



**Japan International
Cooperation Agency**

Learning Material
for
School Based First Aid Training
in
The Project on Children and Youth Development
in Kambia District in the Republic of Sierra Leone

April 2008

JICA Project Team

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for
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Appendix 1: List of School First Aid Kit

Reference: “Where there is no doctor – A Village Health Care Handbook –, updated 2004”, David Werner with Carol Thuman and Jane Maxwell, Macmillan, 2004

As the school first aid has a limitation, the trainees have to be aware that they should access to health personnel after the first aid, if the patient could not recover, or the condition is serious.

II. School Based First Aid Training

JICA Project Team (JPT) will provide training of moderators, in cooperation with District Medical Health Team in Kambia, in the Resource Center. The trainees in this training will be moderators in each community to provide first aid in the school and to sensitize people on importance of deworming and medical treatment.

Moderators and community should have strong commitment to treat children with slight injury and diarrhea and raise awareness of people on necessity and importance of deworming and medical treatment.

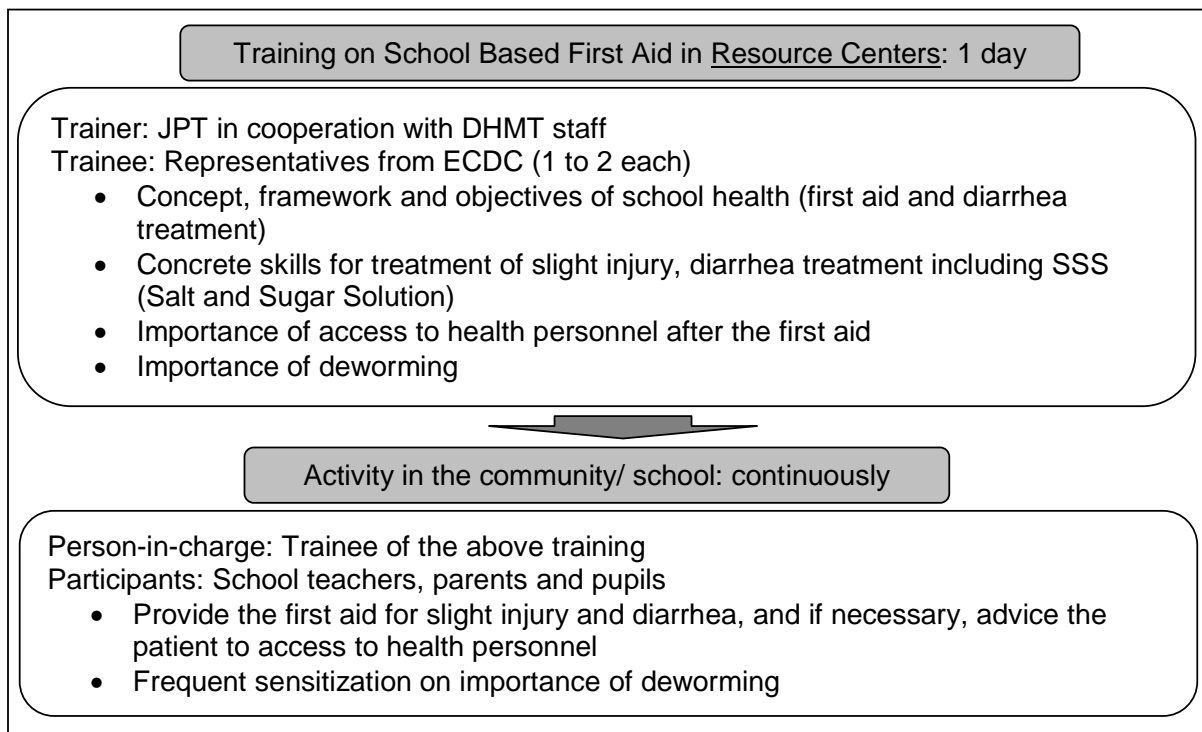


Figure 2 Framework of the Training

III. Standard Program of the Workshop

The workshop in the resource center will be conducted with the following timetable.

Time	Subject	Contents
09:00 – 09:15	Registration	
09:15 – 09:30	Introduction	➤ The trainer explain objectives and contents of the workshop
09:30 – 10:30	Diarrhea treatment at school	<ul style="list-style-type: none"> ➤ Why diarrhea treatment is necessary? ➤ How to treat diarrhea children in school ➤ Necessary tools ➤ How to make the tools clean (sterilization) ➤ How to prepare Oral Rehydrant Solution (ORS) ➤ How to prepare Salt and Sugar Solution (SSS)
10:30 – 10:45	Tea break	
10:45 – 11:30	Demonstration	<ul style="list-style-type: none"> ➤ Sterilizing the tools and make SSS ➤ Checking temprature
11:30 – 12:00	Worm and deworming	<ul style="list-style-type: none"> ➤ What will happen if children have worm? ➤ What will happen if a pupil has worm in school? ➤ Why is deworming necessary?
12:00 – 13:00	Lunch break	
13:00 – 13:45	First aid for slight injury	<ul style="list-style-type: none"> ➤ How to make the tools clean (sterilization) ➤ How to treat slight injury of school children
13:45 – 14:30	Demonstration	<ul style="list-style-type: none"> ➤ Trainees practice sterilization, checking temperature and bandage ➤ Explanation of the school based first aid kit
14:30 – 14:45	Use of toilet in the Resource Center	➤ How to use toilet in the Resource Center properly

IV. Outline of Each Subject

IV.1 Diarrhea Treatment at school

<Causes of Diarrhea>

The trainer asks the participants of the workshop, **“What are the major causes of diarrhea?”** , and let the participants discuss. Then the trainer explains the major causes of diarrhea with showing Figure 1 of this guidebook.

As shown Figure 1, the most common causes of diarrhea are infection and poor nutrition. When the children get diarrhea,

- Poor nutrition
- Unclean water
- Virus infection or intestinal flu
- An infection of the gut caused by bacteria, amebas or giardia
- Malaria
- Food poisoning
- Eating too much unripe fruit or heavy greasy foods, etc.

With good hygiene and good food, most diarrheas could be prevented. You can prevent diarrhea by preventing malnutrition and prevent malnutrition by preventing diarrhea.

<Treatment of Diarrhea in School>

Then, the trainer asks, “**What do you usually do when you find a child with diarrhea?**”, and let the participants discuss.

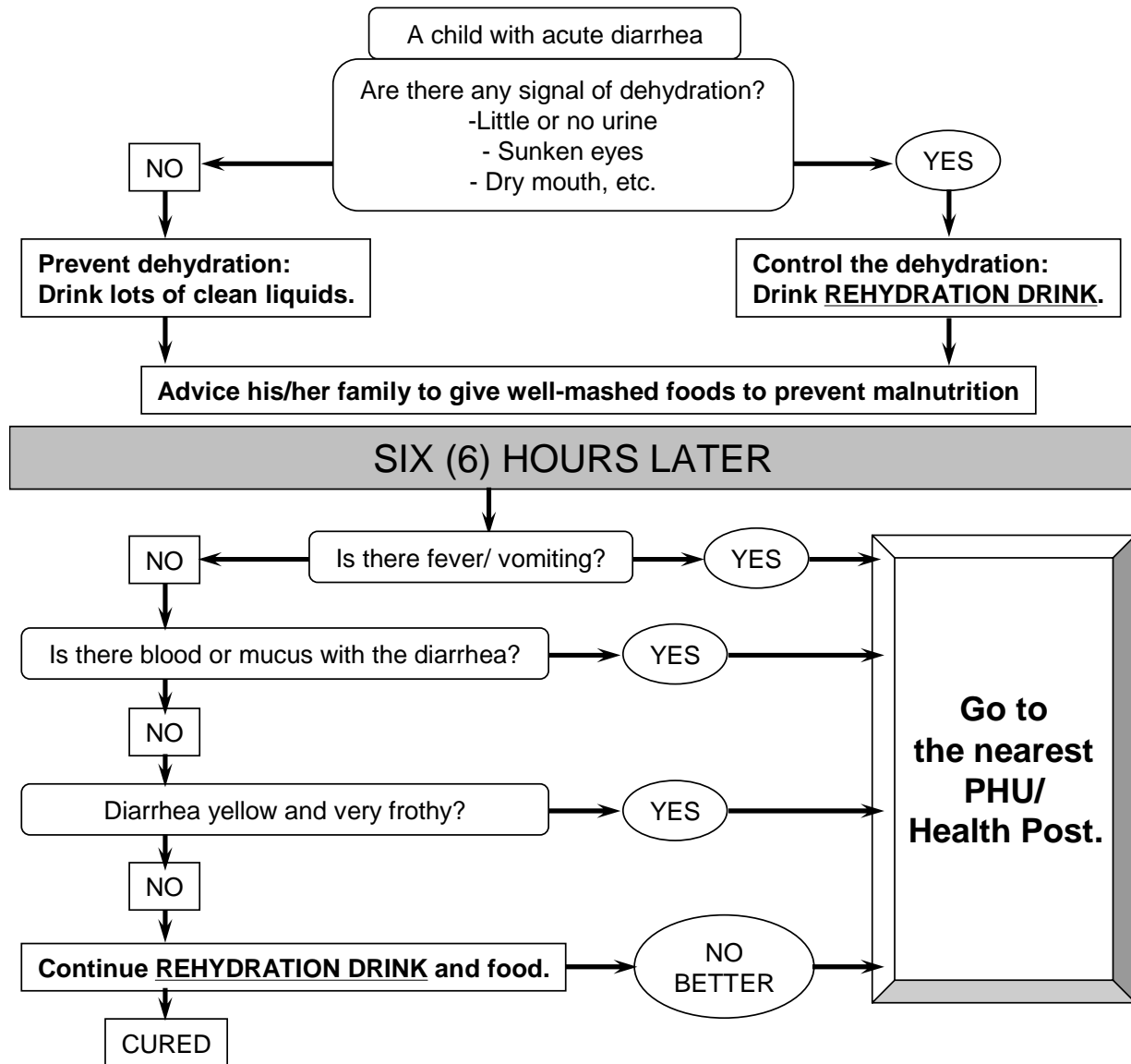
Then, the trainer shows the following figure and explains how to treat a child with diarrhea in school.

When you find a child with diarrhea or a child complains of diarrhea, you should do:

- (1) Check the urine (quantity and color);
- (2) Check the eyes (sunken?);
- (3) Check the mouth (dry?);
- (4) Check the fever (more than 38 °C); and
- (5) Check the excreta (blood, mucus, yellow and frothy?).

Basically, what can be done in the school is:

- (1) To check the child’s condition;
- (2) To provide rehydration drink; and
- (3) To advice them to go to the health facility.



Note: Liquids include clean water, jelly water, light tea without sugar, soup without pepper, etc.

