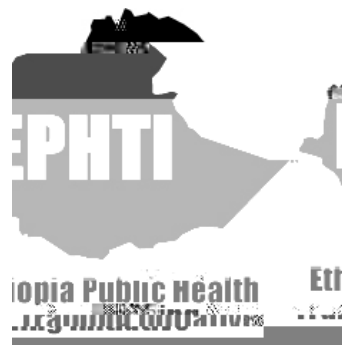


MODULE

# *School Health*

Diploma Program  
For the Ethiopian Health Center Team



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In collaboration with the Ethiopia Public Health Training Initiative, The Carter Center,  
the Ethiopia Ministry of Health, and the Ethiopia Ministry of Education

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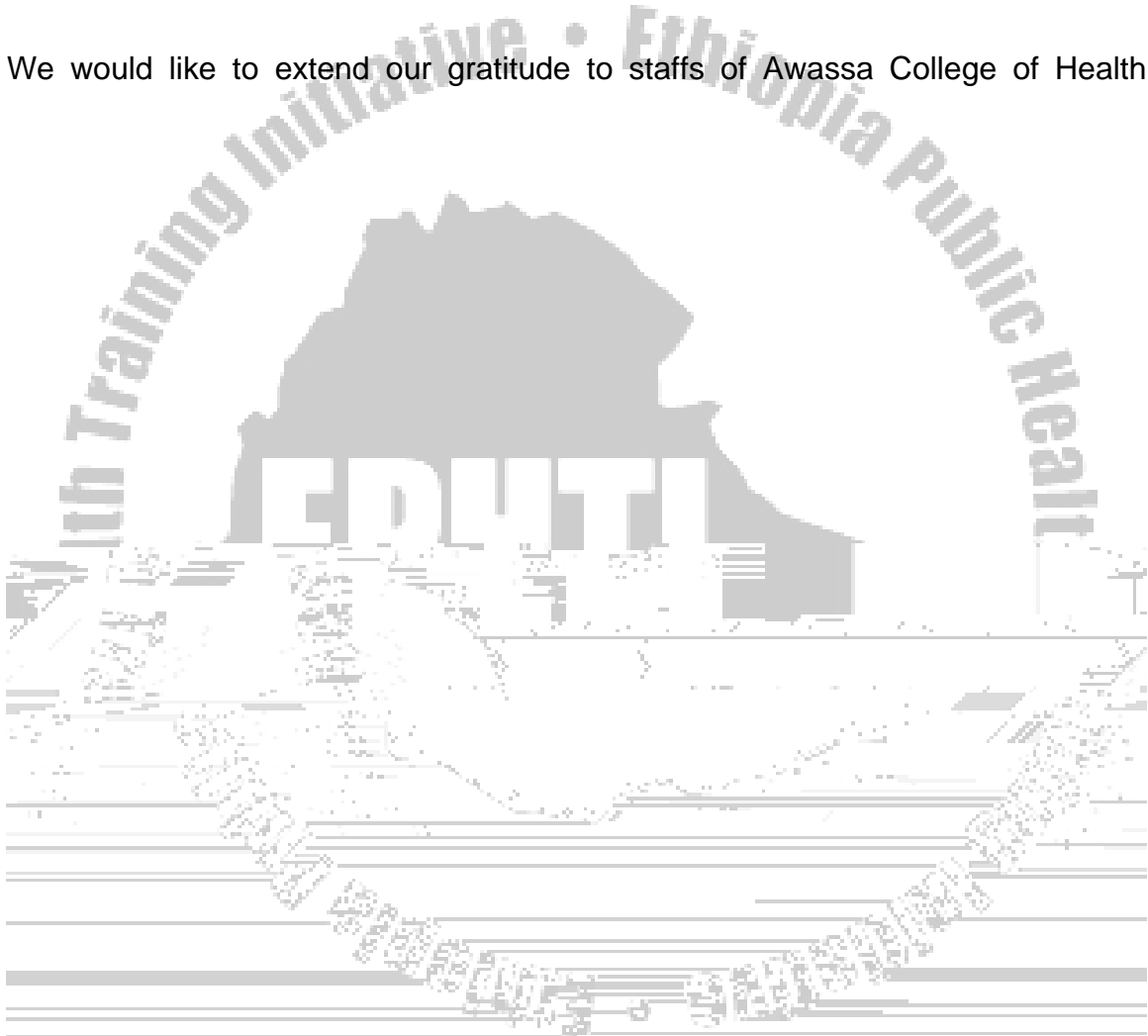
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We would like to extend our gratitude to staffs of Awassa College of Health



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# UNIT ONE

## INTRODUCTION

### 1.1. Purpose and use of the module

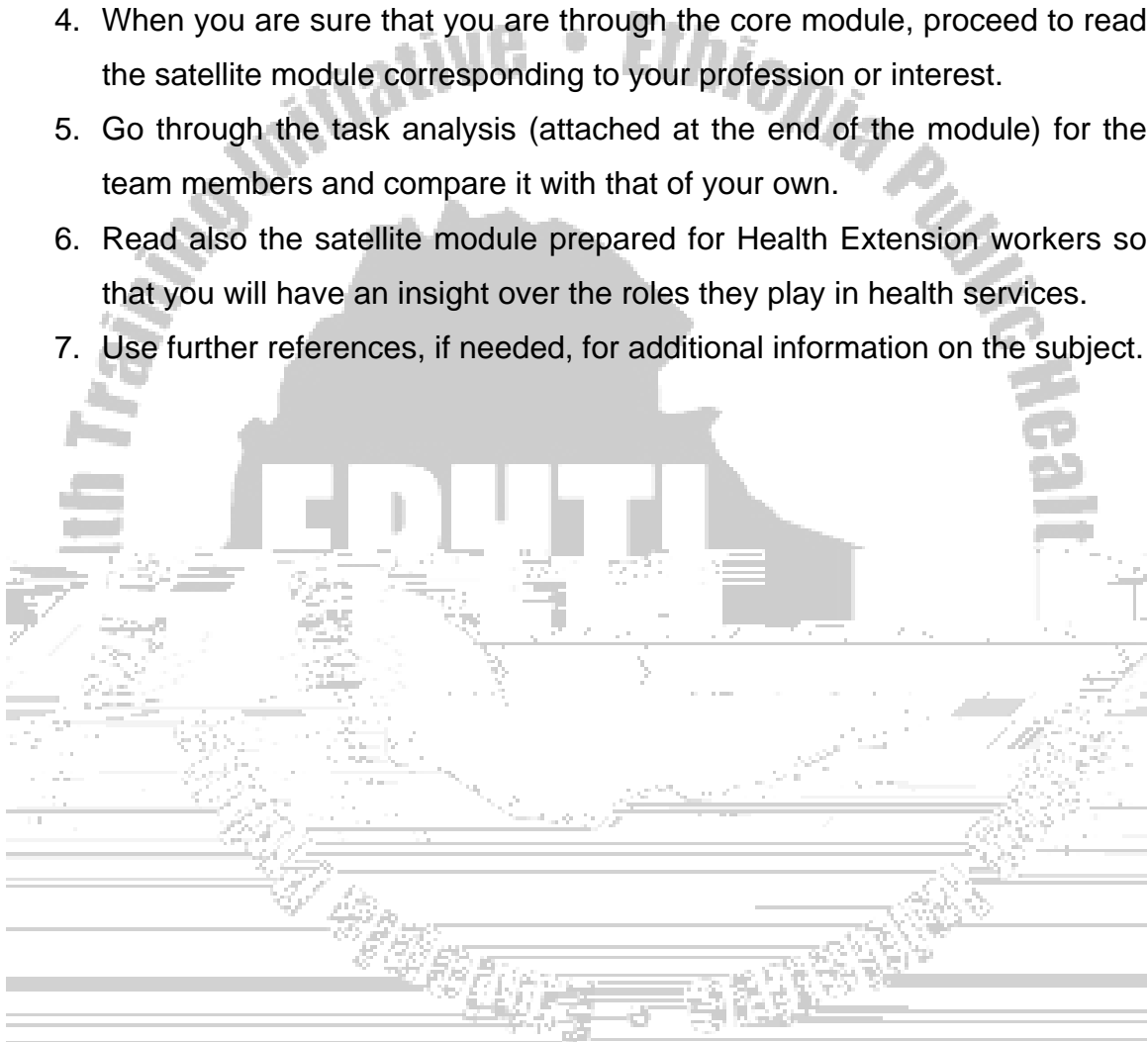
Almost all higher institutions in Ethiopia are promoting community based practical education and development of problem solving skill approaches. However the shortage of adequate reference materials in the majority institutions is one of the main problems which make the teaching-learning process ineffective. Hence preparation of teaching materials is invaluable to alleviate the soaring problem of the teaching- learning process.

The purpose of this module is to enable students develop their knowledge, attitude and problem solving skills through interactive and participatory learning. This module will help the health professionals at diploma and front line health workers comprised of public health officers, environmental health technicians, nurses, medical laboratory technicians, and Health Extension workers to look the problems of the school envir

Part I: Contains common questions to be answered by all categories.

Part II: The questions are prepared for the specific categories i.e. Health Officers, Nurses, Environmental Health Technicians, and Medical Laboratory Technicians. Select and do the portion that corresponds to your professional category.

4. When you are sure that you are through the core module, proceed to read the satellite module corresponding to your profession or interest.
5. Go through the task analysis (attached at the end of the module) for the team members and compare it with that of your own.
6. Read also the satellite module prepared for Health Extension workers so that you will have an insight over the roles they play in health services.
7. Use further references, if needed, for additional information on the subject.



## UNIT TWO

### CORE MODDULE

#### For Health Centre Team and Health Extension workers

#### 2.1. Pre tests:

##### 2.1.1. Questions for all categories:

Answer the following questions and write your answers on a separate answer sheet.

##### 2.1.1.1. Choose the best answer from the given alternatives.

1. Which one of the following is true about the location of the school?
  - A. the location of the school isn't important in school health
  - B. schools built near to the road aren't associated with any danger to the students
  - C. all sites are equally good to build a school
  - D. the distance of the school should be near to the community being served
  - E. C and D
  
2. One of the following infectious diseases may affect school children by spreading through faecal-oral route:
  - A. amoebic dysentery
  - B. cholera
  - C. malaria
  - D. a and b
  - E. all
  
3. Which of the physical aspects of the school environment influence the physical and mental health of the school children?
  - A. sanitation
  - B. hazardous location
  - C. inadequate furniture

D. dangerous structure

E. all

4. The principles that must be considered as priority issues to equip healthy school environment are:

A. keeping the compound clean of faecal material and waste;

B. providing or restoring toilets and keeping them clean;

C. providing convenient hand washing facilities and encouraging their use;

D. providing safe drinking water.

E. all

**2.1.1.2. Write “true” if the statement is correct or” false” if it is wrong for the following questions.**

1. The physical and mental health of school children can be influenced by the sanitation of the school environment.

2. High level noise may cause irritation and reduces the physical and mental performance of pupils.

3. Hand washing arrangements should be available in schools

4. The structural design of a school building has no influence on the health of children.

## **2.2. Significance and brief description of school health service**

“More children than ever before are attending school, and for longer period in their lives. Therefore, schools in virtua



initiation supports the right of children to enjoy a level of health that helps them to make the most use of educational opportunities open to them, the maximum of learning benefits. "Schools could provide the most cost-effective means to improve the health of children and thus to advance social and economical development."(1)

The health and well-being of children is a fundamental issue in education. Indeed, active promotion of



6. To provide nutritional service e.g. through mid-day meals, specially in kindergarten
7. To provide the practice of hygiene and healthy living to students both in school and at home
8. Provision of special methods of education for children who happen to be disabled in body or in mind
9. Accident prevention

### **2.3. Learning objectives:**

Upon completion of the module, the reader will be able to:

1. Identify the main health related problems that may occur in school compound.
2. List the physical aspects which may influence the health of the children.
3. Design how to create safe physical environment for school children.

