum full of water against gradient.
  - (ii) Carrying a pot of water on the head.
  - (iii) Carrying a pail/two pails of water in one/two hands.
- (d) Pupils to discuss the effects of each of the above (c) on the health of an individual.



#### Possible Ways of Carrying Water

## 39. SANITATION

Human excreta always contain one type of germ or another in very large numbers. When careless individuals defecate in the open they allow flies to feed on the excreta. The faeces are then carried by the flies on their feet and later deposited on food or water we take causing illnesses. During the rainy season excreta is washed away into rivers and may percolate into shallow wells where we draw water.

Another problem area is the disposal of solid and liquid waste. When refuse disposal is not properly done, it will always pollute the environment and may contaminate rivers and wells.

It is important that people observe at least three key hygiene behaviours which can help to prevent diseases:

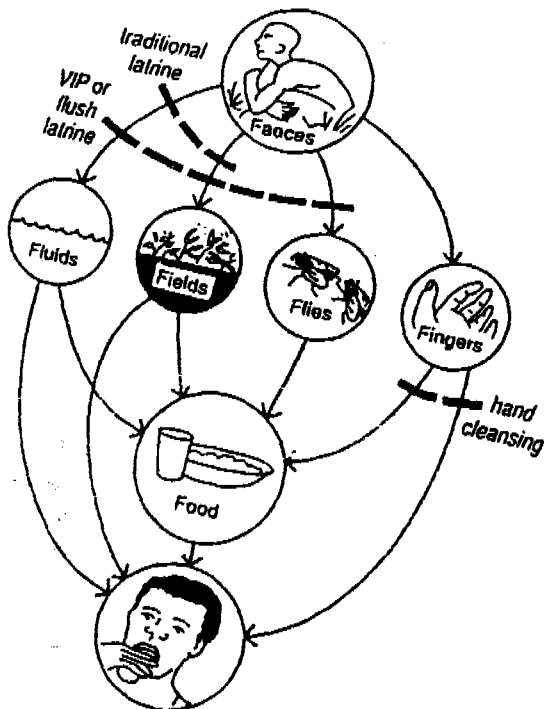
- Safer disposal of faecal matters.
- Washing hands,
- Boiling water.

### Activity 1:

Let children list ways in which faeces can reach the mouth of a person and thereby making him or her sick.

The teacher may draw the faecal - oral route transmission (see below): flies to faeces to food to mouth or fingers soiled with faeces and later touches food which is thus contaminated and eaten.

### Faecal - oral route Transmission



### **Activity 2:**

- (i) Let pupils discuss the different types of latrines available in the community and those which they might have seen elsewhere.
- (ii) Children draw or start practical construction of the ventilated improved latrines after visiting some.
- (iii) Let them discuss the advantages and disadvantages of a simple pit latrine and a ventilated improved latrine.
- (iv) Pupils should carry out a community survey of the number and types of latrines.

During the survey, pupils should note and discuss the importance of proper siting of the latrines in relation to households and water sources.

Children should realise that a latrine can actually be a source of danger and nuisance in terms of diseases and pupils should state how they can care for their toilets.

### **Activity 3:**

Household refuse, even if not containing large amounts of germs as do faecal matter, can attract flies, mosquitoes and rats. This may result in the spread of diseases such malaria, dysentery, bubonic plague, etc.:

- (i) Let pupils discuss the dangers associated with careless and unplanned disposal of household refuse.
- (ii) Let them discuss the proper siting of refuse pits; (at least 20 metres from the kitchen or food preparation area and well above the highest ground water level); hazardous waste should be deposited on impervious rock or clay to stop percolation into the water. Children should mention covering the disposal pit with some lid, soil or dry refuse should be burned to ashes to kill and stop the spread of germs.

## **SECTION E      MATHEMATICS**

**Mathematics is used to solve problems practically in our daily lives. It's application in relation to improving the quality of life for people is rarely explored. Integration of WASHE into Mathematics is one of the ways of exploring how useful mathematics is.**

**This integration has been done generally for grades one to seven. The long term skills and the objectives as provided for in the syllabus for Basic Education have been adopted.**

**Eleven topics, namely Sets, Number, Time, Money, Measurements, Social Arithmetic, Ratio and Proportion, Shapes, Percentages, Statistics and Graphs, have been identified for integration purpose. Background information is given for each topic. Teachers are expected to read the suggested activities carefully. They should also ensure that the suggested WASHE activities are carried out practically by the pupils.**

#### 40. SETS

The concept of sets is the basis of mathematics. It is about groups of things which are common. The teacher should ensure that the idea of grouping is used to enable pupils to classify or group things such as diseases, water sources, toilets, food, medicines and so on.