Figure 3 Treatment of A Child with Diarrhea in School

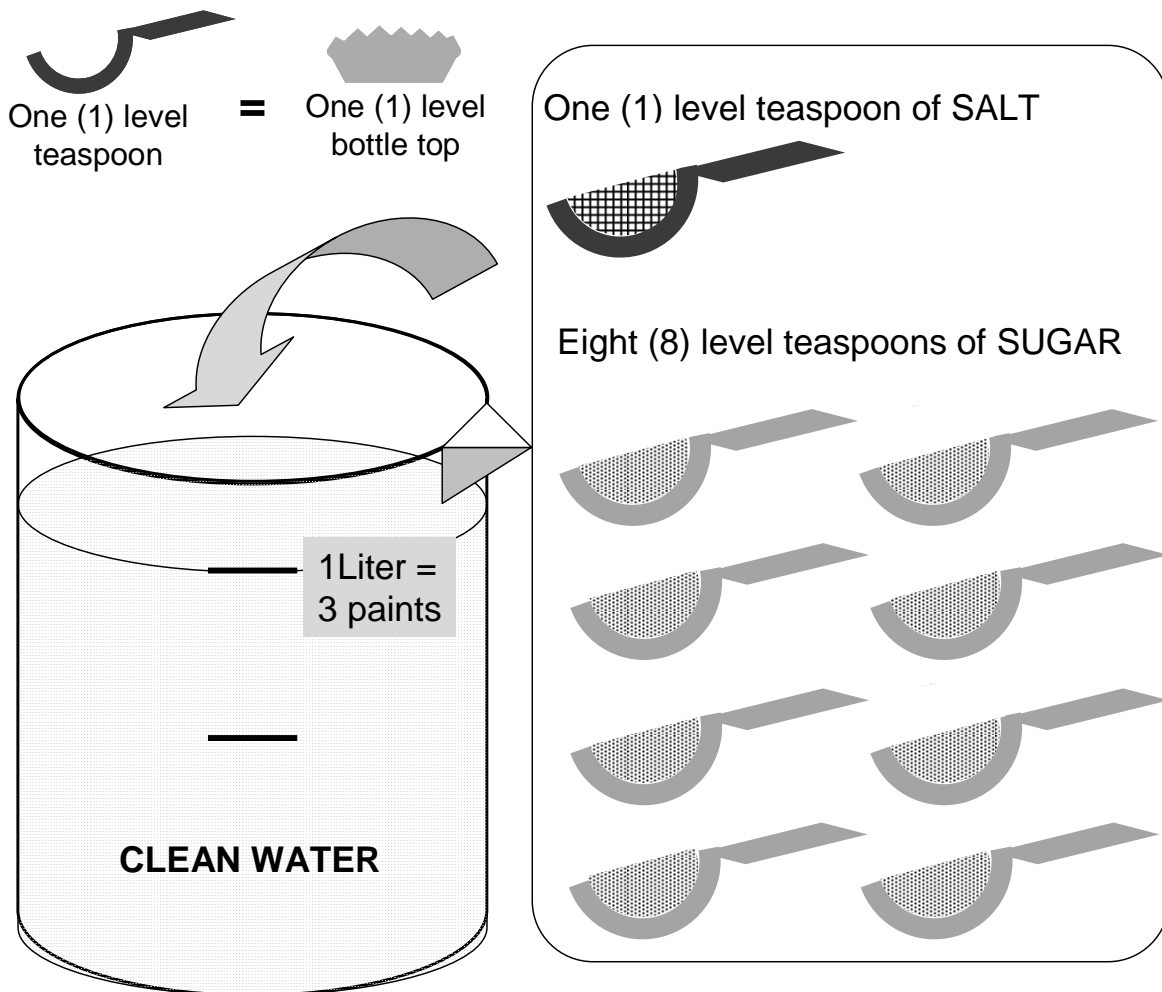
<Rehydration Drink>

Water cannot be absorbed well into the human body and sometimes causes the diarrhea more seriously. Therefore, water needs to be mixed with ions to treat a child with diarrhea. The Rehydration drink acts quickly.

There are two kinds of solution.

1. ORS (Oral Rehydration Salts): available in pharmacy.
2. SSS (Salt and Sugar Solution): You just need salt, sugar and clean water.

It is very important TO BOIL WATER ENOUGH (more than 5 minutes) TO STERILIZE WATER and cool it down in CLOSED AND UNCONTAMINATED PLACE BEFORE MAKING THE REHYDRATION DRINK.



Note: A bottle cap can be used instead of a spoon..

Figure 4 Salt and Sugar Solution

The SSS or ORS water can be drunk for 24 hours only. It must be changed with new one after 24 hours.

The Rehydration Drink shall be given to a diarrhea child.

- (1) A cup by a cup every 5 minutes until he/she begins to urinate normally.
- (2) A child usually need at least one (1) liter a day (3 liters for an adult).

- (3) Even if the child vomits, keep giving the drink small by small, then refer to the nearest health center immediately.

IV.2 Worm and Deworming

The trainer explains about:

- (1) Common worms in this area and the infection routes;
- (2) Major symptom of people with worm in this area;
- (3) Importance of deworming; and
- (4) Schedule and outline of the deworming program in this area.

~ For your reference ~

<Major effects on health>

- Stomach pain
- Anemia
- Weakness
- Fever (especially for a child)

<Prevention>

- Use a latrine
- Wash your hands after toilet and before eating
- Do not eat foods dropped on ground
- Keep a latrine clean

IV.3 First Aid for Slight Injury

The trainer explains about first aid for slight injury which might be common among school children such as:

- (1) Nosebleeds;
- (2) Cuts, scrapes and small wounds; and
- (3) Bandages

Then, the trainer mentioned after the first aid, if the injury seems to be serious, the trainee have to advice the patient to go to the nearest PHU/ Health Post.

Before treating injury person, wash your hands with soap and check your hands if there are no wounds. If you find some wounds, you should ask other person to treat it to prevent blood transmitted infection such as HIV/AIDS.

<Nosebleeds>

1. Sit quietly.
2. Blow the nose GENTLY to remove mucus and blood.
3. Pinch the nose firmly for 10 minutes or until the bleeding has stopped.
4. If there are too much bleeding or it cannot be controlled:
 - (1) Have the person sit quietly;
 - (2) Have the person hold a cork, corn cob or similar small object between his/her teeth;
 - (3) Leaning forward; and
 - (4) Try not to swallow until the bleeding stops.



< Cuts, scrapes and small wounds>

1. Wash your hands very well with soap and water.
2. Wash the skin around the wound with soap and **cooled boiled water**.
3. Wash the wound well with cooled boiled water. (If the wound has a lot of dirt in it, also with soap.)
4. Check the wound if there are dirt. If there is still some dirt, take it out with tweezers carefully.
(Wipe the tweezers with cotton with a little alcohol before and after use.)
5. Place a piece of clean gauze over the top. It should be light enough so that the air can get to the wound and help it to heal.
6. Change the gauze every day to check whether no infection. If you find a sign of infection, go to the nearest PHU or health post.

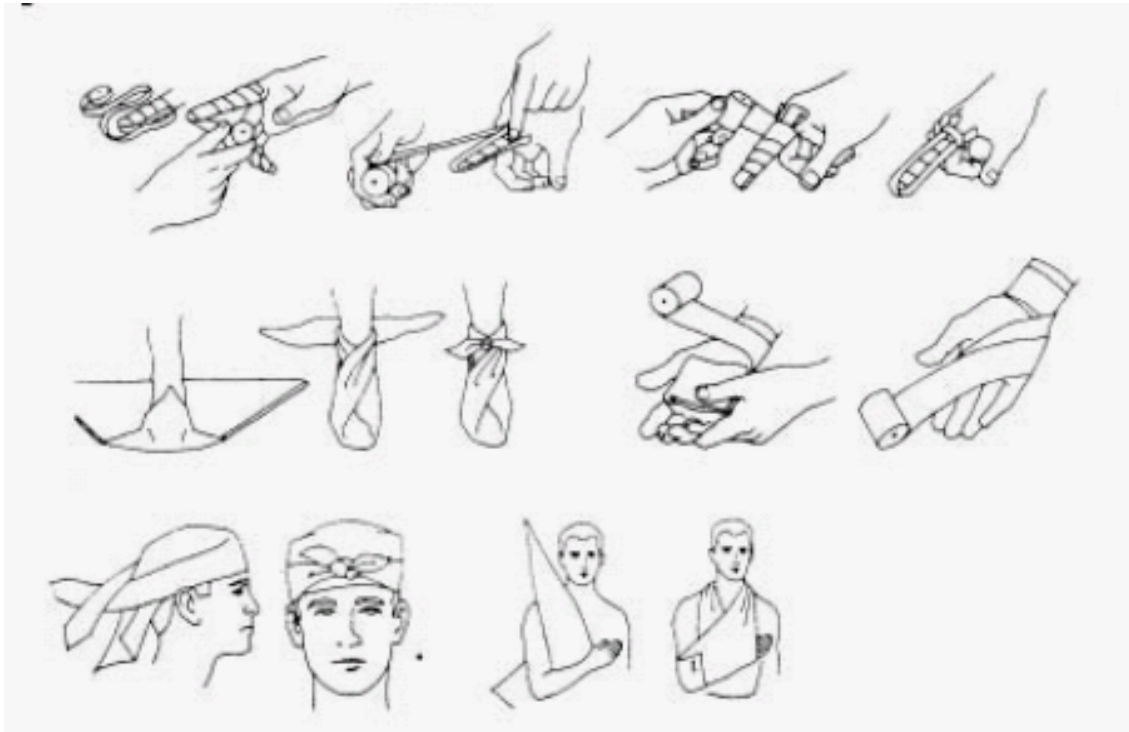


NEVER PUT ALCHHOOL, TINCTURE OF IODINE OR MERTHIOLATE directly into a wound. It will damage the flesh and make healing slower.

<Bandage>

The bandage must be kept clean.

The following shows examples of bandage for first aid.



You can also utilize handkerchief, scarf, or any other cloth to protect the injured part.

<Snake bites>

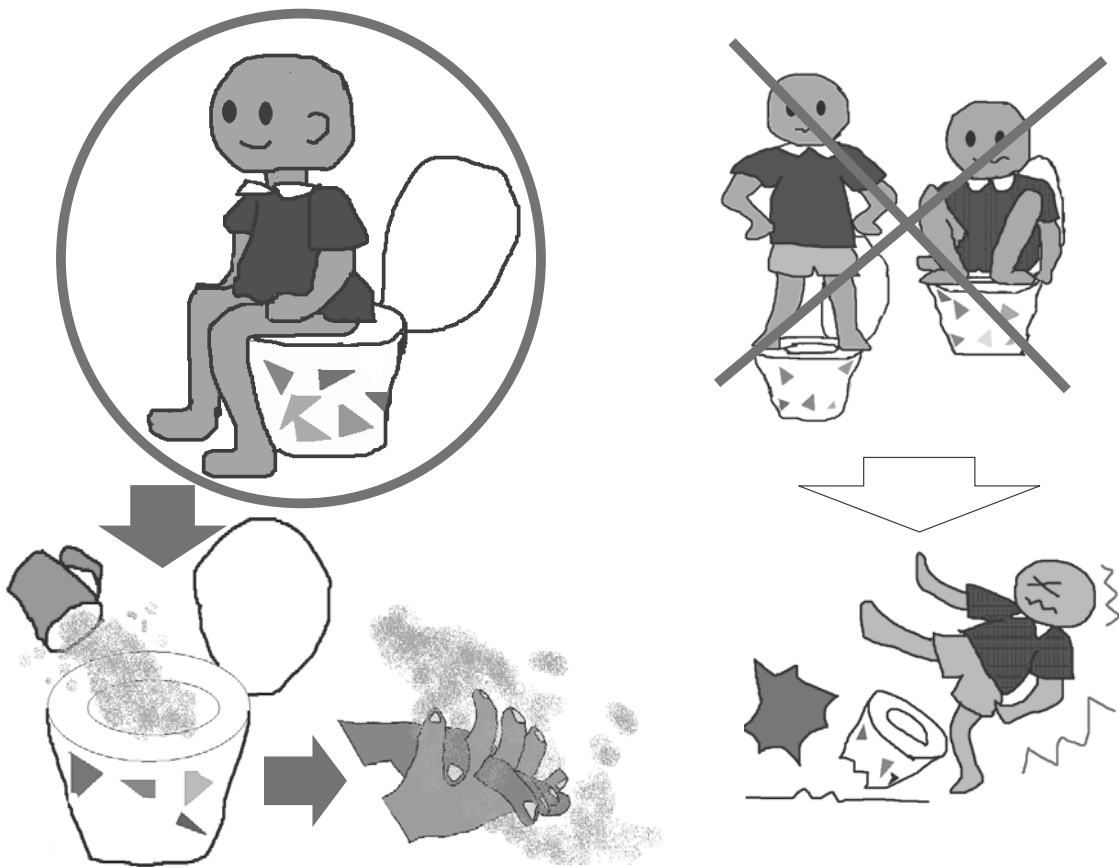
1. Arrest upper part of the bitten part and put it lower than your heart to prevent the poison going to the heart.
2. Do not move the bitten part to avoid the poison spreading fast.
3. Cut the bitten part to let blood drain off with poison.
4. Go to the nearest health facility.

<Fever>

1. Shake the thermometer carefully until a mercurial column goes down.
2. Put top of the thermometer underarm and wait 5 minutes.
3. Watch the mercurial column at the eye height.
4. If the temperature is more than 38 , wipe the child's body with wet towel or sponge and take him/her to the nearest health facility.