### **2.4. Case Study:**

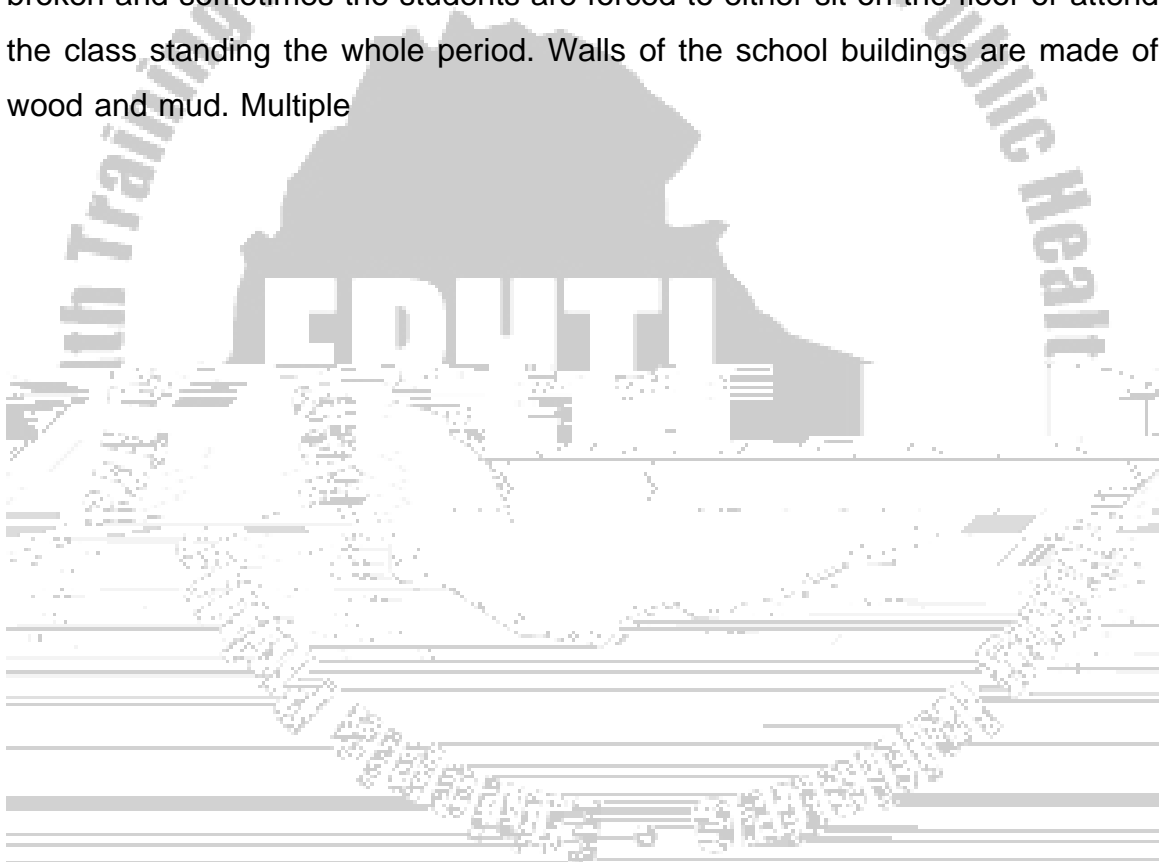
Tulla elementary school is located in Awassa Zuria Woreda. It was established 25 years back. Based on the new education policy it now gives basic education to first cycle primary school students from grade 1-4. The school delivers a whole day teaching for nearly 1000 students.

The school is located next to the main road where their sited the bus and taxi stop. The noise from the vehicles and the pedestrian is audible to most of the classrooms. The fence of the school has fallen down in more than 50% of the boundary. The residents from the nearby village have free access to the school compound. In addition, domestic animals usually spend most of their times in the students play ground.

There is only one toilet in the school compound and it is littered with faecal material. Students usually defecate in the field where they play during their break period. Sources of water for schools is from a well near to the toilet but it is not

functional. So all students have no access to hand washing facilities after visiting the toilet in the school compound. Small ponds are found here and there where water usually accumulates and children play with it. A river is located on the other side of the school and part of the fence on this side has also fallen down. The students sometimes go for swimming in the river.

The school has ten classrooms all situated not far from the main gate. The maximum capacity of each class is fifty students, however enough number of chairs are lacking in all the classrooms. The school has got a chance to be repaired only once since its foundation 25 years ago. Due to this most chairs are broken and sometimes the students are forced to either sit on the floor or attend the class standing the whole period. Walls of the school buildings are made of wood and mud. Multiple



It is widely recognised that schools can play an important role in promoting society's health. Much effort has been invested over recent years in health education techniques for schools in low-income communities, including child-to-child methods, curriculum development, and the productions of locally appropriate education materials.



desirable land - for example, on the areas prone to flooding or subsidence and landslide. They are also often located on busy roads, increasing the risk of accidents, or at some distance from the community they are intended to serve. Size constraints at urban sites may result in overcrowding and inadequate space for exercise.

Standard school designs frequently make assumptions about the kind of site available. They require an area of flat land with specific minimum dimensions. Often, such a site can only be found a long way from where people actually live. This results in young children having to walk long distances, sometimes in the rain, sometimes along busy roads, all of which can increase the hazards they face.

While little can be done about the location of an existing school, planners and community groups should consider this issue at an early stage in the development of a new school. The availability of water, for example, must be borne in mind. Moreover, even in the case of existing schools, improvements are possible. For example: footpaths and bridges can be built for getting to the school; hazardous waste can be removed from the site; efforts can be made to seal off the school from adjacent hazards such as rivers and gullies.

### **2.5.2. Design and Classroom Structure**

Many countries, with the assistance of international aid, have focused on developing standard school and classroom

Classrooms often require larger roof spans than traditional domestic buildings for example, and if domestic construction techniques are used for schools, they may prove to be inadequate, particularly in areas prone to earthquakes and typhoons. External structures, such as concrete sports grounds, are often poorly built, with inadequate foundations. They are also, inevitably, exposed to the weather and so deteriorate rapidly. School grounds tend to be characterised by jagged lumps of subsiding concrete, wide cracks, broken steps and missing inspection covers. All these features are common sources of injury.

### **2.5.3. The microclimate**

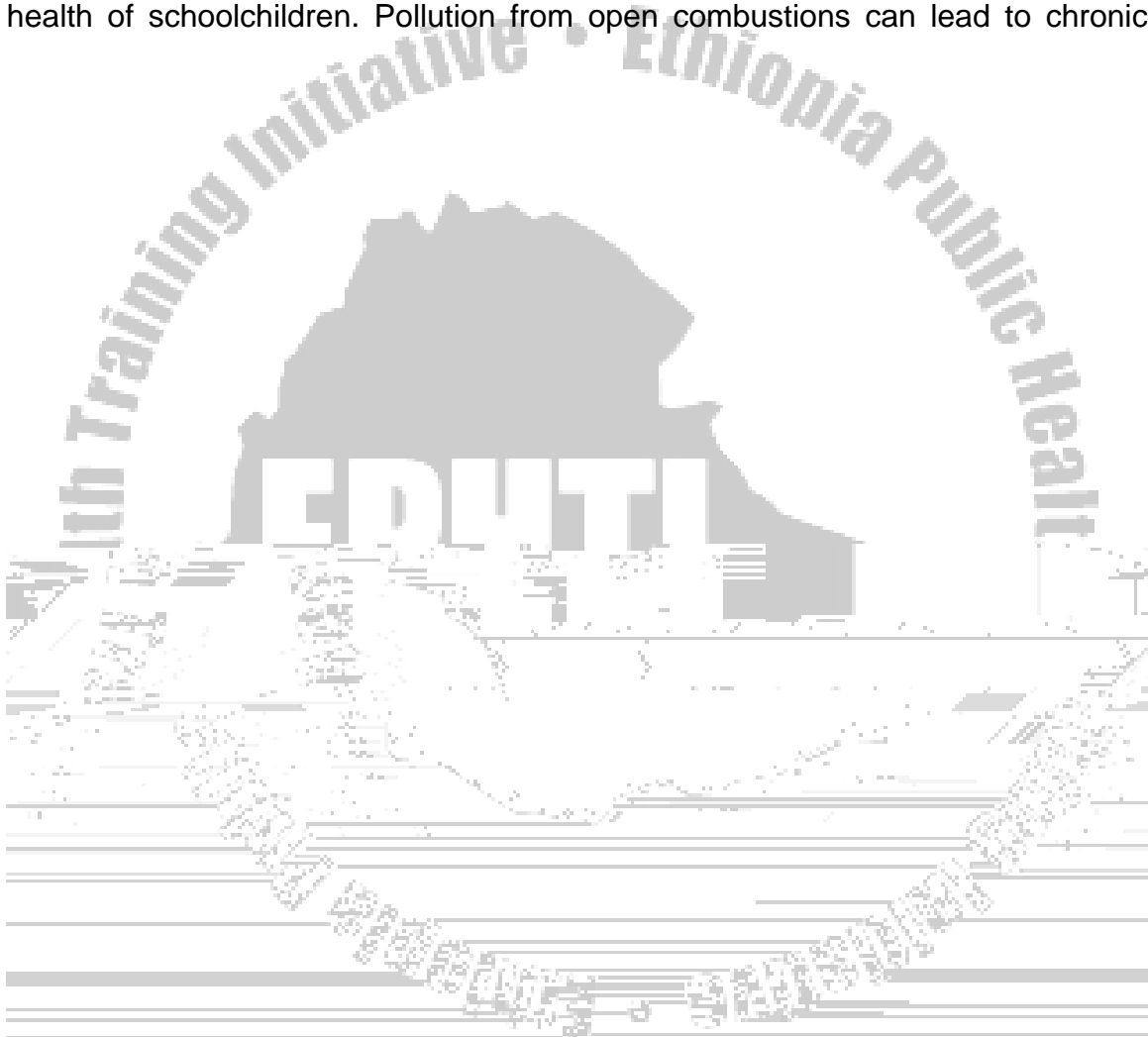
Microclimate is determined by temperature, humidity, and heat radiation and air movement. Details of the relationship between the indoor microclimate and health remain poorly understood. However, it is evidently not good for a child to spend a large part of the day in a cold, damp and poorly ventilated classroom. Poorly nourished and inadequately clothed pupils are particularly vulnerable to acute respiratory infections. Conversely, excessively warm conditions may lead to thermal stress, fatigue, and reduced learning capacity and, in extreme cases,



- School-based learning is not always necessarily best conducted in a classroom. In some climates, the shaded area under a tree or a grassy bank may provide a good teaching environment.