##### **Suggested Activities:**

Let Pupils:

- (a) list different types of toilets and pit latrines. Discuss how and when they are used.
- (b)
  - (i) list the set of waterborne diseases common in their community.
  - (ii) suggest ways of preventing them.
- (c) list common methods of preventing malaria and classify these methods.
- (d)
  - (i) list the set of things that are used to clean toilets.
  - (ii) Write subsets of utensils and how they are stored and made safe.
- (e) list the things that are thrown in rubbish pits and group the ones which are similar.
- (f)
  - (i) list containers which are used to store water.
  - (ii) suggest ways of making water clean and safe for drinking.
- (g)
  - (i) carry out a survey in their class to find pupils who use rubbish pits at home.
  - (ii) present data in a graph.
  - (iii) Discuss advantages of having rubbish pits and disadvantages of not having them.
- (h) discuss sets of disposal systems used in their school, home and community, e.g. pit latrines, water borne toilets, etc.

#### 41. NUMBERS:

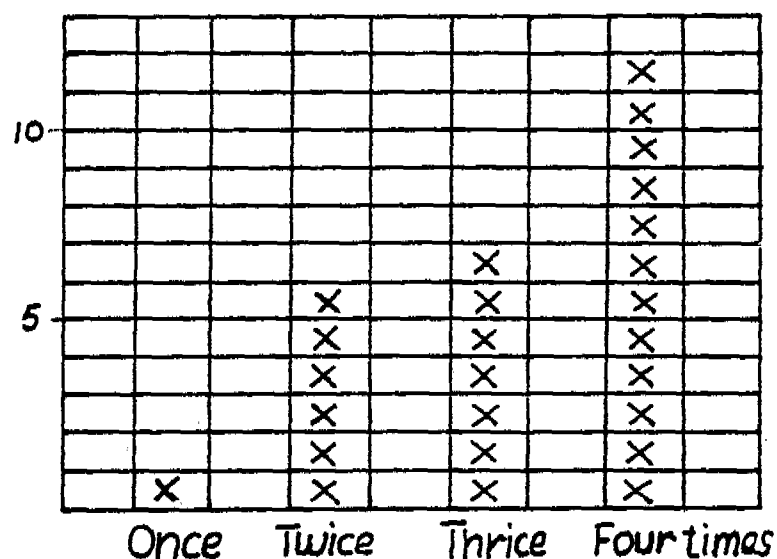
Basic knowledge of number is necessary in our daily lives. Teachers should guide pupils to realise that large numbers of people compete for social amenities such as clean water, toilets, food and health facilities.

#### Suggested Activities

Guide pupils to carry out the following activities:

- Count the number of toilets and houses at school and in the community.
- Compare the number of pupils' and teachers' toilets.
- Compare the number of boys' and girls' toilets in the school.
- Children can carry out a survey at their own homes. They can find out how often children under two years old drink water each day. Results can be shown as follows:

#### The number of times children drink water



Now answer these questions.

- How many children drank a lot of water?
- Why do some children drink a lot of water?
- What is the difference between those who drank twice and those who drank four times?
- List three uses of water in your body.



- (e) Let the children tell where they collect water from and to plot the information on the graph and discuss the results.
- (f) Let pupils carry out a survey of bathing soap used by their family members. Let pupils make three different graphs on quantity, quality and cost.
- (g) Let the pupils carry out a survey of either communal taps or communal wells in their communities. Then ask them to find the number of people using one tap or well. Encourage them to write the ratio of the use of these facilities to people, for example:
  - (i) How many times do people or families use the communal tap?
  - (ii) How many times do people or families use the communal well?

Lead them to discuss their findings.

## 42. TIME

People do things at different times in their lives. Time is money. When we are unwell, life can be saved by either taking appropriate medicine or by getting to hospital in good time.

### Suggested Activities:

- (a) When to take medicine. Let pupils write the following:

1 x 4 means 1 tablet taken 4 times a day.

This means 24 hours  $\div$  4. 1 tablet should be taken every after 6 hours.

If your first tablet was taken at 08.00 hours. when is your next tablet supposed to be taken?

2 x 3 means 2 tablets taken 3 times a day.

This means 24 hours  $\div$  3. 2 tablets should be taken every after 8 hours.

1 x 2 means, 1 tablet taken 2 times in a day

This means 24 hours  $\div$  2. 1 tablet should be taken every after 12 hours.