IV.4 How to Use Toilet in the Resource Center

- Sit properly, like sitting down on the chair.
- Do not stand or squat down on a toilet seat. It will cause breakdown of the toilet and injury of the user.
- Clean the toilet with water after using.
- Then, clean your hands. If you use a soap, it will be much better to avoid infection.



Appendix 1: List of School First Aid Kit

Item	Quantity	Unit
For wounds and skin problems		
Sterile gauze pads	1	(50 sheets)
1-inch gauze bandage rolls	1	(12 rolls)
Clean cotton (small package)	1	(Big portion)
Adhesive tape or adhesive plaster (1-inch wide roll)	5	rolls
Soap	10	bars
70% alcohol	1	liter/ bottle
Small bowl to put alcohol for sterilization	1	Unit
Scissors (clean)	1	Unit
Tweezers with pointed ends	1	Unit
Hand towel	3	Units
For measuring temperature		
Thermometer	1	Unit
For diarrhea		
ORS (Oral Rehydration Salt)	50	Units
Salt for SSS	1	Packet
Sugar for SSS	1	Packet
Small cooking stove with charcoal	1	Unit
Charcoal	1	Bag
Kettle	1	Unit
Bowl	1	Unit
Liter cup	1	Unit
Tea spoon	2	Units
Bottle top	2	Units
Mug cup with cover	2	Units
Small bucket with cover	1	Unit
Small cup to put on the bucket	1	Unit
For keep the above medicines and supplies		
Wood box to keep small items	1	Unit
Plastic bags to keep stocks clean	10	Units



**Ministry of Education,
Science and Technology**



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Moderator's Guide
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in
The Project on Children and Youth Development
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November 2007

JICA Project Team

**Moderator’s Guide for Basic Literacy Class in
The Project on Children and Youth Development in Kambia District
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I. Goal of Basic Literacy Class in the Project for Children and Youth Development in Kambia District

At the end of this class, the participants:

- **Can write their name;**
- **Can keep simple petty cash book to track their household expense for medium/ long term; and**
- **Are empowered and encouraged to participate in community activities actively**

In Basic Literacy Class in the Project for Children and Youth Development in Kambia District conducted by JICA and implemented by JICA Project Team (JPT), complete sets of support to operate full-scale literacy education cannot be provided. However, JPT recognizes the needs and importance of adult literacy, especially for women, to empower the community.

Therefore, JPT prepared this manual to support minimum literacy education activities to be conducted by Education and Community Development Committee (ECDC) aiming at the above goal.

II. Framework of Basic Literacy Class

JICA Project Team (JPT) will provide training of moderators, in cooperation with Ministry of Social Welfare, Gender and Children's Affairs (MSWGCA) in Kambia, in Resource Center. The trainees in this training will be moderators in each community to conduct continuous training courses.

Moderators and participants should have strong commitment to continue learning and the community should support them to achieve the above goal.

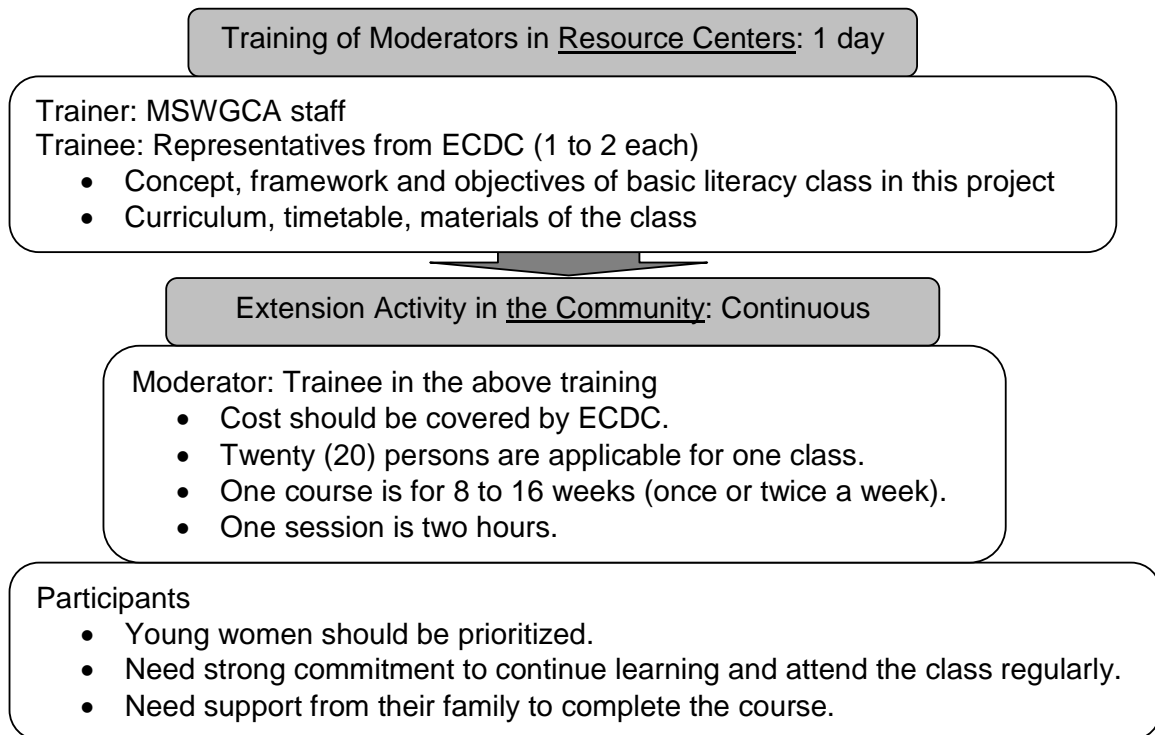


Figure II.1 Framework of Basic Literacy Class

III. Key Players of Basic Literacy Class

- **Moderators (who receive training in Resource Center)**
- **ECDC**
- **Participants**
- **Participants' family**

Main players are ECDC and community. JPT provide minimum support in cooperation with concerned organizations such as: training for moderators in Resource Center; monitoring of literacy activity in each ECDC; and providing technical advice to improve the class operation.

IV. Curriculum of Basic Literacy Class

To achieve the goal of the class (Chapter I), participants need to obtain writing and reading skills of both alphabets and numbers, as well as basic calculation skills. Therefore, the curriculum of Basic Literacy Class was formulated as follows.

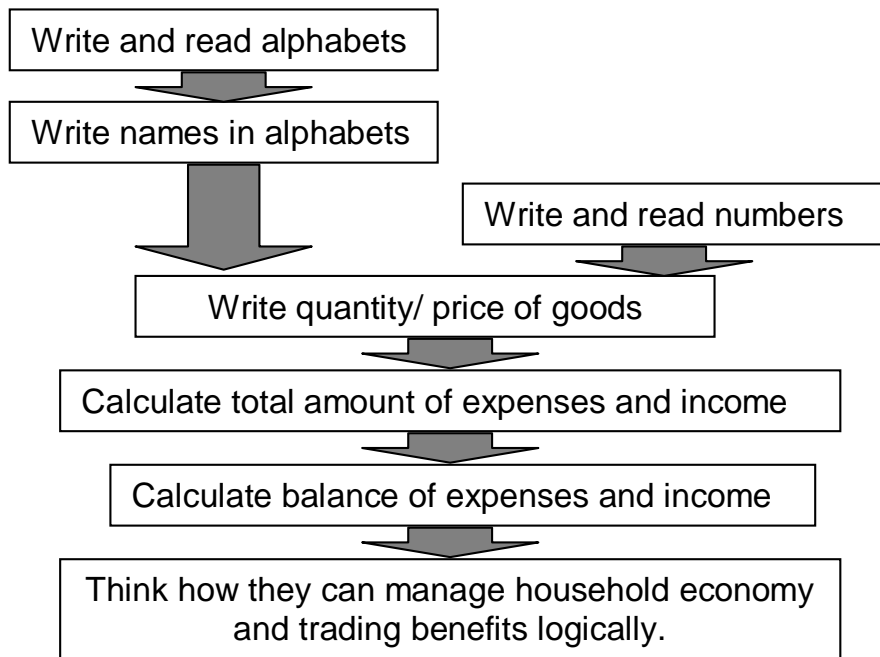


Figure IV.1 Curriculum Structure of Basic Literacy Class

The curriculum was designed for 16 lessons; eight weeks by twice a week or 16 weeks by once a week. Detailed subjects are shown in the next page and instruction guides are described in Chapter VI.

If the level of understanding of the participants is not enough, same subjects can be repeated.

Curriculum of Basic Literacy Class

No.	Subject	Contents
1	Alphabet writing 1	➤ A/a to M/m
2	Alphabet writing 2	➤ N/n to Z/z
3	Alphabet writing 3	➤ A/a to Z/z ➤ Write some words using alphabet
4	"What is your name?"	➤ Write their name ➤ Write their family's/ friends' name
5	"What do you have in your house?" 1	➤ Write the name of items, furniture, and tools which they have in their home
6	"What do you sell and buy in the market?" 1	➤ Write commodities/ goods in the market
7	"What do you spend for regularly?" 1	➤ Write items which they spend money daily/ weekly/ monthly/ annually
8	Number writing and reading 1	➤ 1 to 12, 20, 30... 100, 1,000, 10,000
9	"What do you have in your house?" 2	➤ Write the name of furniture, tools, goods which they have in their home ➤ Write quantity of those
10	Number writing and reading 2	➤ Amount of money
11	Basic calculation	➤ Addition and subtraction
12	"What do you sell and buy in the market?" 2	➤ Write commodities/ goods in the market ➤ Write price of those
13	"What do you spend for regularly?" 2	➤ Write items which they spend money daily/ weekly/ monthly/ annually ➤ Write their cost
14	"How much do you spend?"	➤ Calculate the total price and change
15	"How much do you spend?" 2	➤ Write name and cost of items in petty cash book ➤ Calculate the balance in petty cash book
16	Final evaluation	➤ Examination and evaluation
(17)	Simulation game (optional)	➤ Simulation game of financial management at household level

V. Standard Timetable of Basic Literacy Class

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Participants take a small test (same one as the last achievement test) to remember the last lesson.
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	➤ Moderator provide lesson about new topics.
15min.	Achievement test of today's lesson	➤ Moderator cleans the blackboard. ➤ Participants take a small test (10 questions) to know the level of understanding on today's lesson.
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Because the class is operated once or twice a week, some of the participants might forget the content of the previous lessons. In each lesson, participants need to remember what they learned in the last lesson to move to the next step.

Participants cannot learn too many things at once; therefore, the moderator should focus on the essence of new topics and repeat what they learn by the achievement test. From the results of the achievement test, the moderator can know whether participants understood today's lesson.

Moderators should encourage participants to understand the following basic rules to complete the course.

1. Participants should attend regularly without being late.
2. If participants are late for more than 30 minutes, they cannot attend the session.
3. If participants cannot understand the lesson well, they should not hesitate to raise hand and ask question to the moderator immediately.
4. Participants should pay contribution/ fees, if ECDC set some. (This is left to each ECDC's decision on what is best for achieving the goal)
5. Participants should bring note, pen and other materials necessary for the lesson.

VI. Detailed Instruction for Each Lesson

Detailed instruction for moderators including time table, objectives in each lesson and materials are described in this chapter. However, moderators can arrange the lesson in accordance with the level of understanding of participants.

VI.1 Alphabet writing 1

At the end of this session, participants will:

- Understand the concept, schedule and rules of this course.
- Be able to write and read alphabetic letters from “A/a” to “M/m”.

Timetable

Time	Subject	Contents
30min.	Guidance for participants	<ul style="list-style-type: none">➤ Moderator and ECDC explain the framework, curriculum and rules of this course.➤ Moderator and ECDC answer questions raised by participants.
30min.	Today's topics	<ul style="list-style-type: none">➤ Moderator shows how to write and read A/a to M/m one by one.➤ Participants write on their notebook following moderator.
15min.	Achievement test 1	<ul style="list-style-type: none">➤ Write A/a to M/m in order.
15min.	Evaluation	<ul style="list-style-type: none">➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Illustrated cards of alphabetic letters (A to M)
Alphabet table (Appendix 1)
Chalks & Blackboard
Achievement test 1 (See Appendix 2)

VI.2 Alphabet writing 2

At the end of this session, participants will:

- Be able to write and read alphabetic letters from “N/n” to “Z/z”.