#### **2.5.4. Indoor air quality**

There is a wide range of potential indoor air pollutants, which may influence the health of schoolchildren. Pollution from open combustions can lead to chronic



### **2.5.7. Inadequate furniture**

With a widespread shortage of furniture in schools, many children spend much of their schooldays seated on possibly damp or contaminated mud floors or cold concrete floors. This can lead to infections such as from hookworm. Moreover, overcrowding may lead to risk of cross-infection, for example from scabies. And with overuse, furniture may become damaged, causing injury. Classroom furniture may not always be used appropriately. Examples exist of desks designed for very young children (6-8 years) being used by older children (13-15 years) and vice versa. This is likely to lead to backache and posture problems.

### **2.5.8. Sanitation**

Without sufficient clean and functioning toilets children will defecate in and around the school compound. In such situations the school and its surroundings are likely to become infested with parasitic helminths. Neglected school compounds tend to accumulate waste, both from within the school itself and dumped by people from outside. If school buildings are adjacent to health buildings, medical waste, including items such as used syringes, can frequently be found in school grounds. In malarial areas, standing pools of water around a school can be a major health hazard.

The following is an example of how a school tried to alleviate problems of hand washing and cleanliness of the school toilets.

In a tiny two-room rural school in West Africa, for example, the teacher has instigated a regime whereby, every day, each pupil has to bring a plastic bag full of water. This is added to a communal tank. When the children go to the toilet they have to take water to wash themselves. The toilets, which are simple pits, have high and well-maintained bamboo-screen walls to provide privacy. A rota ensures that every morning the toilets are cleaned by one of the pupils. The result is a clean and well-tended school with a body of pupils who, by the simple expedient of carrying water to school each day, remain constantly aware of hygiene and cleanliness.



### 2.5.9. Dirty hands

The availability of convenient hand-washing facilities is as important as safe disposal of urine and faeces. Hepatitis A, diarrhoea caused by *Escherichia coli*, amoebic and bacillary dysentery, cholera and typhoid are among the infectious diseases, which can spread via the faecal-oral route. Staff and pupils must be afforded with washing facilities so that they are able to wash their hands after visiting the toilet as well as before eating food. Fig. 2. depicts the way of spread of diarrhoeal diseases.

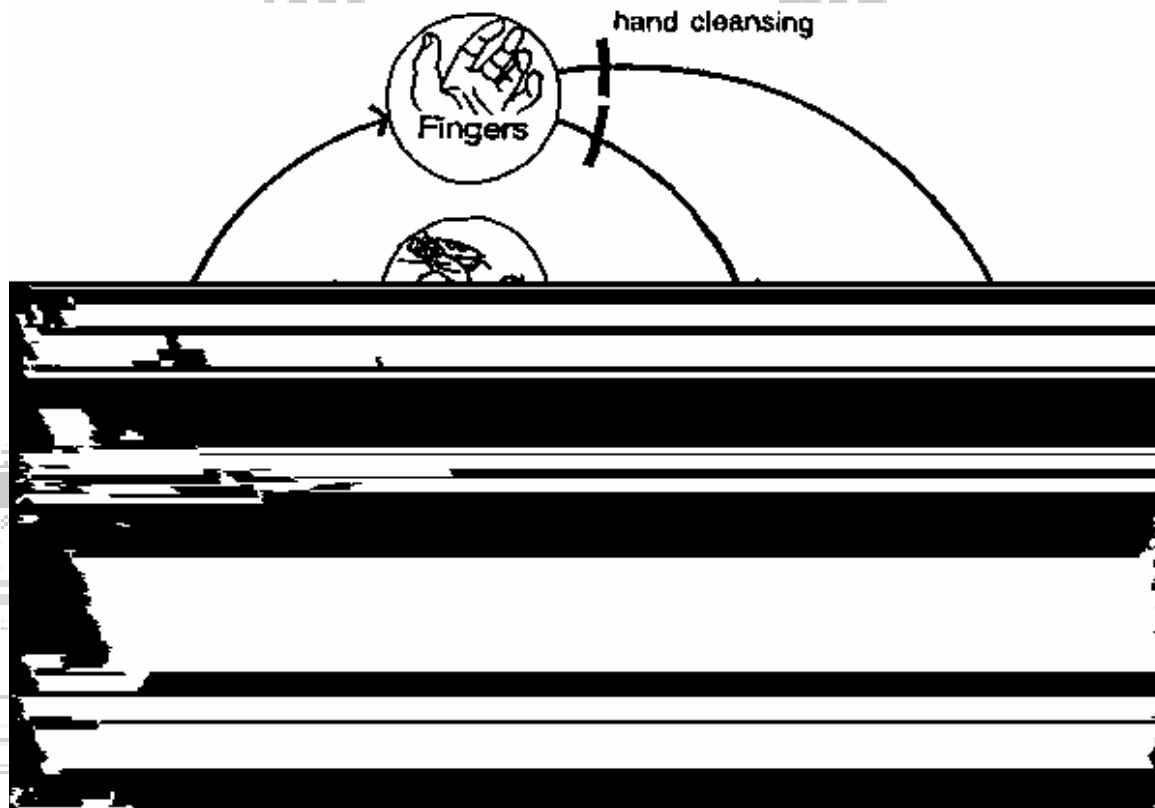


Figure2. The “F-diagram” summarizes the main ways in which diarrhoeal disease is spread - by faecal germs contaminating fields, fluids, fingers, flies or food. Most toilets will stop the “fluids” and “fields” transmission routes. The VIP toilet and the flush (pour-flush) toilet may also break the “flies” route. No type of toilet

### **2.5.10. Water supply**

Many of the faecal-oral infections listed above can also spread via contaminated drinking-water. Children dipping their unwashed hands into a shared drinking-water supply are a typical route of contamination. But problems can also arise from water which is not used for drinking. If rainwater or floodwater is allowed to stand in puddles, the breeding of mosquitoes and other insects may be encouraged, and thus may lead to transmission of diseases such as malaria, dengue fever and schistosomiasis.

### **2.5.11. Health Education**

Health education is a process that helps people make sound decision about personal health practice and about individual, family and community well-being. Knowledge alone does not necessarily poster appropriate health habits. To facilitate effective decision making in health matters, the school system should provide every child with the opportunity to acquire knowledge essential for understanding healthy functions, develop attitudes and habits that promote healthy life style behaviours, and practice health skills conducive to effective living. To achieve these goals, the child, the family, and the community must be involved in the educational process. This is essential because a variety of forces influence the development of healthy lifestyle behaviours. A planned series of integrated health educational activities based on input received from students, parents, community citizens, health care professionals, and education is needed to ensure that health education will become an integral component of a school's curriculum. Comprehensive health education in school is effective in reducing the prevalence of health risk behaviours among youth.

National health objectives provide a framework for developing a sound health education program in the school setting. They help schools to develop curriculum offerings that target critical health issues among school age children such as substance abuse, violence, and sexuality concern. They also provide support for developing planned, sequential and comprehensive curricula. Health educational

activities in school should be aimed at promoting both physiological and psychological functioning. Students must be helped to analyze how normal growth and development progresses and to discuss their needs in relation to the maturational process. The emphasis of a sound health education curriculum is to develop healthy lifestyle patterns.

## **2.5.12. Clinical Health Services**

### **2.5.12.1. Screening**

The school being the first exposure to children, and the presence of different highly contagious diseases in this age group, periodic screening is obligatory in a school to establish a healthy school environment. This will help the health professional to pick up the diseases as early as possible so that the dissemination of a disease can be intervened. For example, health problems such as trachoma, hearing problems, scabies, etc. can easily detected by regular screening. Any sign of highly contagious diseases which are associated with high mortality like measles, relapsing fever, dysentery, etc. need to be promptly reported by the school management to health institutions. The other thing is to monitorsuto by



environment. These tasks are: a faecal-free environment, safe drinking water, convenient hand-washing arrangements, well-lit learning spaces, protection from the elements, structural safety, and adequate cleaning and maintenance.

### **A. Faecal-free environment**

Evidently, faeces on the ground will be a threat to health. The point to be made, though, is that staff, pupils, parents and governing bodies of schools should consider the whole school environment, not just classrooms. Ideally, concern should extend to the streets and fields between home and school, and to the pupils' homes. But at the very least, it must include the school compound.

Success in eliminating faecal material from a school compound is dependent on:

- informed and responsible pupils;
- supervision of young children;
- a compound fence, and vigilance, to stop animals and outsiders from





closely-spaced holes through which light can filter. If the wall is built of bricks the





falling off their hinges, rotten floorboards, broken glass, exposed nails and broken paving stones. While large-scale structural problems are likely to require significant amounts of money to solve, a simple but systematic safety audit can reveal hazards which have simple remedies

In many societies, communal work sessions are traditional. If parents can be persuaded to work together, even just for one day once a year, then such a labour force, which will inevitably include people with specialist skills, can tackle much of the heavier structural repair work. Working together, parents can accomplish tasks such as clearing away broken concrete, rebuilding eroded steps, replacing rotten fence posts, re-laying roofing sheets and repairing furniture and play equipment.

Structural safety plays an important part in good sanitation. Children are often scared that a toilet may collapse, sometimes with good reason. A toilet's squat platform or slab should be well made and protected from the elements. It must also be clearly seen to be safe. The interior of a pit toilet should generally be lined to prevent its sides from collapsing. Surface water from rain should be directed in channels away from toilets, to avoid any erosion of the pit.

For too long the provision of schools has been seen as an issue of construction. Certainly, new schools are

## **F. Adequate cleaning and maintenance**

Problems of structural safety can often be avoided through careful routine maintenance. Dealing with broken roof tiles or undermined foundations straightaway, as soon as they occur, minimizes the need for expensive structural repairs later. Often, where a capital budget is available for construction but resources for routine upkeep inadequate, the result is dilapidated buildings which need to be replaced far earlier than should be necessary.

The key to good maintenance is not letting the situation deteriorate too far before taking action. Broken, clogged or soiled toilets, in particular, will deteriorate rapidly if action is not taken immediately. Rectifying the situation then becomes a major task.

Often a serious problem occurs because everybody thinks it is the responsibility of somebody else. Adequate maintenance, therefore, requires that areas of responsibility are clearly defined and understood by all.