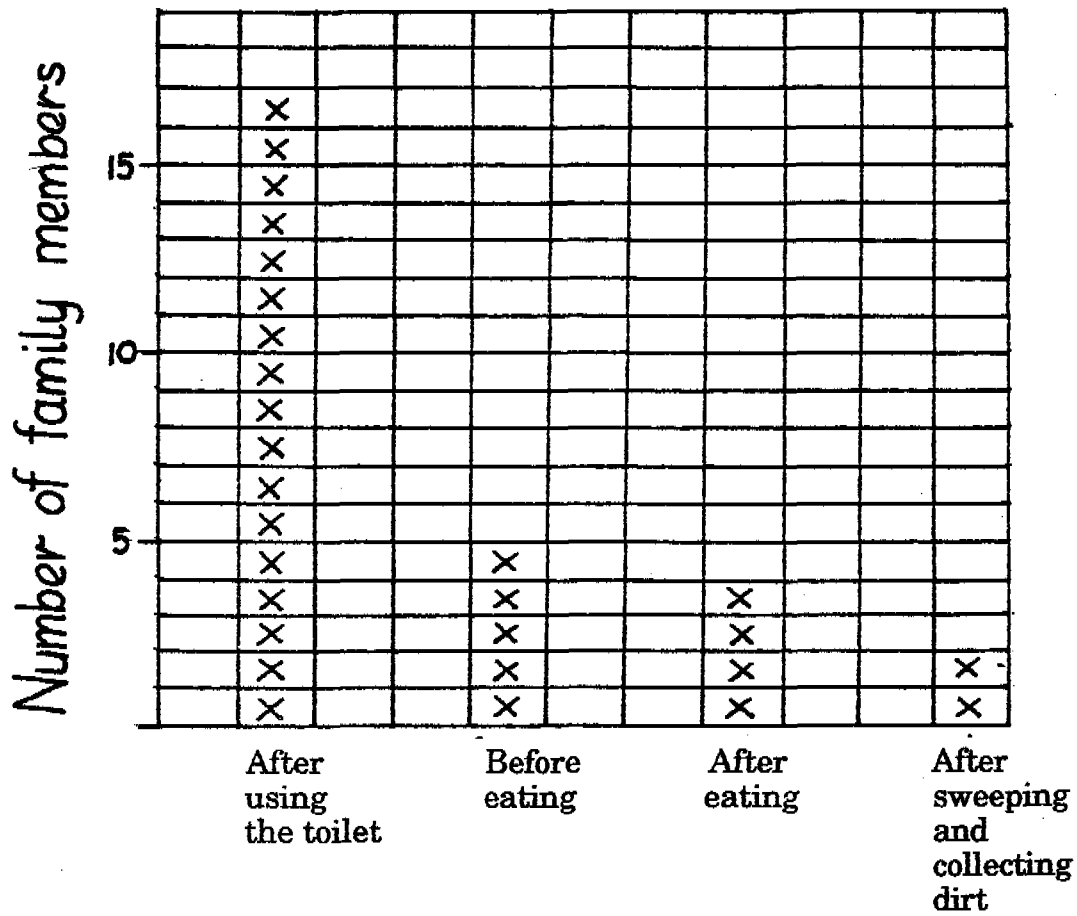
(b) Let pupils state when they do the following and why:

- wash their bodies
- eat
- wash hands
- collect water
- water flowers and vegetables
- clean utensils, stoves, rooms, surroundings.
- play

(c) Survey on washing hands per day.

Let children find out how many times their family members wash their hands per day. The children can display the results in the form of a chart like the one shown below:

**Washing Hands Per Day**



**Now answer these questions.**

1. How many family members don't wash their hands after using the toilet? Why?
  2. Find the difference between those who wash their hands once and those who wash their hands thrice.
  3. What is the number of family members who are aware of hygiene?
  4. Find the number of those who do not wash their hands after using the toilet or pit latrine.
- 

### **43. MONEY**

Money is the medium of exchange. It is used to buy things like food, medicines, shelter, clothes, utensils, soap (both washing and bathing), cleaning material, e.g. detergent and brooms as well as pay for water bills and other services.

**Suggested Activities:**

- (a) Let children investigate all the different ways in which money can be spent to buy toothbrushes, tissues, toothpaste, soap, brooms, rakes, water cans, hosepipes, buckets and disinfectants.
  - (b) Let children make up a budget for the items in 'a'.
  - (c) Pupils carry out a survey of different detergents and their cost.
- 

### **44. MEASUREMENTS:**

Measurements are vital in our daily lives. Guide pupils to explore the usefulness of measurements by manipulating mathematical data on water and health issues.