Timetable

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Same as Achievement test 1
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	➤ Moderator shows how to write and read N/n to Z/z one by one. ➤ Participants write on their notebook following moderator.
15min.	Achievement test 2	➤ Write N/n to Z/z in order.
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Illustrated cards of alphabetic letters (N to Z)
Alphabet table (Appendix 1)
Chalks & Blackboard
Achievement test 1 for review test (See Appendix 2)
Achievement test 2 (See Appendix 2)

VI.3 Alphabet writing 3

At the end of this session, participants will:

- Be able to write and read alphabetic letters from “A/a” to “Z/z”.
- Be able to write and read some words shown in the illustrated cards using the alphabets.

Timetable

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Same as Achievement test 2
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	<ul style="list-style-type: none"> ➤ Moderator picks up 20 words from illustrated cards and shows how to write and read words in the illustrated cards. ➤ Participants complete Alphabet table by writing words.
15min.	Achievement test 3	➤ Write 5 to 10 words (depends on the level of understanding of the participants) learned today.
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Illustrated cards of alphabetic letters (A to Z)
 Alphabet table (Appendix 1)
 Chalks & Blackboard
 Achievement test 2 for review test (See Appendix 2)
 Achievement test 3 (See Appendix 2)

Note on the Achievement Test:

- From this session, Moderator should clean the blackboard before the test.
- Participants can look at their Alphabet table during the test.
- Moderator should spell out words in the test. For example, “Please write ‘ANT,’ A, N, T.”
- Number of words can change based on the level of understanding of participants

VI.4 "What is your name?"

At the end of this session, participants will:

- Be able to write and read name of them, their family and friends.

Timetable

Time	Subject	Contents
Preparation		➤ Moderator and some participants write alphabets (A/a to Z/z) on blackboard.
15min.	Review test of the last lesson	➤ Same as Achievement test 3 (choose same words as the Achievement test)
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	<ul style="list-style-type: none"> ➤ Moderator guides participants to write their name referring to alphabets on blackboard one by one. ➤ Moderator guide participants to write their children's and husband's name. ➤ Participants write on their notebook following moderator.
15min.	Achievement test 4	(Clean the blackboards, except alphabets) ➤ Write names of 5 persons.
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Chalks & Blackboards
 Alphabet table (Appendix 1)
 Achievement test 3 for review test (See Appendix 2)
 Achievement test 4 (See Appendix 2)

VI.5 “What do you have in your house?” 1

At the end of this session, participants will:

- Be able to write and read name of items, furniture and tools in their house.

Timetable

Time	Subject	Contents
Preparation	➤ Moderator and some participants write alphabets (A/a to Z/z) on blackboard.	
15min.	Review test of the last lesson	➤ Same as Achievement test 4
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	<ul style="list-style-type: none"> ➤ Moderator asks participants what they have in their houses and shows how to write their names. ➤ Participants write on their notebook following moderator.
15min.	Achievement test 5	➤ Write 5 to 10 words (depends on the level of understanding of the participants) learned today.
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Chalks & Blackboards
 Alphabet table (Appendix 1)
 Achievement test 4 for review test (See Appendix 2)
 Achievement test 5 (See Appendix 2)

Moderator can select 10 words for the test.

Example:

It's helpful to write each word together with a picture of it!

Chair	Table	Bed	Bench	Shirt	Sandals
Skirt	Pants	Dish	Pot	Pan	Cup
Lamp	Radio	Clock	Knife	Shovel	Pick axe
Bicycle	Mobile phone	Cloth	Towel	Soap	etc...

VI.6 “What do you sell and buy in the market?” 1

At the end of this session, participants will:

- Be able to write and read name goods in the market.

Timetable

Time	Subject	Contents
Preparation	➤ Moderator and some participants write alphabets (A/a to Z/z) on blackboard.	
15min.	Review test of the last lesson	➤ Same as Achievement test 5
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	<ul style="list-style-type: none"> ➤ Moderator asks participants what they sell and buy in market and shows how to write their names. ➤ Participants write on their notebook following moderator.
15min.	Achievement test 6	➤ Write 5 to 10 words (depends on the level of understanding of the participants) learned today.
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Chalks & Blackboards
 Alphabet table (Appendix 1)
 Achievement test 5 for review test (See Appendix 2)
 Achievement test 6 (See Appendix 2)

Moderator can select 10 words for the test.

Example:

Rice	Pepper	Bread	Fire wood	Soap
Egg	Cheese	Milk	Fish	Cloth
Note	Book	Orange	Radio	Tobacco
Shoes	Oil	Onion	Pen	etc.

VI.7 “What do you spend for regularly?” 1

At the end of this session, participants will:

- Be able to write and read name of costs that they spend regularly.

Timetable

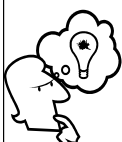
Time	Subject	Contents
Preparation	➤ Moderator and some participants write alphabets (A/a to Z/z) on blackboard.	
15min.	Review test of the last lesson	➤ Same as Achievement test 6
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	<ul style="list-style-type: none"> ➤ Moderator asks participants what kind of costs they spend daily, weekly, monthly and annually, and shows how to write their names. ➤ Participants write on their notebook following moderator.
15min.	Achievement test 7	➤ Write 5 to 10 words (depends on the level of understanding of the participants) learned today.
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Chalks & Blackboards
 Alphabet table (Appendix 1)
 Achievement test 6 for review test (See Appendix 2)
 Achievement test 7 (See Appendix 2)

“I spend money for;” (Moderator can select 5 to 10 words for the test.)

Example:

Daily:	foods for family, foods for domestic animals (chicken, goat, etc) ...
Weekly:	firewood, kerosene, soap, oil, transportation to the market...
Monthly:	community contribution, hair cut, medicine, rent...
Term:	school charge, clothes, shoes...
Year:	seed rice, groundnuts seed, fertilizer, school uniform...



VI.8 Number writing and reading 1

At the end of this session, participants will:

- Be able to write and read numbers from one to twelve, 20 ~ 90, 100, 1,000, 10,000.

Timetable

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Same as Achievement test 7
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	<ul style="list-style-type: none"> ➤ Moderator shows how to write and read 1 ~ 12, 20 ~ 90, 100, 1,000, 10,000 and other numbers one by one. ➤ Participants write on their notebook following moderator.
15min.	Achievement test 8	➤ Write 20 numbers told by the moderator.
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Chalks & Blackboards
 Alphabet table (Appendix 1)
 Primary Mathematics 1 (textbook. You may borrow from school)
 Achievement test 7 for review test (See Appendix 2)
 Achievement test 8 (See Appendix 2)

Moderator can select 20 numbers for the test.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
30	40	50	60	70	80	90	100	120	150
1,000	1,500	2,000	2,800	3,000	3,300	10,000	17,000	20,000	35,000

VI.9 “What do you have in your house?” 2

At the end of this session, participants will:

- Be able to write name and quantity of goods in their house.

Timetable

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Same as Achievement test 8
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	➤ Moderator asks participants what they have in their house and how many they have, and shows how to write those. ➤ Participants write on their notebook following moderator.
15min.	Achievement test 9	➤ Write 5 to 10 goods and their quantities (depending on the level of understanding of the participants).
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Chalks & Blackboards
 Alphabet table (Appendix 1)
 Achievement test 8 for review test (See Appendix 2)
 Achievement test 9 (See Appendix 2)

Moderator asks;

“How many chairs do you have in your house?”
 beds
 dishes
 cups, etc...

and writes on the board following the participants' answer;

“2 chairs”, “3 beds”, “10 dishes”, “8 cups”, etc...

VI.10 Number writing and reading 2

At the end of this session, participants will:

- Be able to write and read amount of money.

Timetable

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Same as Achievement test 9
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	➤ Moderator shows money cards to participants and teaches them how they read the amounts. ➤ Participants write on their notebook following moderator.
15min.	Achievement test 10	➤ Write 10 total amounts of money shown by the moderator.
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Chalks & Blackboards
 Alphabet table (Appendix 1)
 Money cards (Appendix 3)
 Primary Mathematics 2 and 3 (textbook. You may borrow from school)
 Achievement test 9 for review test (See Appendix 2)
 Achievement test 10 (See Appendix 2)

Moderator shows money cards in the following manner:

$$\begin{array}{l}
 \begin{array}{l} \boxed{1} \\ \boxed{1} \\ \boxed{1,000} \end{array} = 3,000 \text{ Leone} \qquad \begin{array}{l} \boxed{5} \\ \boxed{5} \\ \boxed{5,000} \end{array} = 15,000 \text{ Leone} \\
 \begin{array}{l} \textcircled{100} \textcircled{100} \textcircled{100} \textcircled{100} \end{array} = 400 \text{ Leone} \qquad \begin{array}{l} \textcircled{500} \textcircled{500} \end{array} = 1,000 \text{ Leone} \\
 \begin{array}{l} \boxed{5,000} \boxed{1,000} \textcircled{100} \textcircled{100} \end{array} = 6,200 \text{ Leone} \qquad \begin{array}{l} \boxed{2,000} \textcircled{500} \end{array} = 2,500 \text{ Leone}
 \end{array}$$

VI.11 Basic calculation

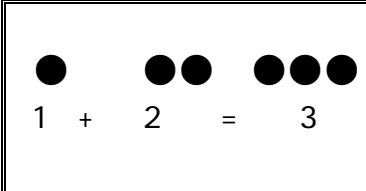
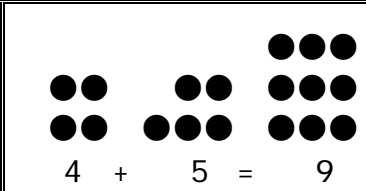
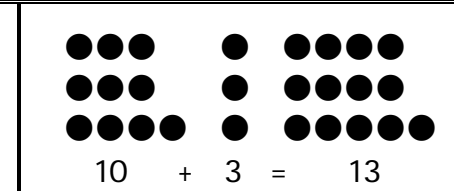
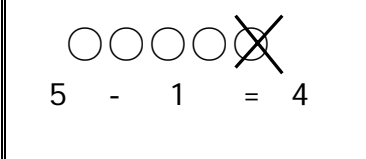
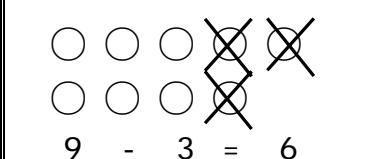
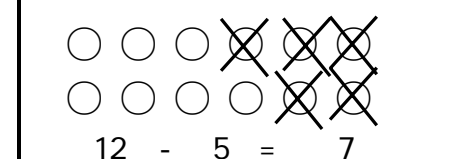
At the end of this session, participants will:

- Be able to add and subtract simple numbers.

Timetable

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Same as Achievement test 10
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	➤ Moderator shows how to add and subtract numbers. ➤ Participants write on their notebook following moderator.
15min.	Achievement test 11	➤ Write 5 to 10 formulas shown by the moderator and answer them. (depending on the level of understanding of the participants).
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Chalks & Blackboards
 Alphabet table (Appendix 1)
 Money cards (Appendix 3)
 Primary Mathematics 1 and 2 (textbook. You may borrow from school)
 Achievement test 10 for review test (See Appendix 2)
 Achievement test 11 (See Appendix 2)

 <p>1 + 2 = 3</p>	 <p>4 + 5 = 9</p>	 <p>10 + 3 = 13</p>
 <p>5 - 1 = 4</p>	 <p>9 - 3 = 6</p>	 <p>12 - 5 = 7</p>

VI.12 “What do you sell and buy in the market?” 2

At the end of this session, participants will:

- Be able to write name and price of goods in the market.
- (if possible) Be able to calculate price of goods from the unit price and quantity

Timetable

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Same as Achievement test 11
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	<ul style="list-style-type: none"> ➤ Moderator asks participants what they sell and buy in the market and how much those are and, shows how to write those. ➤ Participants write on their notebook following moderator.
15min.	Achievement test 12	➤ Write 3 to 5 goods and their prices (depending on the level of understanding of the participants).
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Chalks & Blackboards
 Alphabet table (Appendix 1)
 Achievement test 11 for review test (See Appendix 2)
 Achievement test 12 (See Appendix 2)

Example:

Goods	Unit Price	Quantity	Total Price
Rice	Le. 500	2 cups	Le. 1,000
Ground nuts	Le. 1,500	4 pans	Le. 6,000
Firewood	Le. 500	6 bands	Le. 3,000
Notebook	Le. 800	1 book	Le. 800
Pepper	Le.1,000	3 cups	Le. 3,000
Palm oil	Le.1,000	5 pints	Le. 5,000

VI.13 “What do you spend for regularly?” 2

At the end of this session, participants will:

- Be able to write name and amount of costs that they spend regularly.