Waste collection is an example of an activity for which several different people can be assigned responsibility for the different parts. Children and teaching staff may be involved in collecting waste in the classroom and compound. A caretaker may be responsible for managing a waste pile and emptying bins. And a municipal waste collector may be responsible for final disposal. Sometimes, one part of the process breaks down. In such a case, dialogue between all the parties involved is important.

## **G. Protection from physical factors**

A classroom of a standard design required to offer as much protection as necessary from rain, wind, sun, and snow is mandatory. Because, it helps the schools to run the teaching and learning process well in a manner that avoids the likely of risk to health of children.

## 2.7. Post-tests

Answer the following question on a separate answer sheet

### 2.7.1. Pre-test for all categories of health professionals

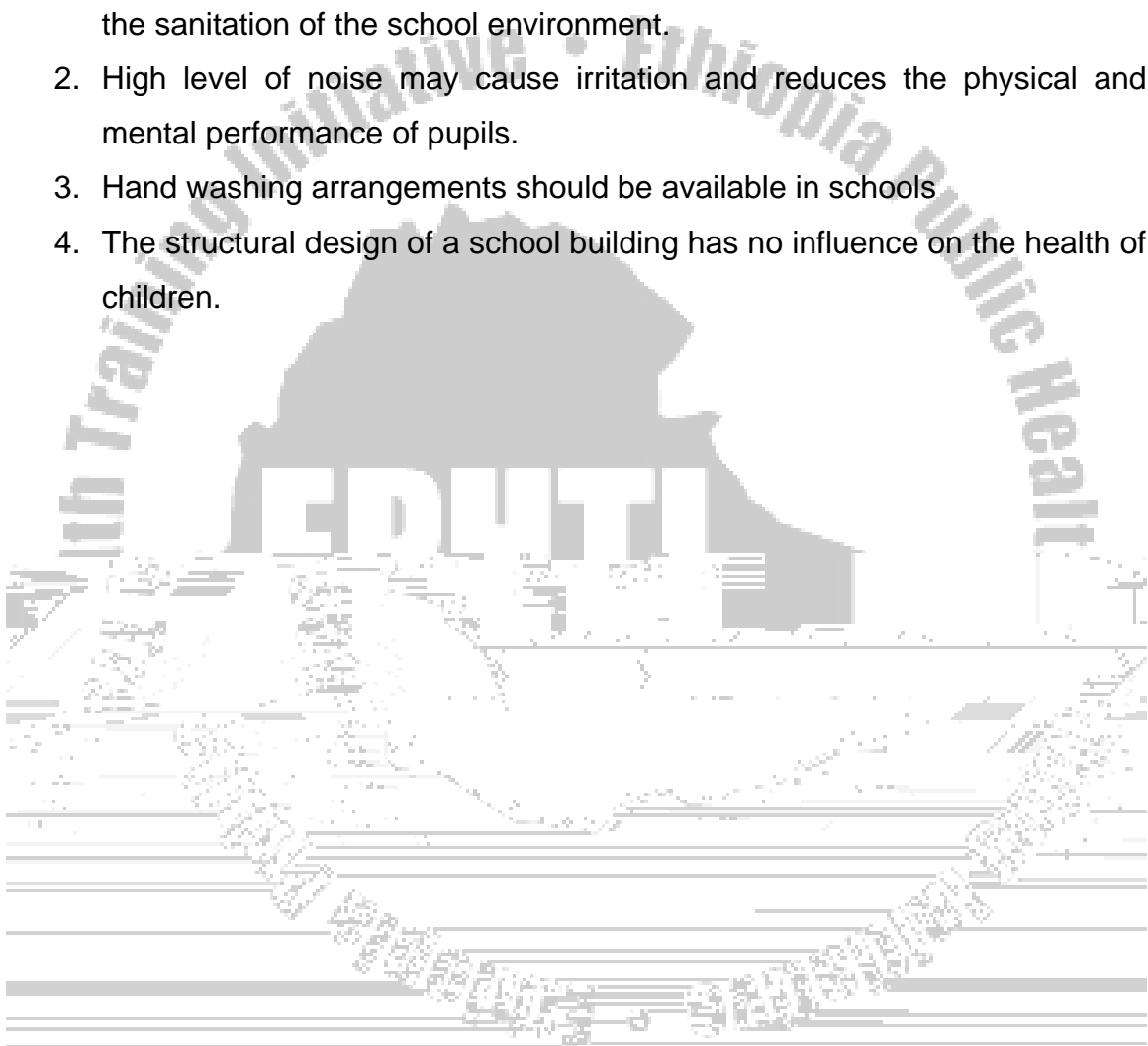
#### 2.7.1.1. Choose the best answer and write on a separate paper.

1. Which one of the following is true about the location of the school?
  - A. the location of the school isn't important in school health
  - B. schools built near to the road aren't associated with any danger to the students
  - C. all sites are equally good to build a school
  - D. the distance of the school should be near to the community being served
  - E. c and d
  
2. One of the following infectious diseases may affect school children by spreading through faecal-oral route
  - A. amoebic dysentery
  - B. cholera
  - C. malaria
  - D. a and b
  - E. all
  
3. Which of the physical aspects of the school environment influence the physical and mental health of the school children?
  - A. sanitation
  - B. hazardous location
  - C. inadequate furniture
  - D. dangerous structure
  - E. all
  
4. The principles which must be considered as priority issues to equip healthy school environment are
  - A. keeping the compound clean of faecal material and waste;
  - B. providing or restoring toilets and keeping them clean;
  - C. providing convenient hand washing facilities and encouraging their use;

- D. providing safe drinking-water.
- E. all

**2.7.1.2. Say “true” if the statement is correct or” false” if it is wrong for the following questions**

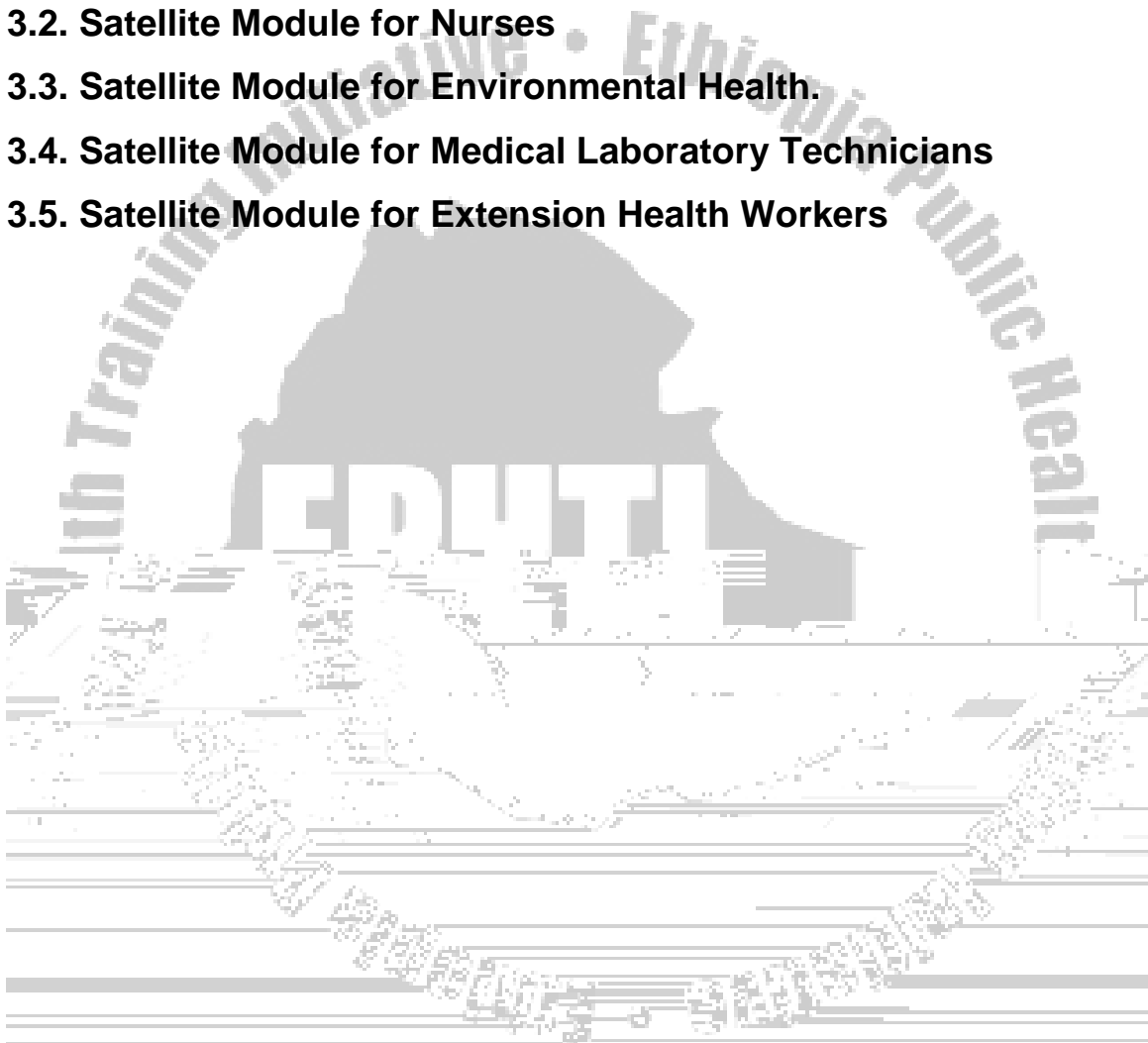
1. The physical and mental health of school children can be influenced by the sanitation of the school environment.
2. High level of noise may cause irritation and reduces the physical and mental performance of pupils.
3. Hand washing arrangements should be available in schools
4. The structural design of a school building has no influence on the health of children.



## UNIT THREE

### SATELLITE MODULES

- 3.1. Satellite Module for Health Officers
- 3.2. Satellite Module for Nurses
- 3.3. Satellite Module for Environmental Health.
- 3.4. Satellite Module for Medical Laboratory Technicians
- 3.5. Satellite Module for Extension Health Workers



## 3.1. Satellite Module for Health Officers

### 3.1.1. Introduction

Despite the fact that integrated health services are kept important nowadays in



### 3.1.4. Pre-test

1. Which one of the following is not true about the influence of Indoor air quality on the health of schoolchildren,
  - A. airborne bacteria can cause cross-infection in a crowded environment



- C. infections from hookworm and urinary tract infections
- D. problems with joints.
- E. all

### **3.1.5. Learning Objectives:**

1. Identify the role and responsibility of the public health officers in the evaluation of the health of children in the school environment
2. Identify the importance of a health service provision
3. Identify the basic situations needed to be fulfilled in the establishment of healthy environment in the school
4. Identify and manage the common diseases acquired in the unhealthy school environment

### **3.1.6. Significance and brief description of the problem**

Most schools in Ethiopia including those locating in the major cities don't fulfill the basic necessities. Considering a school being the first opportunity for many children to mix with people other than close relatives and near neighbours, it may represent their first exposure to a range of infectious diseases .For example a total of one billion people in the world are infected by soil-transmitted helminthes (STH), of which the greatest burden of disease occurs among children in developing countries, where there is poor hygiene and sanitation (1) .These infections are particularly rampant throughout the tropics, posing serious public health problems. In these parts of the world, socio-economic status, cultural practices and the environment favor transmission of STH (2). A report by the Ethiopian Ministry of Health (MoH) indicates that helminthiasis is a leading cause of outpatient morbidity (3). "Schools could the most cost-effective means to improve the health of children and thus to advance social and economical development."(1)



A range of physical aspects of the school environment affects the physical and mental of children.



classrooms may be followed with the attendant risk of cross-infection, for example from scabies.