**Suggested Activities:**

1. Let children measure and record the distance between water supply and the latrines. Discuss the dangers of having the water supply closer to the latrine.
2. Ask pupils to estimate and measure litres of water they use for drinking, cooking, washing dishes, bathing and washing their clothes.

3. Ask children to measure containers of water they use in drawing and storing water.
4. Make scale drawing of toilets and wells and discuss them.
5. Ask children to draw maps showing sources of water and location of pit latrines and rubbish pits at their homes.
6. Involve pupils in the construction of pit latrines in schools and homes as a contribution to the school and homes.
7. Let the children use water metres to calculate water use. For schools which have piped water let the children bring to school old water bills, let them find out the number of litres used, e.g. consumption of 24,000 litres per month can be calculated on daily use per person as follows:

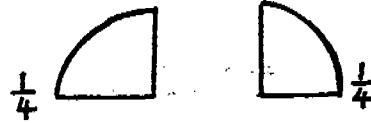
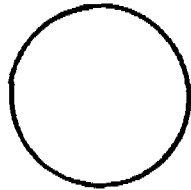
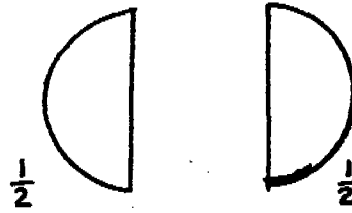
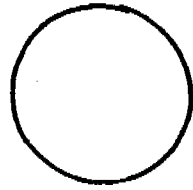
- number of people in a house = 10
- average daily use = 24 000  
30 litres
- average daily use per person =  $\frac{24\ 000}{30} = 80$  litres

The children can compare the daily use per person with others and explain where all the water goes.

8. Sometimes fractions are used to determine the quantity of medicines to be given to patients who suffer from various diseases, e.g. dysentery, bilharzia, cholera, typhoid, and scabies. The measurements can be:
  - (a) half tablet
  - (b) quarter tablet
  - (c)  $\frac{5}{7}$  means that the medicine should be taken within 5 days time.
  - (d)  $\frac{3}{52}$  means that the medicine should be taken for a continuous period of 3 weeks.
  - (e)  $\frac{1}{12}$  means that the medicine should be taken for one month.

If a patient with typhoid requires 20 seprine tablets, how many quarter tablets are there?

## Tablets



### NOTE:

Patients should take plenty of water when drinking tablets / pills such as septrine, panadols, aspirin or chloroquine. It is also advised that age be taken into consideration when giving medicines.

9. Estimate the length, width and height/depth of a normal rubbish pit.
- 

## 45. SOCIAL ARITHMETIC

The major purpose of this topic is to equip pupils with knowledge and skills in carrying out calculations involving money.

### Suggested Activities:

- (a) Let pupils calculate the cost of chemicals used to treat water.
- (b) As a class project, let the children design and calculate cost of water supply for their town or village.
- cost of pipe per metre K 5,000
  - cost of pump K60,000
  - cost of 4000 litre tank K40,000
  - cost of 60 000 litre tank K60,000

The children can work out what a water supply would cost for their village by:

- working out how far it is to the water source.
  - working out if a pump and tank are necessary
  - calculating the cost.
- (c) Pupils imagine that they have a certain amount of money to spend on food. They must buy food from each stall so that they have a balanced meal. Each child will have to decide how much money to be spent, e.g. each child should list foodstuffs to buy from K10,000 involving energy growth and protective foods.

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## 46. RATIO AND PROPORTION

In normal life, comparisons are done on daily basis. Ratio is used to compare quantities.

### Suggested Activities:

- (a) Comparing the number of girls to boys in a class, school and community in relation to facilities available.
- (b) Ratio of water use between one family, village and town to another.
- (c) Ratio and proportion on water maintenance supply and use.
- (d) Ratio of those not immunised for immunised diseases.
- (e) Comparing the heights and distances between places.
- (f) Make O.R.S. to treat diarrhoea in the following ratio:-
  - (i) 1 part of salt: 8 parts of sugar: 200 parts of water.
  - (ii) a pinch of salt: a scoop of sugar: a glass of water:
  - (iii) 1/4 tea spoon salt: 2 level table spoons full of water: 1 litre of water (1/4 teaspoon baking soda can be added). The solution should taste like tears.
- (g) According to health guidelines, the ratio of toilets is 1:10 for girls and 1:20 for boys. Based on this information, guide pupils to estimate the required number of toilets for girls and boys in the school. Discuss the results and suggest remedies.