Timetable

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Same as Achievement test 12
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	➤ Moderator asks participants what kind of costs they spend regularly and how much those are and, shows how to write those. ➤ Participants write on their notebook following moderator.
15min.	Achievement test 13	➤ Write name of 3 to 5 living costs and amounts (depends on the level of understanding of the participants).
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Chalks & Blackboards
 Alphabet table (Appendix 1)
 Achievement test 12 for review test (See Appendix 2)
 Achievement test 13 (See Appendix 2)

Example:

Items	Period	Cost
School charge	Term	Le. 5,000
School feeding	Term	Le. 1,500
Osusu	Month	Le. 500
Seed rice	Year	Le. 1,000
Rice	Day	Le. 500
Public bus	Week	Le. 500

VI.14 "How much do you spend?"

At the end of this session, participants will:

- Be able to calculate the total price and change in shopping

Timetable

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Same as Achievement test 13
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	<ul style="list-style-type: none"> ➤ Moderator shows participants how to calculate the total price and change in shopping. ➤ Participants write on their notebook following moderator. ➤ Moderator plays a role of trader and participants play a role of customer one by one. Participants write the name, price and total price of what they bought.
15min.	Achievement test 14	➤ Participants calculate the total price and change of shopping shown by the moderator.
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

Material: Chalks & Blackboards
 Primary Mathematics 2, 3 and 4 (textbook. You may borrow from school)
 Shopping kit (Appendix 4)
 Achievement test 13 for review test (See Appendix 2)
 Achievement test 14 (See Appendix 2)

Example:

"How much do I pay to buy...?"

- 1 egg and 2 onions
- 1 cup of pepper, 1 pencil and 1 soap

Price List			
Egg	Le. 500	Oil	Le. 1,500
Onion	Le. 300	Pencil	Le. 100
Pepper	Le. 1,000	Soap	Le. 400

"I have Le. 3,000. If I buy ..., how much is the change?"

- 1 cup of pepper
- 2 pencils
- 1 pint of oil
- 1 onion and 1 soap

VI.15 “How much do you spend?” 2

At the end of this session, participants will:

- Be able to write name and amount of costs on petty cash book.
- Be able to calculate the balance and total amount of expenses.

Timetable

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Same as Achievement test 14
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Today's topics	➤ Moderator guide participants how to calculate balance of income and expense on petty cash book. ➤ Participants try to record a sample petty cash book.
15min.	Achievement test 15	➤ Participants calculate the balance and total expenses.
15min.	Evaluation	➤ Moderator quickly reviews the results and gives short advice to each participant.

- Material: Chalks & Blackboards
 Shopping kit (Appendix 4)
 Petty cash book (Appendix 5)
 Achievement test 14 for review test (See Appendix 2)
 Achievement test 15 (See Appendix 2)

Date	Item	Income	Expense	Balance
01/11/07	Sales of cassava	8,000		8,000
10/11/07	Eggs (2)		1,000	7,000
15/11/07	Soap		400	6,600
20/11/07	Pencils (3)		300	6,300
20/11/07	Pepper (2 cups)		2,000	4,300
	Total of November	8,000	3,700	4,300

VI.16 Final evaluation

At the end of this session, participants will:

- Know their level of understanding and achievement in this course.

Timetable

Time	Subject	Contents
15min.	Review test of the last lesson	➤ Same as Achievement test 15
15min.	Evaluation	➤ Moderator reviews the results of the test quickly.
30min.	Examination	<ul style="list-style-type: none"> ➤ Moderator explains the role of final evaluation examination. ➤ Moderator tells words and figures to be written as follows. ➤ Participants write the words and numbers, and calculate the total and balance.
30min.	Evaluation	<ul style="list-style-type: none"> ➤ Moderator evaluate one by one quickly. ➤ Moderator and ECDC give completion certificate to participant who attended the course more than 80%.

Material: Chalks & Blackboard
 Achievement test 15 for review test (See Appendix 2)
 Final examination (Appendix 6)
 Completion certificate (if necessary)

1. You earned 35,000 Leone from sales of rice in this month.
 - 2-1. You bought 2 EGGS for 1,000 Leone.
 - 2-2. You bought 2 cups of PEPPER for 2,000 Leone.
 - 2-3. You bought 1 SOAP for 400 Leone.
 - 2-4. You paid 1,000 Leone for PUBLIC BUS to go to the market.
- Now, please fill in the petty cash book and calculate total income, total expense and balance.

VI.17 Simulation game (Optional)

This lesson can be conducted if the moderators are willing to and the understanding of participants is very high.

At the end of this session, participants will:

- Be able to keep a simple petty cash book
- Be able to calculate total amount of expenses and balance between income and expenses.

Timetable

Time	Subject	Contents
15min.	Review of the last lesson	➤ Moderator guides participants to remember what they did in the last lesson.
15min.	Guidance of the game	<ul style="list-style-type: none"> ➤ Moderator explains the rule of the game. ➤ Participants form three groups as shown in the table in next page (shop keepers, school and housewives) ➤ Moderator distributes kits for each group (money, petty cash book, and picture cards) ➤ Participants count the money and record initial income on petty cash book.
60min.	Simulation game	<ul style="list-style-type: none"> ➤ Shopkeepers go to wholesaler to buy their goods. ➤ School collects school charge and contributions from housewives. ➤ Housewives go to shops to buy school materials and food, and pay school related costs. ➤ All participants record their income and expense, and calculate the balance. ➤ Moderator facilitates and supervises participants to enjoy the game. ➤ Participants enjoy the game.


Material: Chalks & Blackboards
 Alphabet table (Appendix 1)
 Petty cash book sheet (Appendix 4)
 Simulation game kit (Appendix 7)

Rule of the Game:

Group	No. per group	Instruction
<p>4 Shops</p> <ul style="list-style-type: none"> - stationary - food - bag - uniform 	1-2	<ul style="list-style-type: none"> ▶ Initial fund is provided. ▶ Record income, expense and balance on petty cash book. ▶ Buy goods to sell in your shop from a wholesaler (Moderator) with the initial fund. ▶ Sell the goods to customers (housewives or the school). ▶ You can decide the price to sell. ▶ If your sales is less than the initial fund, you lose the game.
1 School	1-3	<ul style="list-style-type: none"> ▶ No initial fund is provided. ▶ Record income, expense and balance on petty cash book ▶ Collect school charge (Le. 5,000/pupil) and school feeding contribution (Le. 1,500/pupil) from all housewives. ▶ Pay incentives to three (3) teachers (Le. 10,000/teacher) as soon as possible. ▶ Buy foods for school feeding for all school kids from the food shop. ▶ If you fail to pay the incentives or to provide school meal, you lose the game.
5-6 Housewives	1-2	<ul style="list-style-type: none"> ▶ Initial income is provided. ▶ Record income, expense and balance on petty cash book. ▶ Each family sends two children to school ▶ Buy school materials for your children (2) from shop keepers. You can negotiate the price with shopkeepers. ▶ Buy food for family to feed and send your children to school. ▶ Pay school charge (Le. 5,000/pupil) and school feeding contribution (Le. 1,500/pupil) for your children. ▶ If you spend all cash before buying all materials and paying school related costs, you lose the game.

APPENDICES

- Appendix 1 Alphabet table**
- Appendix 2 Achievement tests (1 to 15)**
- Appendix 3 Money cards**
- Appendix 4 Shopping kit**
- Appendix 5 Petty cash book**
- Appendix 6 Final examination**
- Appendix 7 Simulation game kit**

	Alphabets (1)		A/a
B/b	C/c	D/d	
E/e	F/f	G/g	
H/h	I/i	J/j	
K/k	L/l	M/m	

	Alphabets (2)	N/n
O/o	P/p	Q/q
R/r	S/s	T/t
U/u	V/v	W/w
X/x	Y/y	Z/z

Achievement Test – 1				
Write alphabets which you learned in Lesson 1 in order.				

Achievement Test – 2				
Write alphabets which you learned in Lesson 2 in order.				

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Appendix 2: Achievement Tests <40 copies>

Achievement Test – 3 Write 10 words told by Moderator.	
1	2
3	4
5	6
7	8
9	10

Achievement Test – 4 Write your name and 4 names of your family/ friends.	
1	
2	
3	
4	
5	

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Appendix 2: Achievement Tests <40 copies>

Achievement Test – 5		Name:	
Write 10 words told by Moderator.			
1		2	
3		4	
5		6	
7		8	
9		10	

Achievement Test – 6		Name:	
Write 10 words told by Moderator.			
1		2	
3		4	
5		6	
7		8	
9		10	

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Achievement Test – 7 Name:	
Write 10 words told by Moderator.	
1	2
3	4
5	6
7	8
9	10

Achievement Test – 8 Name:				
Write numbers told by Moderator.				

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Appendix 2: Achievement Tests <40 copies>

Achievement Test – 9		Name:	
Write 10 goods and those quantity told by Moderator.			
Goods	Q'ty	Goods	Q'ty
1		2	
3		4	
5		6	
7		8	
9		10	

Achievement Test – 10		Name:	
Write 10 prices told by Moderator.			
1	2		
3	4		
5	6		
7	8		
9	10		

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Appendix 2: Achievement Tests <40 copies>

Achievement Test – 11		Name:	
Write 10 formula told by Moderator and write the answer.			
1	2		
3	4		
5	6		
7	8		
9	10		

Achievement Test – 12		Name:	
Write 5 goods in the market and those quantity and prices told by Moderator.			
Goods	Quantity	Total Price	
1			
2			
3			
4			
5			

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Appendix 2: Achievement Tests <40 copies>

Achievement Test – 13		Name:	
Write 5 items and those period and costs told by Moderator.			
Item		Period	Cost
1			
2			
3			
4			
5			

Achievement Test – 14		Name:	
Write 10 prices and changes of shopping told by Moderator.			
1		2	
3		4	
5		6	
7		8	
9		10	

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Appendix 2: Achievement Tests <40 copies>

Achievement Test – 15		Name:		
Complete the following petty cash book with filling the bordered boxes..				
Date	Item	Income	Expense	Balance
01/11/07	Sales of Cassava	Le. 8,000		
10/11/07	Eggs (2)		Le. 1,000	
15/11/07	_____		<u>Le.</u> _____	
20/11/07	_____		<u>Le.</u> _____	
20/11/07	_____		<u>Le.</u> _____	
	Total			

Le. 100

Le. 100

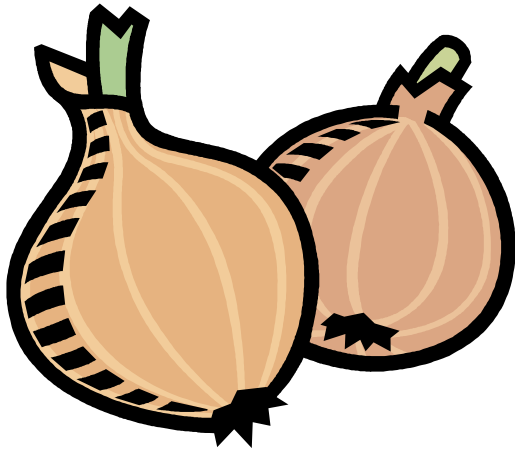
Le. 500

Le. 1,000

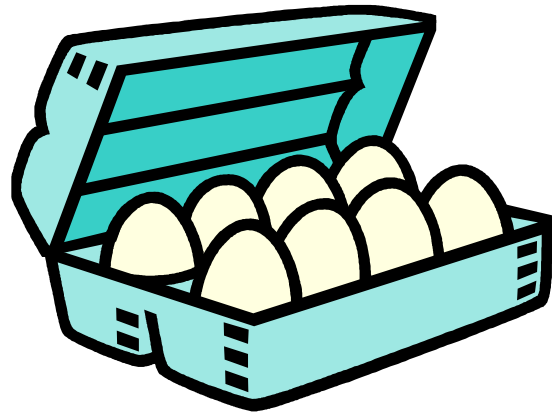
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Le. 5,000