### **3.1.7. Prevention and control of problems in the school:**

The public health officer plays a leading role in the school health activity. She/he is expected to coordinate the other health professionals and get a maximum effect out of the campaign.

The public health officer should actively involve in the establishment of school clinics and provision of an adequate health care to school children. He is expected to examine the health status of all students attending the school regularly and also submit monthly as well as annual reports.

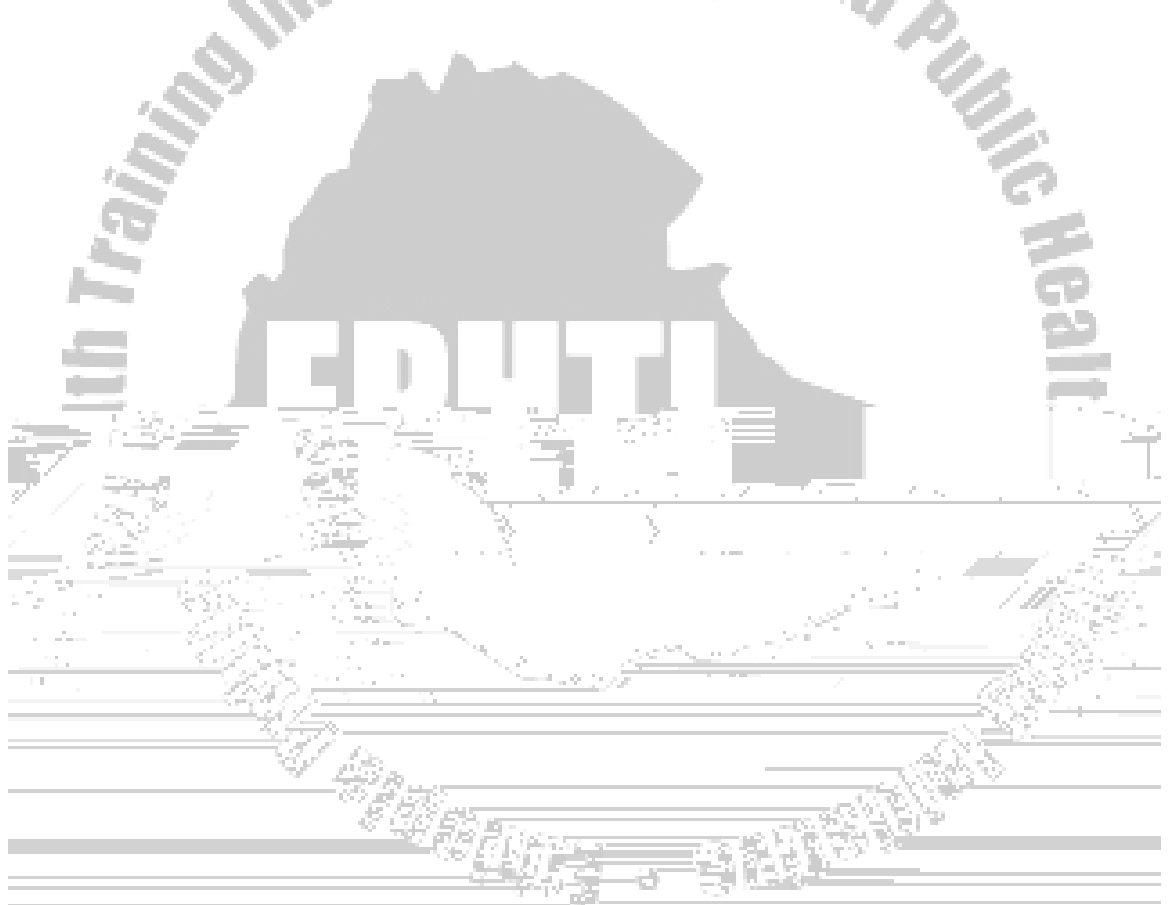
The equipments in such clinics include weighing machine, height standards, a tape measure, snell's eye testing cards, and a tongue depressor. He is solely responsible in the delivery of medical inspection of all children and detection of the presence of contagious diseases and physical defects among them and suggestion of their remedies.

The health officer should inquire into the cases of outbreaks of infectious diseases in school and take all necessary steps to arrest their spread. He/she should give high index of suspicion to diseases acquired in the poor school environment. Outbreaks such as: Hepatitis A, diarrhea caused by Escherichia coli, amoebic and bacillary dysentery, cholera, typhoid Hookworm, urinary tract infections, problems with joints, Scabies, Acute respiratory, 4off and dehrs: Hmm5dr18ie

to deliver deworming pills is through schools because schools offer a readily available, extensive, and sustained infrastructure with a skilled workforce that is in close contact with the community

In many low-income countries, it is more common to be infected than not. Indeed, it has been estimated that, for children aged 5 to 14 years, intestinal worms account for 12% of the total disease burden. Periodic deworming of the school children against intestinal helminthiasis is also kept important in the

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3. In a school environment, if rainwater or floodwater is allowed to stand in puddles, it leads to the transmission of diseases like
- A. tuberculosis
  - B. HIV
  - C. malaria
  - D. schistosomiasis
  - E. c and d
4. Excessively warm conditions of a school microclimate may lead to
- A. fatigue
  - B. reduced learning capacity
  - C. has no effect on child health
  - D. a and b
  - E. none
5. Many children spend much of their schooldays seated on possibly damp or contaminated mud floors or cold concrete floors due to shortage of furniture in primary schools, these may pose them to,
- A. furniture may become damaged, causing injury
  - B. the attendant risk of cross-infection due to overcrowding (e.g. Scabies)
  - C. infections from hookworm and urinary tract infections
  - D. problems with joints.
  - E. all

## 3.2. Satellite Module for Nursing Students

### 3.2.1. Introduction

School environment is a composition of different gr





### 3.2.5. Statements underpinning the principles of school nursing

- Health is a valued asset. School-age children, as well as adults, have a right to the best possible state of health and equal access to health care.
- The health of school –age children benefits from a specialist school nursing service.
- The school –age child’s individual ability to take responsibility for making his or her own decisions should be respected.
- A school age child should be supported in identifying his or her own health needs.
- Sense of worth depends equally on a child’s concept of body image, physical well-being and academic learning achievement.
- The school- health nursing service should be extended to include the development of a health- promoting a school community.

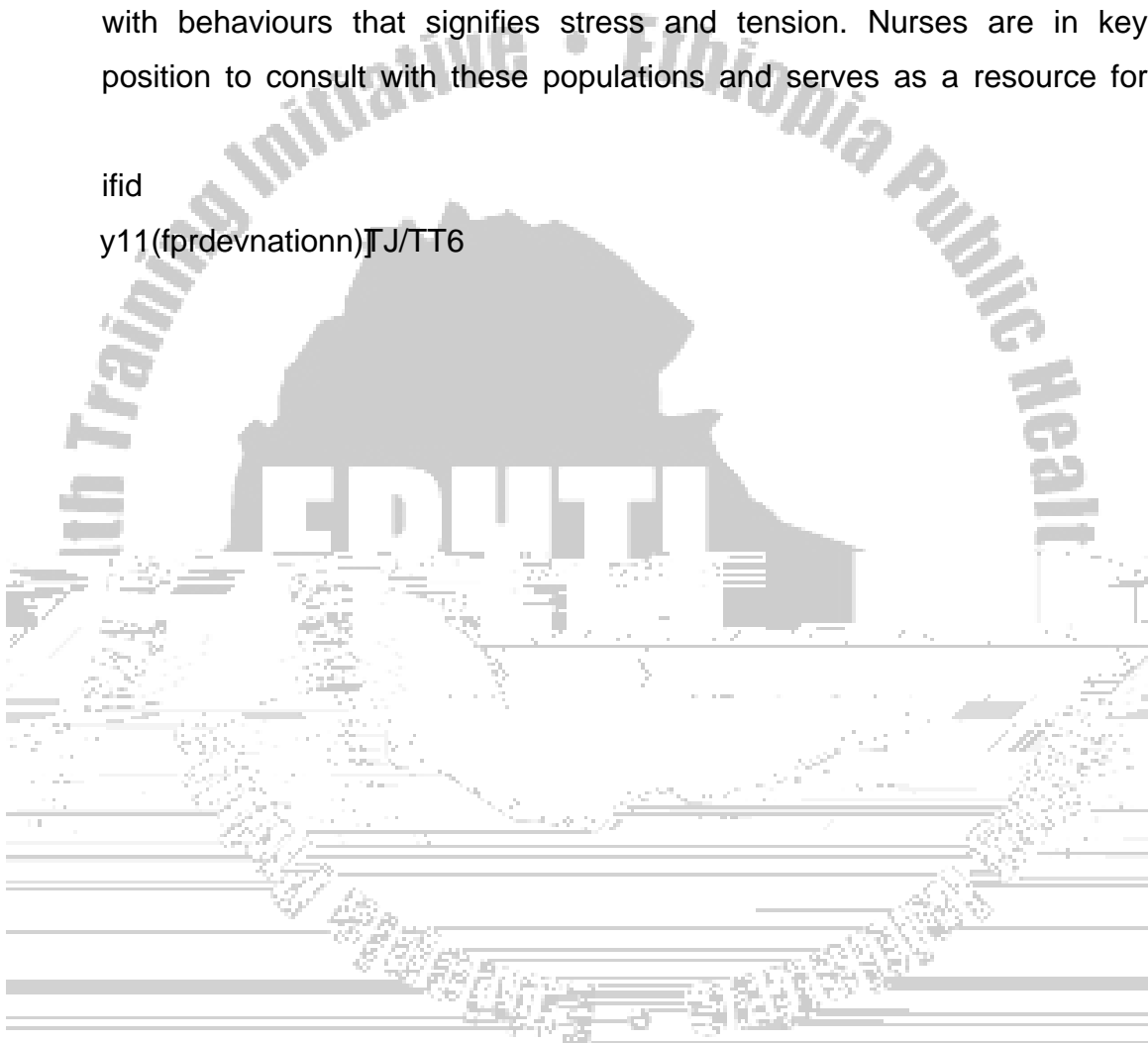
### 3.2.6. Type of services provided by community health nurse at school