- (h) Guide pupils to solve problems involving proportion, e.g. If two tablets of soap cost K700, find the cost of 5 similar tablets of soap.
- (i) Count the number of toilets in the school. Write the ratio of boys' to girls' toilets.
  - (ii) Discuss how long the break is. If every pupil in school has to use the toilet for 4 minutes during break, how many pupils will use the toilet? How long will it take? How many pupils will not use the toilet?
- 

## 47. SHAPES:

Our environment has various shapes. Guide pupils to identify them:

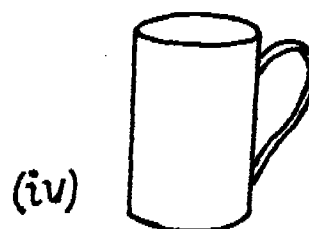
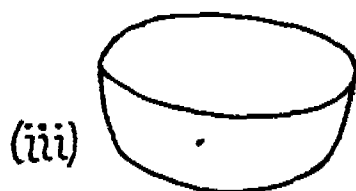
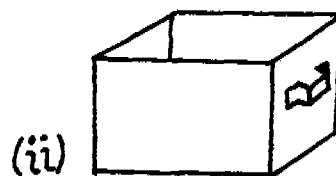
### Suggested Activities

Let pupils state why:

- (a) kitchen utensils such as pots and plates are mainly cylindrical?
- (b) water tanks, dustbins, wells and braziers are mainly cylindrical?

Let the pupils do the exercise on the next page:

### Utensils



Which of these utensils are easier to clean with water? Pupils should give reasons why.

- (c) Let the pupils identify the latrines and their shapes.
  - (d) Discuss the consequences of the depth and size of latrines.
- 

#### **48. PERCENTAGES**

Like ratio, percentages are used to compare quantities in life in order to solve practical problems.

##### **Suggested Activities:**

Guide pupils to carry out the following activities:

- (a) Let pupils go to the health centre, clinic or hospital and collect data of people who suffered from diarrhoea, cholera, malaria, dysentery and write down how many died from each of these diseases. Pupils should convert the figures to percentages and then compare them.
- (b) Children get statistical data of children born in their community and use the knowledge above to determine deaths likely to occur as a result of diarrhoea.
- (c) Find out what the children in your class believe about diarrhoea by carrying out a class survey (This may include HIV/AIDS, drug abuse, child abuse, pollution). Discuss the results and suggest that the children survey their parents and community. Work out the percentages from the results.
- (d) Children get the data of their community or town on population, e.g. for 1995 and 1996.

They use the data to calculate the population growth and express it in percentages.

- (e) Give pupils time to carry out a survey in a class of common diseases that affect them. Express this in percentages and discuss the results.
- 

#### **49. STATISTICS**

Use statistics to equip pupils with knowledge and skills of collecting, presenting data, reading, drawing, interpreting, and solving problems on Water, Sanitation and Health Education using graphs.



### **Suggested Activities:**

1. Charts of water sources, let children list different sources of water in their community and to draw the chart indicating sources of water. (e.g. well, river, tap, pond, lakes, spring, fountain, etc.). Let children discuss the most common sources of water.
2. Let children list different types of toilets they use in their community. Let groups of children draw graphs of data given. They can carry out a survey of the forms of sanitation used by different families in their location. They then make a chart of their results and discuss ways of improving sanitation.
3. Let the children carry out a survey on the number of wells dug or boreholes sunk in their area for a period of ten years and present that in a graph form.
4. Encourage pupils to carry out a survey on sewage disposal in their area by presenting the data in table form. They should be made to interpret their findings and to draw conclusions.
5. Survey on last illness: Discuss with the children the illness they had last. Make a graph from the information. Discuss the results with the children.
6. Life expectancy: The average number of years that people live is called life expectancy. Let the children carry out a survey of the average national life expectancy of Zambia and its neighbours. Pupils should present data in a graph. Discuss findings and consequences.
7. Let the class carry out a survey in the community of common diseases. They should also show this information on a chart. Discuss the results. Guide pupils to identify the most common diseases and how to avoid them and keep healthier.
8. Let children carry out a survey in their community of common diseases during the rainy season. Let them discuss water borne diseases and how to avoid them.
9. Pupils carry out a survey of their class to find out which children have been immunised. Present data in a graph. Discuss the findings.