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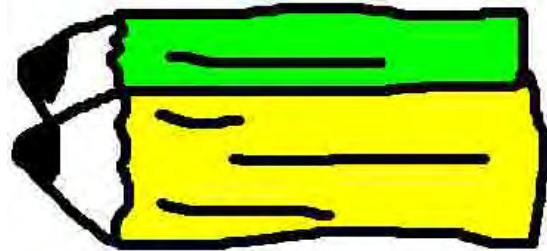
Onion Le. 300



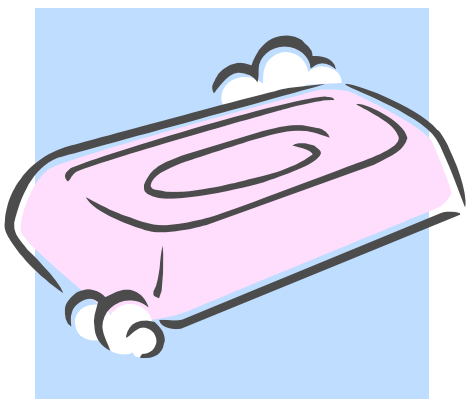
Egg Le. 500



Pepper Le. 1,000



Pencil Le. 100



Soap Le. 400



Oil Le. 1,500

<2 copies>

Le. 500	Le. 1,000	Le. 100
Le. 500	Le. 1,000	Le. 100
Le. 500	Le. 1,000	Le. 100
Le. 500	Le. 1,000	Le. 100

Moderator's Guide for Basic Literacy Class
Appendix 5: Petty cash book <24 copies>

Name:				
Date	Item	Income	Expense	Balance
	Total			

FINAL EXAMINATION

Complete the petty cash book following the instruction of the moderator.

Name:				
No.	Item	Income	Expense	Balance
1				
2-1				
2-2				
2-3				
2-4				
3	Total			

Price List at wholesaler (Moderator)

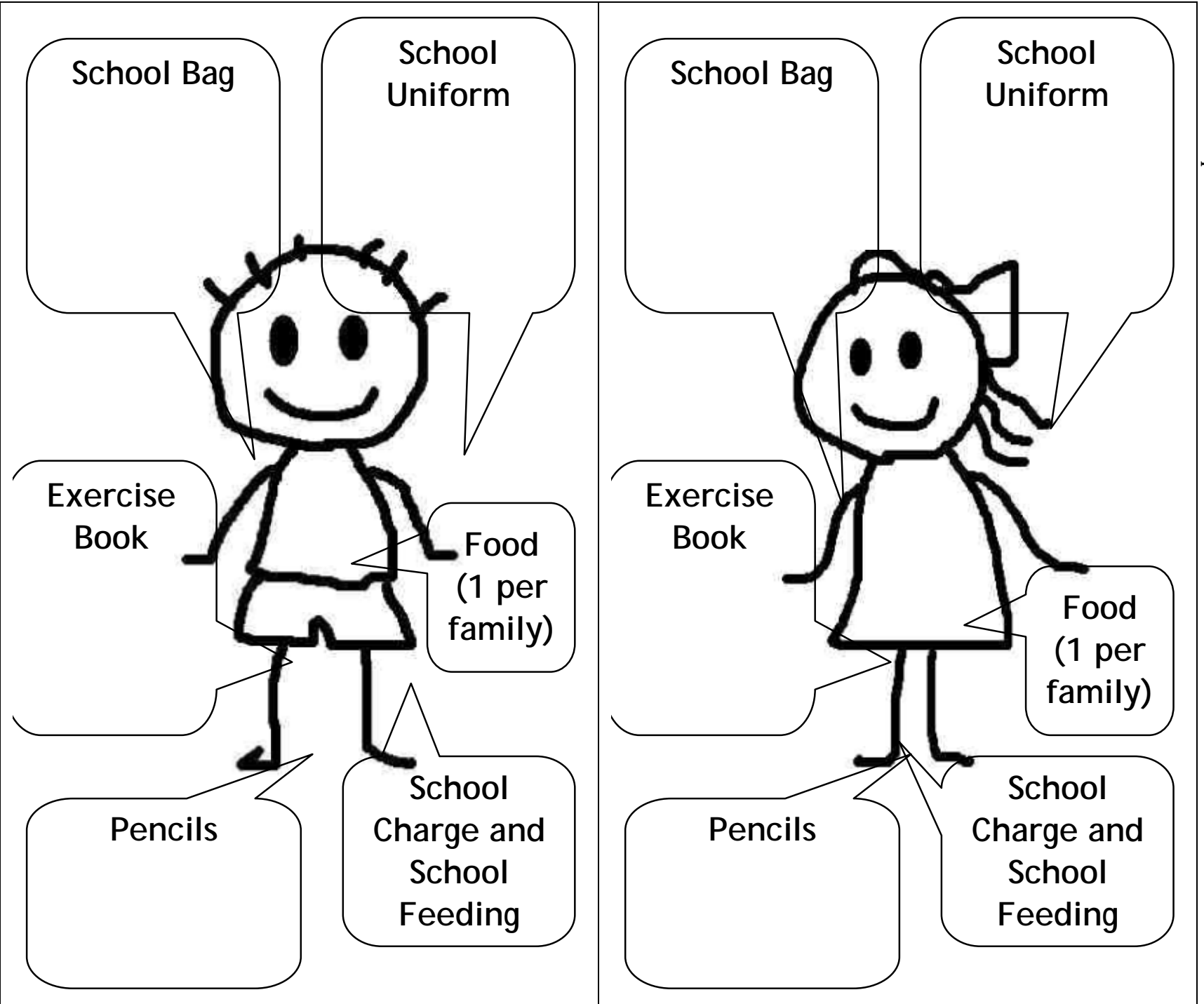
*Price at the wholesaler is fixed. Not negotiable.

Item	Price	Q'ty	Item	Price	Q'ty
Exercise book	Le.1,200	12	Pencils (2 per pack)	Le. 400	12
School bag	Le. 3,000	12	School uniform	Le. 8,000	12
Food for family	Le. 2,000	6	Food for school feeding	Le. 18,000	1

Initial Income

Moderator distribute following money to participants.

Player \ Money	Money					Initial income Total
	Le. 100	Le.500	Le.1,000	Le.2,000	Le.5,000	
Stationary shop	2			2	3	Le.19,200
Bag shop			1		7	Le.36,000
Uniform shop				3	18	Le.96,000
Food shop			3	1	5	Le.30,000
Housewife	10	8	10	5	5	Le.50,000



<School: 1 copy>

Teacher 1 **Le. 10,000**



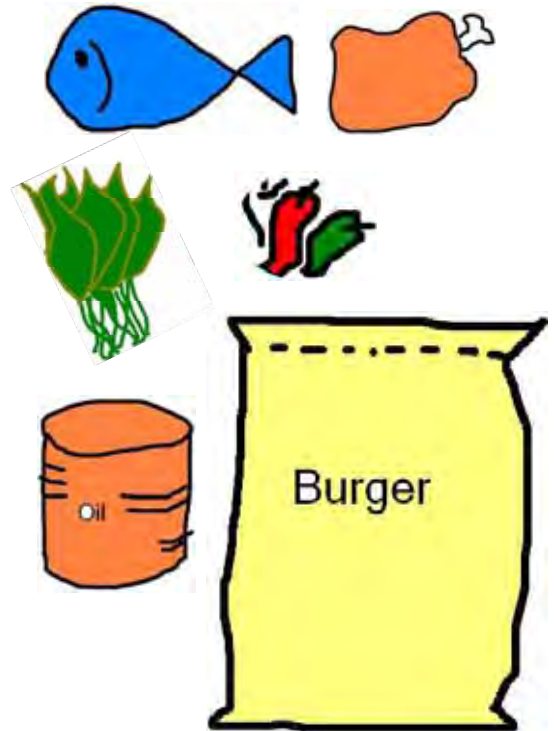
Teacher 2 **Le. 10,000**



Teacher 3 **Le. 10,000**

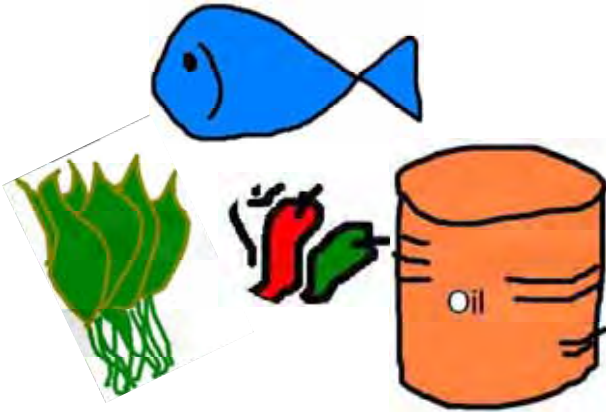


School feeding storage

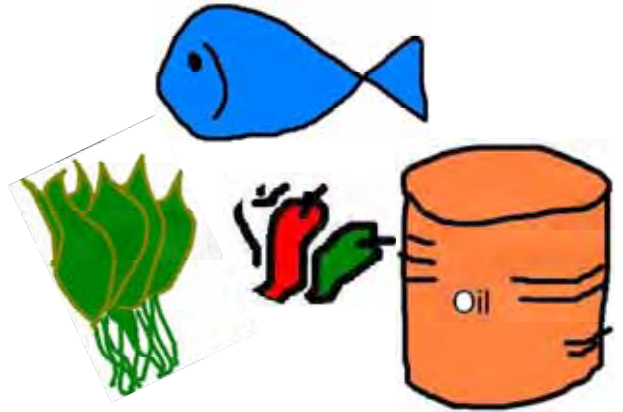


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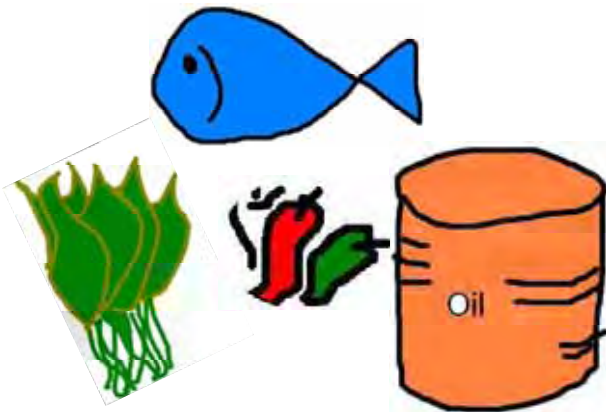
Food for family