- physical examination for screening for vision and hearing
- Immunization
- Identification of abuse and neglect
- Nutritional
  - School Health gives an environmental framework for school children
  - Nurses can provide information regarding illness and injury prevention for child care

- Health education should be incorporated in to school curriculum for older children and adolescents
- Participate school student in school health programs, in teaching topics related to services.
- Education of families of the children may focus on coping strategies, such as division of responsibilities, identification of a frustrations, and dealing with behaviours that signifies stress and tension. Nurses are in key position to consult with these populations and serves as a resource for

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- Provide consultation services
- Provide guidance and support services
- Prepare parent program in school health services
- Maintain standards of health and safety in school
- Participate in communicable diseases control program in school
- Develop skills of health team and take active role in this regard
- Facilitate utilization of preventive services and resources
- Create environmental adaptation for special needs

### **Secondary prevention**

#### Objective

- To facilitate early identification of health problems
- To provide/ facilitate prompt intervention in presence of problems

#### Interventions

- Health interview/ history taking
  - Bear in mind that taking information from school children is not an easy thing
- Conducting physical assessment
  - Perform physical assessment using nursing process approach starting from head to foot.
  - Use the classic approach such as: inspection, auscultation, percussion and palpation unless contraindicated otherwise.
- Screening and testing
- Observations
- Conducting outreach activities, establish home visiting and follow up program
- Conducting school conferences with school community including parents
- Problem management
- Referral
- Communication / interpretation

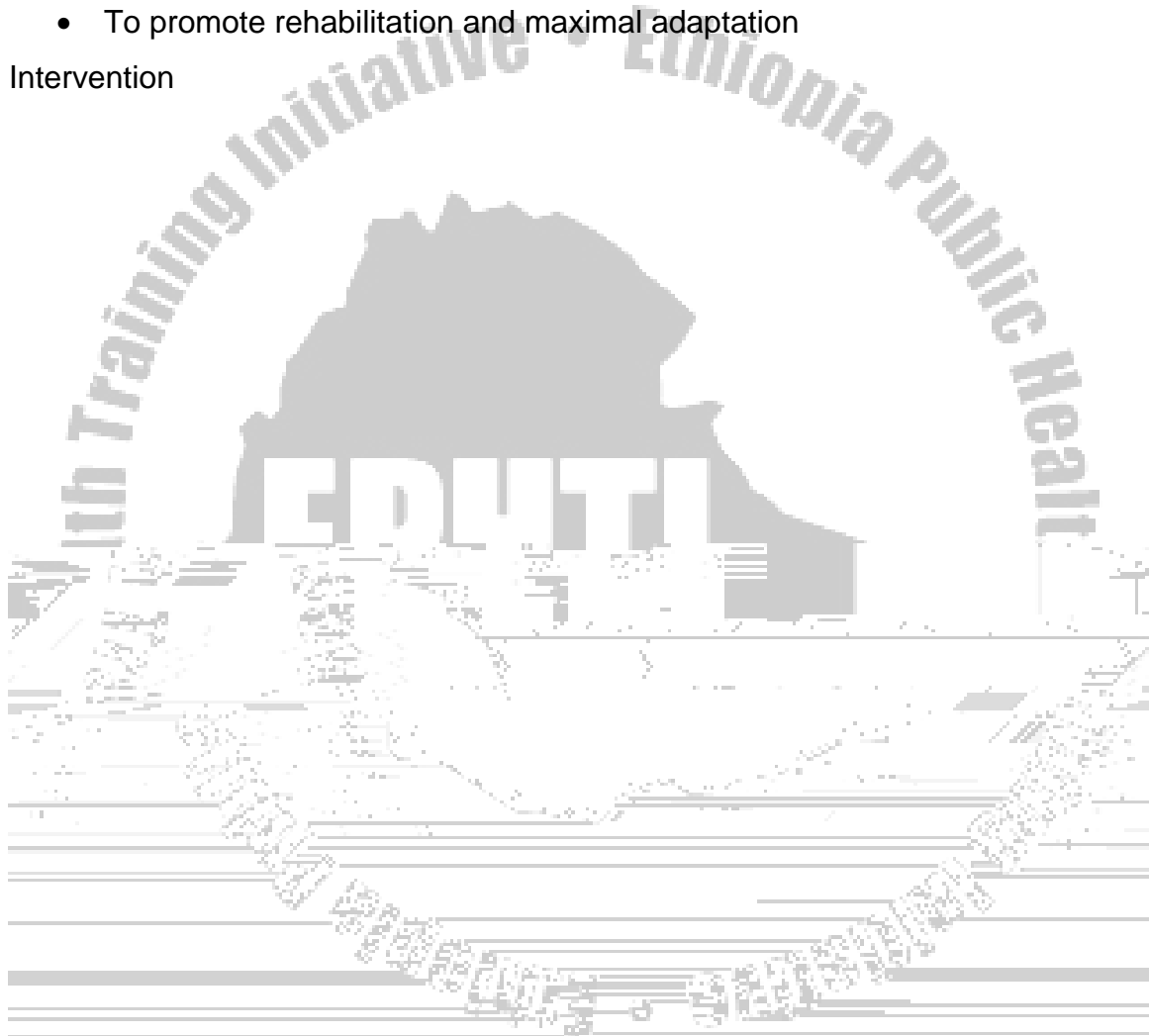
- First aid and emergency care
- Crisis interventions like counselling

### **Tertiary prevention**

#### Objective

- To prevent complication and limit disability
- To promote rehabilitation and maximal adaptation

#### Intervention



### 3.2.8. Post- test questions

1. Which one of the following is not included under the comprehensive school health program?
  - a. Health education
  - b. Clinical services
  - c. Community co-ordination
  - d. Ensuring safe school environment
  - e. None
2. The role of nurse in school health program includes:
  - a. case management
  - b. family counselling
  - c. primary health care services
  - d. primary and secondary prevention
  - e. all of the above
3. The role of nurse on the school health team include all **except**
  - a. case finder
  - b. health counsellor
  - c. advocate
  - d. consultant
  - e. none
4. Mention some of the standards of school health nursing practices
5. State the principles of school health nursing

## **3.3. Satellite module for Environmental Health Technicians**

### **3.3.1. Introduction**

Basic learning activities and information that are equally important to different categories of health professionals expected to implement health services in schools have already been adequately covered in the core module. This satellite module focuses on the roles that are more specific to Environmental Health technicians in school health services.

### **3.3.2. Directions for using this module**

- § Before studying this satellite module, make sure that you have thoroughly read the core module.
- § Do the pre-test questions.
- § Continue studying this satellite module.
- § Identify specific tasks relevant to your profession in school health services.
- § Do the post-test questions and evaluate your knowledge.





## 2. The School Building:

The building structure is another important factor that should draw the attention of Environmental Health professionals both during the construction phase and regular inspections periods of the school:

- § School buildings are recommended to be of classrooms that are opened into the veranda and the hall should be separated and well ventilated.
- § The school premises should have a proper boundary wall and should be kept free from all potential hazards. Corridors should be 1.8-2.44 meters wide and the width of the staircase should be about 1.22 meters with a doorway opening to outside, as it facilitates the escape of children in case of fire outbreaks.
- § There should be a separate staircase for each block and it should be guarded on the open side to minimize the risk of falling down.
- § All parts of the school buildings should be constructed fireproof.
- § A minimum of 4.247 m<sup>3</sup> space and 0.93-1.39 m<sup>2</sup> floor area per pupil is recommended. This allows 42.47-50.17 m<sup>3</sup> circulation of fresh air per head in the room. To attain such requirement of the fresh air circulation, height of classrooms should not be less than 3.65 metres.
- § Classrooms are preferably better face South or South-east for sunlight. Each room should be able to accommodate about 25-50 children. Rooms should





and desks should be adjusted to requirements of students twice a year for the prevention of the eye-strain, fatigue and to eliminate the risk of developing orthopaedic defects.

### **3. Provision of Meals:**

Provision of school meals kindergarten or first cycle schools is important because of several reasons:

- (i) School age population is a vulnerable group; forms a considerable proportion of the total population.
- (ii) The school child often gets hungry in school because the child leaves home after a hurried meal and returns late in the afternoon. In rural areas the child may have to walk several miles. Thus school meal will not only correct the malnutrition due to poor diet at home, but would also combat his hunger in the school.
- (iii) School meals therefore, provide opportunities for improving nutrition, education, and food hygiene and gastronomy.

In Ethiopia, there are no licensed vendors who should keep food items clean and protect them from flies and dust. Foods are prepared at individual homes and are carried to and stored in schools until served. Such situations may subject food items to contamination. For mid-day meals, there should be a separate dining room in the school building.

### **6. Sanitary Conveniences**

§ Privies and urinals sild m003 T3( )esrovidAand food hyg15

in vogue, conservancy arrangements should



- § Prevent the spread of any infectious disease.
- § Protect the children from parasitic infestations
- § Treat any mental or physical defect, or other abnormalities.

### 3.3.6. Post-test

1. One of the following statements is **not** true about school building?

- A. The doorways should open towards the outside.
- B. Each block should have a separate staircase.
- C. 150 ft<sup>3</sup> space per pupil is needed.
- C. Rectangular rooms are not good.
- E. a and c

2. Schools should be situated at:

- A. Close to the cinema house.
- B. Adjoining the public park.
- C. Near large trees.
- D. At least 60 ft away from the main road.
- E. b and d

3. Of the following one choice is **not** true about school furniture:

- A. Seats should hold two-third of the thigh.
- B. single seats are the best.
- C. The front edge of the seat should be rounded.
- D. Students should seat at a fixed place through out the year.
- E. All