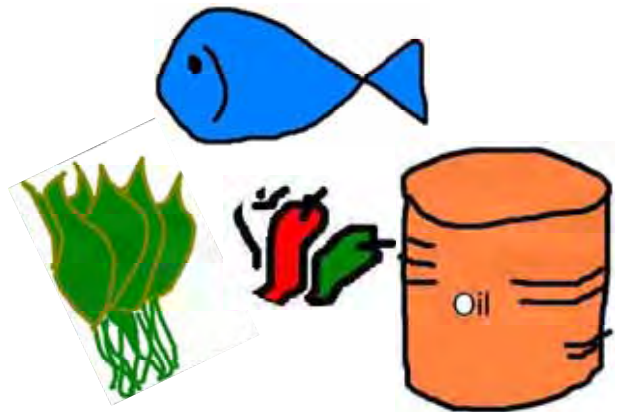
Food for family



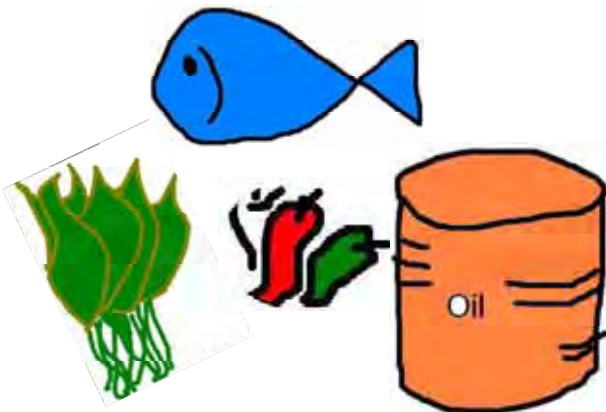
Food for family



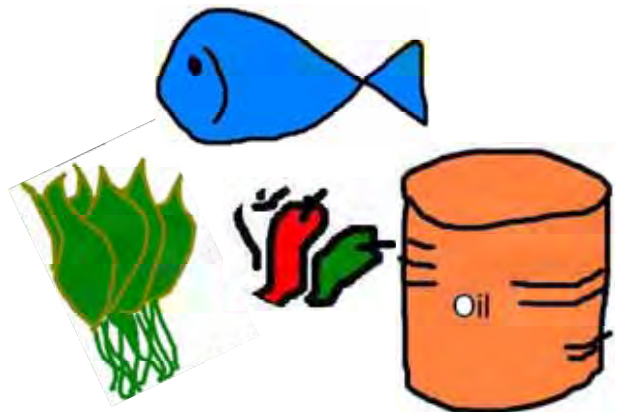
Food for family


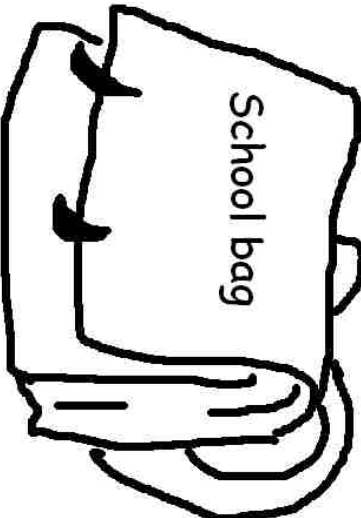
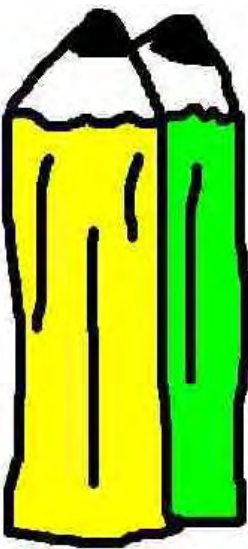
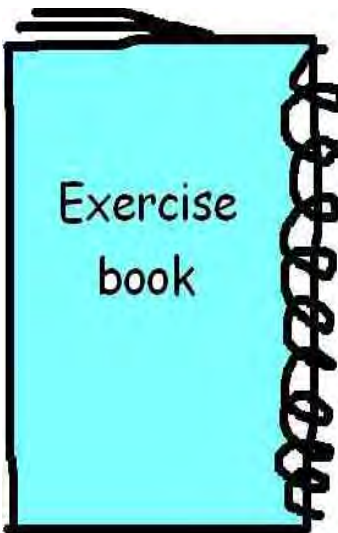

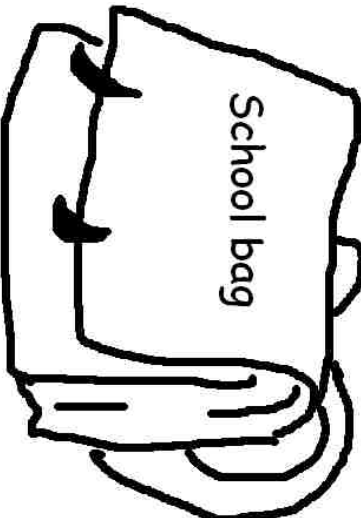
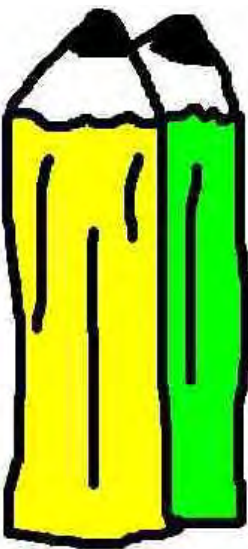
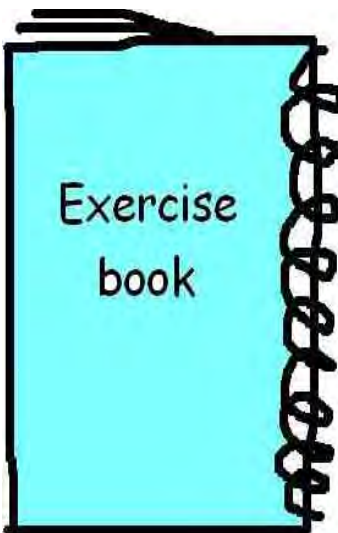


Food for family



Food for family



<p>School uniform</p> 	<p>School bag</p> 	<p>Pencil</p> 	<p>Exercise book</p> 
<p>School uniform</p> 	<p>School bag</p> 	<p>Pencil</p> 	<p>Exercise book</p> 

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ASEI / PDSI MODULE

Prepared by

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(SLAMAST)**

for

**Science and Mathematics Training in
Children and Youth Development Project in Kambia District**

MARCH 2008

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1. Principles of ASEI Movement and PDSI Approach

Session Objectives

To enable participants to:

1. *Understand the principles of ASEI Movement and PDSI Approach*
2. *Appreciate the merits of ASEI Movement and PDSI Approach*
3. *Understand how to manage the demerits that may be involved in adapting and applying ASEI Movement and PDSI Approach in their situations*

BACKGROUND

Science and Mathematics has continued to be taught the same way as it was in the 60's, 70's, 80's and 90's even though the learners, the conditions, the priorities etc have changed. Teachers ought to teach and then find out if learning took place. Effective teaching requires daily preparation, individualised or student centred teaching and motivation of the learners.

To achieve this SMASSE intervention introduced ASEI Movement and PDSI Approach targeting classroom effectiveness.

The ASEI (Activity, Student, Experiment, and Improvisation) principle is based on the fact that students do not simply copy the science world; rather, they construct their own meanings of it

ASEI MOVEMENT

To enhance the quality of teaching and learning, particularly in mathematics and science classroom, the ASEI movement through PDSI approach is central. The ASEI paradigm calls upon educators to shift from traditional practices of:-

1. *Knowledge-based teaching to Activity-based teaching*
2. *Teacher-centred teaching where the teacher is in the classroom with students as passive recipients of the activity, to Student-centred learning*
3. *Lecture method/theoretical approach characterised by traditional chalk and talk (or talk and talk) to Experiment and Research based approach*
4. *Large scale 'recipe' type experiments (as described in text books), to small scale experiments and Improvisation*

Activity Focused Teaching/Learning

Effective teaching and learning requires exposure to carefully selected activities to enhance student interest, understanding and retention of knowledge. All these must be student focused so that learners are actively involved in the learning process as they explain ideas based on prior experiences express opinions and verify their opinions/ideas through the suitably designed activities.

These activities should be in line with the lesson objectives and have a clear way of being linked (bridged) with the concepts.

Student-Centred Teaching/Learning

The 'S' aspect of ASEI encourages a shift of classroom focus from the teacher as the main actor (and sometimes the only actor) to the learner. Teachers are once again made to appreciate the fact that active learner involvement in the teaching/learning process is key to knowledge and skills acquisition. As such they should not dominate the teaching/learning process but rather facilitate it. Teachers are therefore encouraged to let learners be actively involved by providing opportunities to express opinions and explain ideas based on their prior experiences as related to lesson content and then allowing them to verify these through suitably designed teaching/learning activities.

Student-centred teaching /learning should not be taken to mean that the teacher's role is relegated. Rather, the teacher plays the role of guiding students to learn instead of 'dispensing' knowledge.

Experiments

Experiment/Research based approach where simpler, more relevant experiments are encouraged, rather than those prescribed in textbooks. This requires the teacher to be innovative in designing small-scale experiments and improvisation using locally available resources and students' real life experiences. The emphasis here is a shift from recipe type experiments to investigative type that allows learners to make predictions/hypothesis, verify them practically and where possible design their own experiments. Considered very critical to the effectiveness of the experiments is how the activity is linked to the concept (bridging) so that experiments are not merely done for sakes' sake.

Improvisation

The 'I' aspect of ASEI encourages practicing improvisation/innovativeness through:

- a) Scaling down materials for experiments e.g. diluting chemicals to suitable levels and use of small quantities of chemicals. Same experimental results are obtainable using much smaller quantities than prescribed in recipe-type experiments commonly found in textbooks.
- b) Utilization of available materials in the students' immediate environment to raise interest and curiosity.
- c) Modification/simplification of recipe-type textbook experiment(s),
- d) Use of a non-conventional apparatus in lesson delivery

BENEFITS OF ASEI

ASEI based lessons would help students to:

- (a) Generate and sustain learner's interest in mathematics and science. This will lead to positive attitude towards these subjects
- (b) Enjoy the lessons
- (c) Increase understanding, retention and application of mathematics and scientific concepts
- (d) Make mathematics and science concepts real life experiences to the learners
- (e) Arouse curiosity
- (f) Develop cognitive growth "minds on" activities
- (g) Develop communication skills "minds on, mouth on" activities
- (h) Develop psychomotor skills "hands on"
- (i) Develop process skills such as, observation, record, analysis and interpretation of data
- (j) Develop affective skills "hearts on" activities

PDSI APPROACH

The ASEI principle calls for systematic work planning and evaluation. The **PDSI (Plan, Do, See, Improve)** approach advocates for planning the lesson based on the ASEI principles, planning teaching/learning activities, with improvisation where necessary and planning the delivery process in terms of teacher /student activities. The lesson is then executed as planned. The teacher monitors student understanding and comprehension **during** and **after** the lesson by observing students perform and getting feedback for lesson adjustment and evaluates the teaching process against the work plan. The outcome of evaluation is used to enhance performance and student learning in subsequent lessons.

PDSI basically is:

- **Plan:** Outline lesson activities based on the ASEI principles.
- **Do:** Conduct the planned activity.
- **See:** Evaluate the process against the plan in terms of effectiveness in achievement of lesson objectives
- **Improve:** Use evaluation outcome to enhance the whole process

The PDSI Approach targets planning at class level. It is in the class that the curriculum is actually translated into teaching/learning activities and where learners experience it.

Plan

This basically is designing the instruction (planning the lesson) by outlining how it will unfold. Teachers are helped to once again appreciate the usefulness

of lesson planning in delivering coherent lesson content. Emphasis is on how the instructional activities will enable learners to:

1. **Understand** individual concepts and the connections among them so as to explain the content in their own words and connect it to prior knowledge/experiences.
2. **Appreciate**/value what is being learnt since there are good reasons for learning it which is also known as '*Rationale for the activity/ lesson*'
3. Retain the learning and **apply it in real life situations**, i.e. retain the knowledge and skills learnt in a form that makes it usable when needed in other contexts.

In addition, during planning teachers take into consideration the learners' backgrounds such as, learning difficulties, needs, interests, misconceptions and previous experience in relation to the topic.

Do (Implement/Execute the Planned Activity)

The *Do* aspect is basically concerned with lesson delivery; the instructional process based on the plan

1) Starting off the lesson

In traditional approach there is over reliance on reviewing previous lesson activities as a form lesson introduction. Teachers are encouraged to supplement this with innovative ways such as use of relevant role play, story-telling, skit, etc. where possible to arouse learners' curiosity and interest. Lesson introduction activity should relate to the learners' previous experience and orientates them to the lesson objectives while helping the teacher to quickly establish what students already know about the lesson content, link their real life experience to lesson content, communicate the rationale.

2) Quality of Lesson Activities

The design of lesson activities is that which encourages active learner participation. The activities are sufficiently varied and interesting to motivate the learner's engagement and to facilitate meaningful learning experiences. These activities facilitate growth of process skills such as observing, measuring, identifying variables and planning experiments while the teacher deals with students' questions, misconceptions and reinforces learning at each step to develop high order thinking.