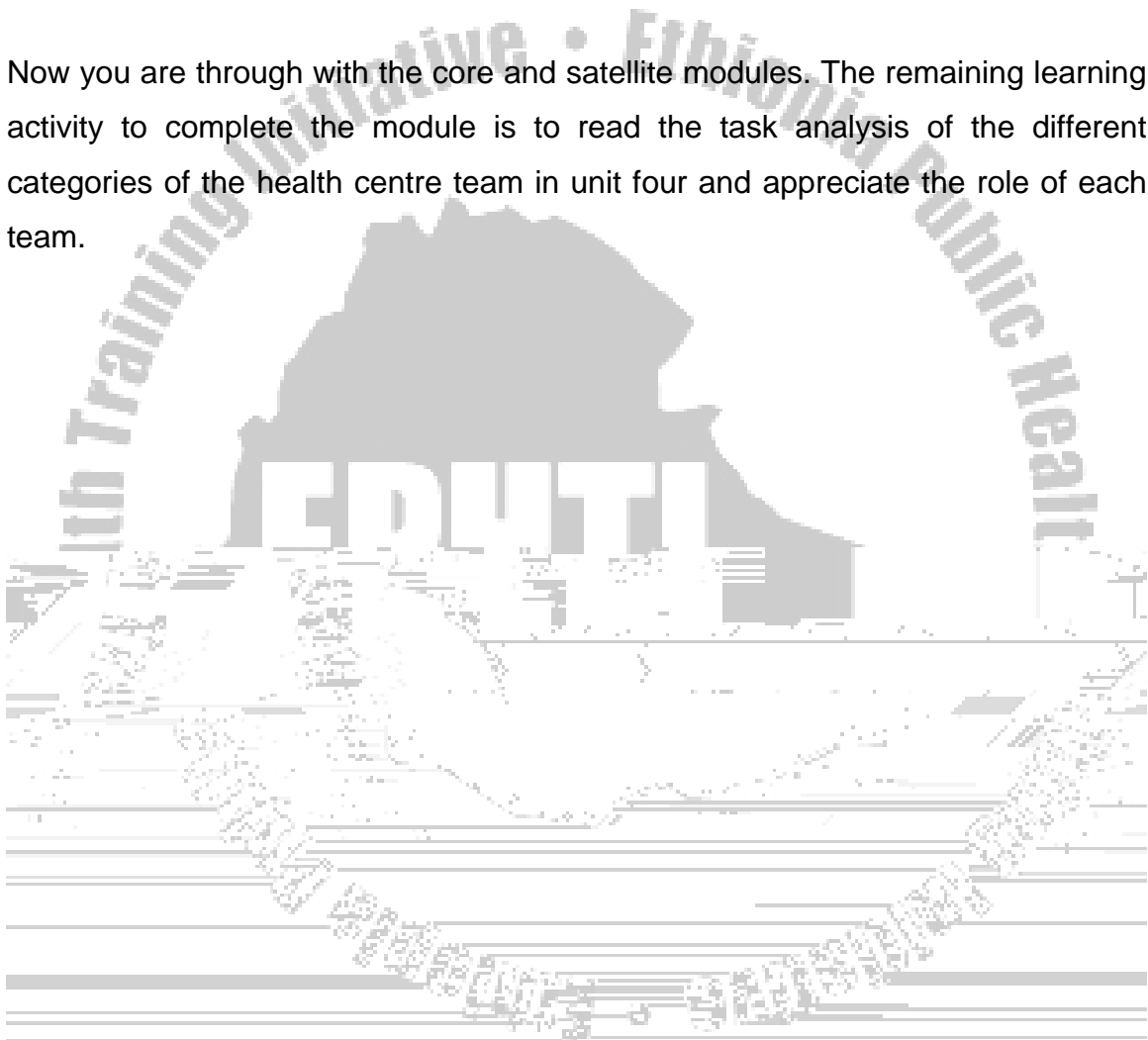
4. Poorly ventilated rooms may lead the students to:

- A. Eye-strain
- B. Fatigue
- C. Infections
- D. All
- E. None

5. Take the wrong statement out.

- A. Artificial lights are not good for the students.
- B. Natural lighting should be provided to the school building.
- C. In the classrooms the main natural light should come from the left.
- D. Glaring should be avoided in the classrooms.
- E. None

Now you are through with the core and satellite modules. The remaining learning activity to complete the module is to read the task analysis of the different categories of the health centre team in unit four and appreciate the role of each team.



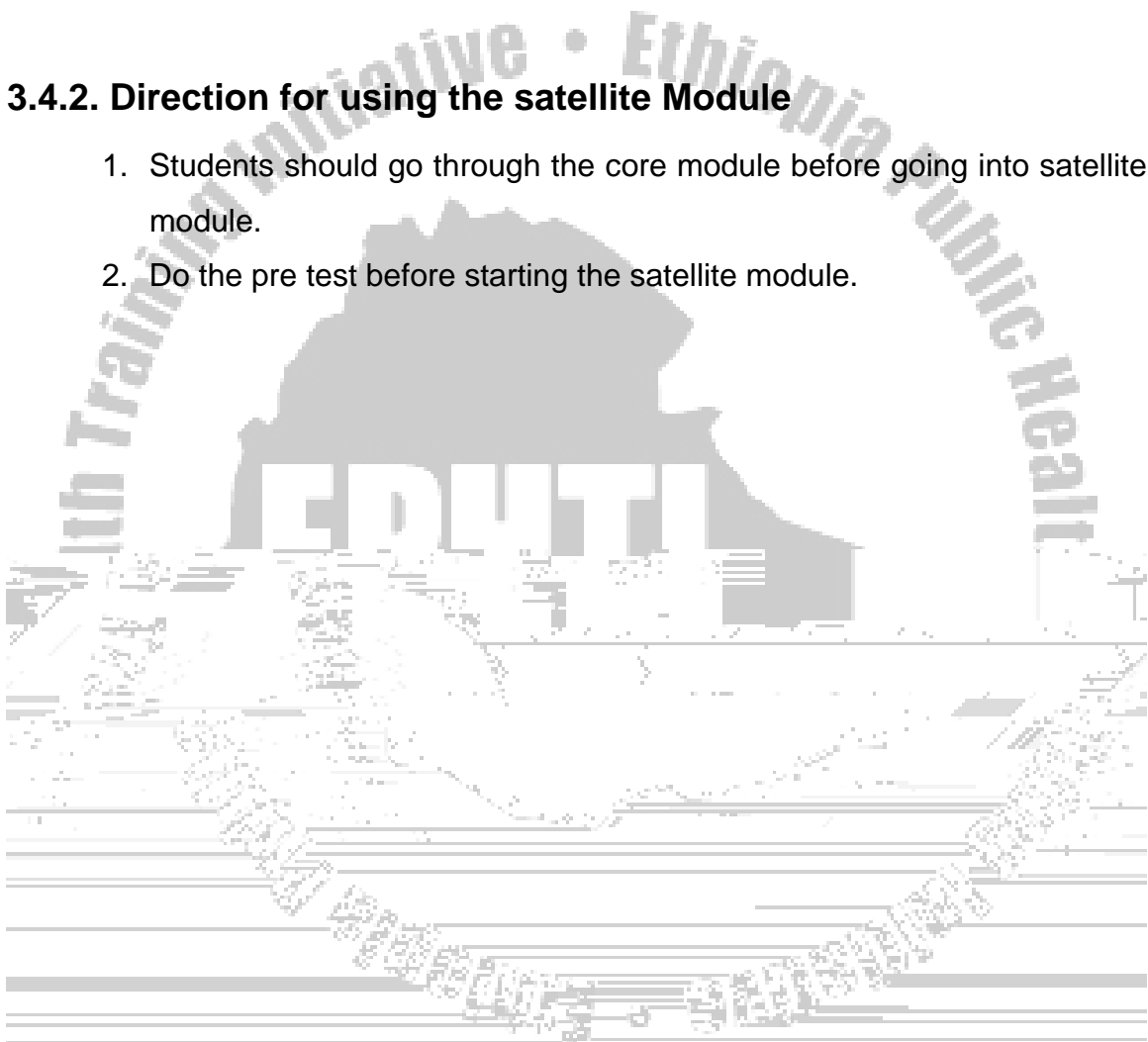
## **3.4. Satellite Module For Medical Laboratory Technicians**

### **3.4.1. Use and Purpose of the satellite Module**

This satellite module provides the specific tasks and activities that should be done by Medical laboratory Technician students involving in school health service.

### **3.4.2. Direction for using the satellite Module**

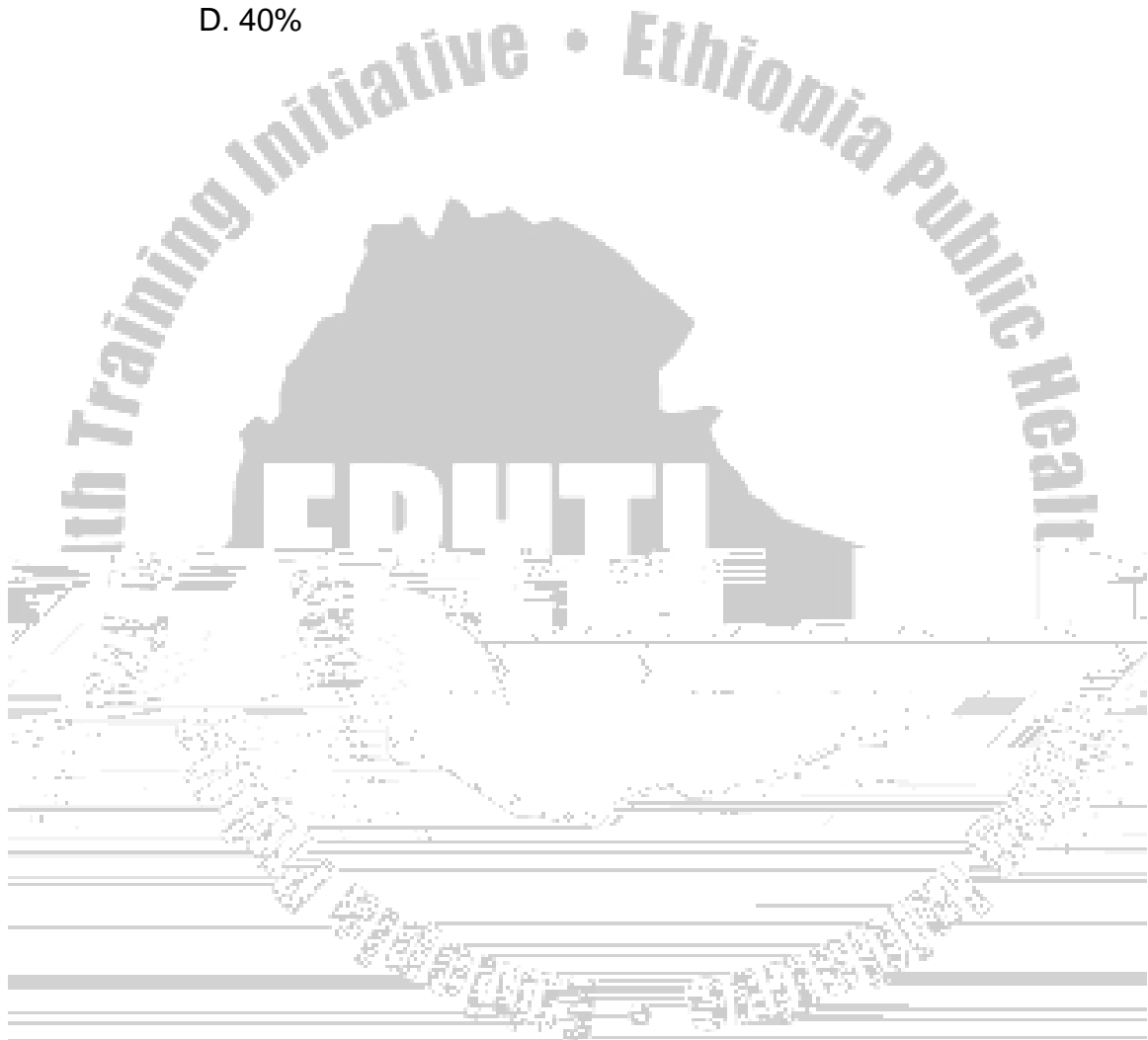
1. Students should go through the core module before going into satellite module.
2. Do the pre test before starting the satellite module.