3) Bridging Between Lesson Activities and Concepts

As the lesson progresses the teacher helps learners to make meaning out of the lesson activities through various means such as:

- Asking probing questions
- Class discussions
- giving explanations

These should help the learner to link between the activity and the concept being taught.

See (Evaluate the Performance of the Activity)

This aspect focuses on retraining teachers on lesson evaluation both as the presentation progresses and at the end using various techniques and feed back from students. Students' answers to questions, explanation of concepts, ability to follow procedures and get results; all provide the information necessary for lesson evaluation. The teacher should be able to use such information in the course of the lesson

Improve (Incorporate Feedback)

In the *See* component of the PDSI Approach, teachers evaluate the teaching/learning process by reflecting on the performance and the effectiveness in achieving lesson objectives. The teacher makes use of such information to modify the lesson as it progresses in order to eliminate misconceptions and achieve objectives and to improve on subsequent lessons.

BENEFIT OF PDSI

PDSI ensures lesson is delivered to the satisfaction of both the teacher and the learners because of:

1. Considerations made of learning ability of learners
2. Appropriate utilisation of time available
3. Teachers' confidence in direction of lesson flow
4. Enhanced teachers' competence in content/skills after trying out lesson activities

IN CONCLUSION

The net impact is that the mathematics and science classrooms become more active in terms of student participation in meaningful learning activities; teachers plan better and more consistently, are more punctual in attending lessons and marking students' work, are more available for out-of-class consultation with students and open to teamwork. Students are very actively involved, show great interest and responsiveness, attend lessons more punctually and regularly, do their assignments more neatly and promptly, carry discussions beyond class time, ask questions in and out of class and enrol more in optional science subjects such as physics. Their attitude towards mathematics and science gradually becomes more positive.

- TASK
- ① State the Merits and Demerits of the 5 ASEI Movement and PDSI Approach.
 - ② How do you manage the demerits of the ASEI Movement and PDSI approach?

2. Effective Implementation of ASEI/PDSI Approach

EFFECTIVE IMPLEMENTATION OF ASEI/PDSI APPROACH

FACILITATOR : J.J. BASSIE

RATIONALE

The implementation of ASEI principle and PDSI approach would be an uphill task without consideration of the following key issues by teachers.

- i. Attitude towards Mathematics and Science
- ii. Learning psychology of adolescents
- iii. Gender issues in teaching/ learning of Mathematics and Science and
- iv. Work planning.

SESSION OBJECTIVES

By the end of the session, participants should be able to:-

- i. Attitude towards Mathematics/Science and work planning
- ii. Changes in adolescence and
- iii. Gender issues in mathematics/science in implementation of ASEI/PDSI in the classroom.

B. Suggest the way forward on each of the above issue.

The following have been identified as some of the factors responsible for the poor performance in Mathematics and Science.

1. Attitudinal factors
2. Teaching Methodology
3. Mastery of content
4. Professional interactive ^{forum for} teachers
5. Administrative factors

1). Attitude towards Mathematics and Science

Attitude is a settled way of thinking or feeling about something or somebody, usually reflected in a person's behaviour. It is a description of a person's readiness to respond when confronted with certain situation (The New Oxford Dictionary of English)

There are basically two ways in which a person may respond to a given situation or stimulus. There are instances when a person shows readiness to

respond by displaying acceptance without any hesitation or condition. Such is referred to as positive attitude.

Where there is negative attitude, the person responds by showing dislike and defense.

How ^{is} attitude ~~is~~ formed?

It is important to realise that attitudes are socially learnt. They are acquired through experiences in our environment and learned in much the same way as skills and habits. They constitute a state of mind and are resistant to change because they are wrapped up with a person's needs, feelings and self-concept.

A person needs approval, feeling of importance, security and independence.

He/she is thus likely to develop an interest in any activity, which brings him/her satisfaction of such needs. Factors such as needs, which the person is not aware of, or hidden aggressions and wishes, may become key players in building attitudes.

Some Causes of Students' Negative Attitude Towards Mathematics and Science

The general feeling among students is that Mathematics and Science are difficult subjects. This leads to a negative attitude towards the subjects. The feeling is even greater in girls than boys. Some of the reasons for this negative attitude could be:

1. Poor performances during national examinations-Student consider it a waste of time to concentrate on subjects they will not pass. This idea is supported by studies done by two psychologists Birch and Veroff:
"Anticipation of positive outcome enhances the tendency to action while anticipation of negative outcomes blocks or inhibits the action" Suggested remedy- teachers should do everything possible to build confidence in the students.
2. Too much theoretical teaching of Mathematics and Science. This has made the subjects appear too abstract and boring. Suggested remedy- applying the ASEI/PDSI approach.
3. Job market- the job market in Sierra Leone is not very promising. This has discouraged students from taking up subjects that appear more challenging, especially when they see

their own educated brothers and sisters go without jobs for years. Suggested remedy- make students understand that education is not important for purposes of helping to secure formal jobs only. Education is meant to assist individuals to live a more complete life.

4. Teachers contribute in installing the negative attitude in students. They expect some students to pass and others to fail and show it openly. This is especially so in mixed schools where some teachers expect boys to perform better in Mathematics/Sciences than girls. Suggested remedy- show fairness and encourage all students.

Some Causes of Teachers' Negative Attitudes Towards Mathematics and Science

Although many Mathematics and Science teachers have positive attitude towards their job, they are still beset with problems that frustrate their efforts to teach effectively and efficiently:

1. It is possible that a number of teachers are not in the profession by choice. Although many of them adjust and accept teaching as a profession, there are those who take too long while others do not accept the profession at all. A committed teacher should find time for preparation and research.
2. The fact that performance in national examinations in Mathematics and Science is not as good as in humanities could frustrate a teacher, who thought he had put in a lot of effort.
3. Lack of sufficient teachers is a problem in many schools. Many schools, especially those in the rural areas, experience shortage of Science and Mathematics teachers. It is possible for instance to find only one Physics teacher in a school. In such situations, the teacher may be overwhelmed by the workload.
4. Overloaded Curriculum- in an attempt to cover the syllabus, Mathematics/Science, is taught theoretically and students are not given time to discover things for themselves.
5. Lack of teaching/learning resources in some schools has frustrated those teachers who rely on conventional apparatus only.
6. Some principals have contributed to the frustration of Science teachers. Those who are not science-based are sometimes ignorant of the needs of science subjects. They are willing to

spend money on co-curricular activities or on prestigious projects but not on apparatus and materials

Manifestations in the Classroom.

Some attitudes have many habits associated with them while others have a few. Sometimes, the only action associated with the attitude is a verbal expression e.g.

“I hate mathematics”

“Sciences are difficult”, etc

The verbal expressions of an attitude is known as an opinion. Sometimes, the action component of an attitude may be much more differentiated and may include a variety of action tendencies e.g.

1. Coming to class late
2. Sleeping during the lesson
3. Not feeling bothered by low scores
4. Refusing to participate during lessons

Therefore, there is need to change the negative attitude towards Mathematics and Science. Despite the myriad of problems teachers are faced with, they should not lay the blame entirely on those problems. The situation needs to be addressed all the way from teachers' training institutions to the schools. This can be done through change of approach in methodology as suggested above, in-service training, seminars, conferences, etc at district, national or even regional level. Focus should also be directed to the learners, parents and the community

ii) Learning Psychology of Adolescents

Adolescent psychology is the behavioral study of a very volatile group of youngsters in the age gap of 11-20 years. This is the age bracket in the secondary schools. It is an important subject to the teachers because knowledge of it will enable him/her to understand his/her to come up with activities that will ensure learners' maximum participation in the classroom.

Key Characteristics of Adolescents

Members of this age group have certain key characteristics that may impact positively or negatively on their learning depending on the way they are

handled. Some of the key facts about adolescents that need consideration by teachers are as follows:

1. Adolescence is a developmental stage between childhood and adulthood, during which many physical, cognitive and social changes take place in the life of the individual. This is the time when a young person makes transition from childhood dependency to adulthood independency. It is time when a well behaving child may become disobedient, argumentative, moody and impatient. The adolescent seeks personal autonomy and yet he/she is not mature enough to be independent. The teacher need not be overwhelmed but instead understand the person and give the necessary guidance.
2. Adolescence is a period characterized by stress for parents, teachers and even the adolescents themselves. Sometimes a teacher may suffer from a burn-out (a psychological condition produced by stress). Some teachers let out on the students which greatly interfere with their learning in terms of attitude, motivation, students' self-esteem and even their level of stress. It is therefore important for teachers to identify their own stress levels and deal with it in order to be of help to the students.
3. At the beginning of adolescence the thinking of an individual becomes more abstract, logical and future oriented. With the capacity for formal thought and abstract, reasoning, they discover new facts, experiences and feelings. Mathematics and Science teachers should take advantage of this by giving them more opportunity to discover and to be engaged in more meaningful activities.
4. The adolescents are extremely egocentric (their thoughts are center on their individual selves) especially in their relationships with adults. Negative comments can greatly hurt them while positive comments and praises are treasured. ~~Use~~ Mathematics and Science teachers need to take advantage to this egocentrism by using student centered teaching approaches. The teacher should also carefully select his comments.
5. Peer groups are an important component of an adolescents' complete development because:
 - They give them a feeling of belonging.
 - They make them feel important and with a status and role as a member of the group

In these groups they are able to release their tension through expressing their pent-up feelings without inhibitions.

In these groups they are to learn new things and also form close and life long relationships. This is an important factor as it favors the use of group working in the teaching/learning process. Therefore group activities will be a welcome idea by the adolescent.

6. Regardless of their level of education, all parents, especially the mothers have a great influence in their children's achievements, beliefs and attitudes. They serve as role models to their children in hard work or otherwise.

Parents need to be included in the strengthening of Mathematics and Science. This can be done through parents' teachers' association meetings, letters to parents, inviting individual parents to the school etc. They need to be enlightened on the importance of the subject in their children's future careers and should be discouraged from negative comments about the subjects.

Parents should also avoid:-

Setting unrealistic goals and demands for their children e.g. wanting their children to be engineers but lacking the necessary ability.

Demands on grades, marriage, etc

In view of the above facts, open communication is therefore very important. The adolescents need to be treated with a lot of respect without being allowed to disrespect others.

iii) Gender issues in Mathematics and Science Education

What is Gender?

This is a socio-cultural classification of human beings into two basic groups comprising of women and girls on one hand and men and boys on the other hand. It is a social construct because it is defined, supported and reinforced by societal structures.

From this definition it can be seen that gender is different from sex, in that sex is categorization of human beings and other creatures into males and females. Thus, while we can have male and female cats, elephants, birds or humans, men and women, boys and girls are exclusively human. Therefore while sex is universal and does not change, gender is not. As such gender can be constructed and deconstructed.

Why Gender Issues in Mathematics and Science Education?

There are a number of reasons as to why gender issues cannot be ignored if any positive impact must be realized as ASEI principle and PDSI approach are being implemented in the classroom. The following are some of the reasons:

a) Upbringing

Boys and girls are brought up differently right from birth. As both girls and boys grow up they are socialized into different gender roles

Gender roles refer to task and responsibilities that men and women or boys and girls perform, that are socially determined at a definite time and place.

b) Stereotypes

These are pre-set prejudices by a given group of people about another group of people or things. These prejudices are often taken to be true but not necessarily taken to be true by all or any other group of people. Stereotypes can be about a particular tribe, gender, race, subject etc. Example

1. Women are naturally tolerant and better equipped than men to look after children.
2. Mathematics and Science subjects are for tough people.
3. Mathematics and Science subjects are for boys

These stereotypes may be enhanced by teachers and peers through their utterances. For example a teacher who may find a boy undertaking an activity in home economics as a subject would remark 'why are you struggling with a subject for women? If you continue like that you will not find a woman to marry. Or for a girl who excels in physics, a teacher might remark "Where do you think physics will lead you? Don't you think only people who are interested in engineering should study physics? Engineering is good for men only" These remarks and many similar remarks may lead to negative attitude formation by students in subjects they would otherwise have achieved better results

c) Gender insensitive teaching and learning materials such as text books

Textbooks rank high as resources for teaching/learning. It has been found that the language and illustrations in some of the textbooks are gender