6. The concentration of potassium hydroxide solution for Direct microscopy in diagnosing fungal infection is:

- A. 10%
- B. 30%
- C. 20%
- D. 40%



### 3.5TD05TARNING OBJECTIVES

At the end of the activities in this module the MLT student will be able to:

1. List the types of laboratory investigations performed for a school health service
2. Discuss the methods of stool, blood and skin scrap sample collection.
3. Explain the interpretation of test results, which are carried out at school health service.
4. List the materials and reagents required for carrying out laboratory tests in providing school health service

### 3.5T5. COMMON LABORATORY TESTS RELATED TO SCHOOL HEALTH SERVICE

Laboratory tests may be needed when indicated by medical professional after carrying out physical examination and/ or taking health history. Most of the tests which help for school health service are performed at a health center level or conducted at the school compound during out- reach activities. The following are common laboratory investigations that are widely applicable in school health service:

<b>Department</b>	<b>Type of investigations</b>
- Parasitology	Microscopical examination of stool Blood film examination
- Haematology	Haemoglobin quantitation
- Mycology	Direct microscopy using KOH preparation
- Serology	Pregnancy test

An overview about the above mentioned tests are clearly described in the following subunits, so that Medical Laboratory Technology students should select and use appropriate kind of investigation based on its clinical significance to school health service.



### 3.4.5.1. MICROSCOPICAL EXAMINATION OF STOOL

#### A) Direct Microscopy with physiological saline and Dobell's Iodine

**Principle:** Routine microscopic examination of stool specimen with physiological saline and Dobell's iodine solution helps to detect and identify the different stages of most parasites

#### **Materials and solutions**

- Dropping bottles containing physiological saline and Dobell's iodine
- Wooden applicator sticks
- Microscope slides with cover slips
- Microscope

#### **Procedure**

1. Place a drop of physiological saline (0.85% w/v) in the center of the left half of the slide and place a drop of Dobell's iodine solution in the center of the right half of the slide
2. With applicator stick, pick up a small portion of the feces (approx.2 mg, which is the size of match head) and put it on the drop of saline. Add a similar portion of stool sample to the drop of iodine
3. Mix the feces with drops to form homogenous suspensions
4. Cover each suspension with a cover slip by holding the cover slip at an angle of 30<sup>0</sup> touching the edge of the suspension and gently lowering the cover slip onto the slide so that no air bubbles are introduced.
5. Using the 10x and 40x objectives, examine the saline preparation for motile forms, cysts and oocyst of intestinal protozoa and for any ova or larvae of helminthes
6. Examine the iodine solution preparation using 40x objectives to identify the cyst stages of protozoa. The iodine will stain the nuclei and the glycogen mass of the cyst.

7. Report the number of larvae and each species of egg found in the entire saline preparation as follow.

Scanty.....1-3 per preparation  
Few ..... 4-10 per preparation  
Moderate number .....11-20 per preparation  
Many ..... 21-40 per preparation  
Very many ..... Over 40 per preparation

**B) Formal - ether concentration technique**

Principle ***Formalin acts as both a fixative and preservative of protozoan, eggs, larvae and cysts. The specific gravity of protozoan cysts and helminthes eggs is greater than that of water fecal debris is extracted in to the ether phase so that the parasitic forms can be separated and then segmented by centrifugation.***

Materials and reagents

## Procedure

1. Using rod or stick, emulsify an estimated 1 g (pea sized) of faeces on about 4 ml of 10% formal water contained in a screw cap bottle or tube
2. Add a further 3-4 ml of 10% formal water, cap the bottle & mix well by shaking
3. Sieve the emulsified faeces collected the sieved suspension in a beaker
4. Transfer the suspension to a conical centrifuge tube made of strong glass, & add 3-4 ml of diethyl ether or ethyl acetate
5. Stopper the tube and mix for 1 minute. (It is best use a boiling tube) don't use rubber line cap
6. With a tissue or piece of cloth wrapped around the top of the tube, loosen the stopper (considerable pressure will have built up side the tube)
7. Centrifuge immediate. At 750-1000g (approx 3000 rpm) for 1 minute
8. Using a stick or the stem of plastic bulb pipette, loosen the layer of the faecal debris from the side of the tube and invert the tube to discard the ether, faecal debris and formal water. Then the sediment will remain
9. Return the tube to its upright position and allow the fluid from the side of the tube to drain to the bottom. Tap the bottom of the tube to suspend and mix the sediment. Transfer the sediment to a slide and cover with cover glass.
10. Examine the preparation microscopically using the 10x objective with the condenser iris closed sufficiently to give good contrast. Use the 40x objective to examine small cysts and eggs. (To assist in the identification of cysts run a small drop of iodine under the cover glass). Although the motility of *S. stercoraris* larval not be seen. The non-motile larvae can be easily recognized.
11. If required, count the number of each species egg in the entire preparation. This will give the approximate number per gram of faeces

## C) BLOOD FILM EXAMINATION

**Principle:** Thick and thin blood film used for to check whether heamoparasites are present or not .In thin blood film the red cells are intact whereas in thick blood film the red cells heamolysed and only the parasites and white cells observed.

### Materials

- Slide
- Spreader with sharp edge
- A piece of gauze
- methanol
- staining rack
- Giemsa stain
- microscope
- shallow tray

### Preparation of thick and thin blood film

1. Use a completely clean grease free microscope slide; add a small drop of blood to the center of the slide and a larger drop about 15 mm to the right.
2. Immediately spread the film using a smooth edged slide spreader.
3. Without delay, spread the large drop of blood to make a thick smear.
4. Using a black lead pencil, label the slide with the date an identification number.
5. Allow the blood films to air-dry with the slide in a horizontal position and placed in a safe place (where there is no risk of the blood coming in contact with any person or object)

### Fixation of thin blood films

1. Place the slide horizontally on a level bench or on a staining rack.
2. Apply a small drop of absolute methanol or ethanol to the thin film, making sure that alcohol doesn't touch the thick film. Alternatively apply the methanol to the thin film using a swab.
3. Allow the thin film to fix for 1-2 minutes.

**Staining *technique***





## II) Acid- Hematin (sahli- Hellige) Method

**Principle:** Hemoglobin in a sample of blood is converted to a brown colored acid- hematin by treatment with 0.1N HCl and after allowing the diluted sample to stand for 5 minutes, to ensure complete conversion to acid hematin; it is gradually diluted with distilled water until its color matches with the colour of an artificial standard (tinted glass).

### Materials

- Sahli hemoglobinometer
- Sahli pipette
- Stirring glass rod
- Dropping pipette
- Absorbent cotton
- 0.1N HCl
- Capillary blood sample collection materials

### Method:

1. Fill the graduated tube to the "2.00" mark of the yellow graduation with 0.1N HCl
2. Draw venous or capillary blood to the 0.02 ml mark of the sahli pipette don't allow air bubbles to enter. With venous blood ensure that it is well mixed by inverting the tube containing it and anticoagulant repeatedly for about 1 minute immediately before pipetting it. If using capillary blood, don't take the first drop of blood from the finger

lorishi

5. Place the graduated tube in the hemoglobinometer stand facing a window. Compare the color of the tube containing diluted blood with the color of the reference tube. If the color of the diluted sample is darker than that of the reference, continue to dilute by adding 0.1N HCl or distilled water drop by drop. Stir with the glass rod after adding each drop. Remove the rod and compare the color of the tube with the standard columns. Stop when the color matches.
6. Note the mark reached. Depending on the type of hemoglobinometer this gives the hemoglobin concentration either in g/dl or as a percentage of "normal". To convert percentages to g/dl. Multiply the reading by 0.146.

## E) POTASSIUM HYDROXIDE (KOH) PREPARATION

**Principle:** Fungal elements may be obscured by skin, hair or nail tissue. KOH dissolves keratin in these specimens, facilitating observation of the organism's morphology. KOH preparations are used in the initial examination of keratinized tissue suspected of fungal infection

### Materials and reagent

- 20% KOH solution
- Microscope slide with cover slip
- Microscope



## Interpretation

Observe for the presence of characteristic fungal elements, including hyphae, budding yeast, and spherules.

## F) PREGNANCY TEST

Pregnancy test can be conducted at a level of secondary school health service. The principle, materials required procedure and interpretation of test results is highly depend on the type of kit, which is produced by different manufacturer. The best way to apply these test kits is reading the kit insert before starting any activity.

### 3.4.6. POST TEST

The following post test questions are designed to assess your understanding of the satellite module, attempt all of them and compare your results with the answer key on page 20.

**Instruction: - Choose the best answer and write the answer on separate sheet of paper**

1. Which one of the following intestinal parasite is identified by presence of the larva in stool specimen?
  - A. *Ascaris lumbricoides*
  - B. *Entrobium vermicularis*.
  - C. *Strongloides stercoloris*
  - D. *Gardia lamblia*
2. One of the following parasitological tests can be implemented simply in the school compound for parasitological assessment of stool sample
  - A. Direct microscopy
  - B. Formal- Ether concentration technique
  - C. Kato- thick technique
  - D. A & B

3. Direct microscopy of stool specimen is performed by using
- A. Normal saline
  - B. Sodium carbonate
  - C. Dobell's iodine
  - D. A & C
4. During microscopical examination of stool, the objective of the microscope should be at which magnification power
- A. 10x & 40x
  - B. 40x & 100x
  - C. Only 10x
  - D. Only 40x
5. The diluent used for shali-hellige hemoglobin quantitation is known as:
- A. Glacial acetic acid
  - B. 0.1N HCl
  - C. 2%  $H_2SO_4$
  - D. Turk 's solution
6. The concentration of potassium hydroxide solution for direct microscopy in diagnosing fungal infection is:
- |        |        |
|--------|--------|
| A. 10% | C. 20% |
| B. 30% | D. 40% |

Now you are through with the core and satellite modules. The remaining learning activity to complete the module is to read the task analysis of the different categories of the health centre team in unit four and appreciate the role of each team.

## **3.5. Satellite Module For Health Service Extension Workers**

### **3.5.1. Introduction**

Schools are places where large numbers of people gather at a time on a daily basis for educational purposes. Such gathering places may constitute risk of disease transmission from person to person. Children are especially vulnerable to various health problems such as malnutrition, Asthma, helminths, and other infections. Therefore, school children need regular assessments and screening tests for early intervention and prevention of unnecessary sequelae.

It is therefore, of paramount importance that school-aged children are educated in a sanitary and wholesome environment that largely supports the mental, social and physical wellbeing of the children. Hence, it is critically important to establish and render basic health services in schools. The roles of frontline health professionals, especially health extension workers are extremely important to ensure the wellbeing of school population. This satellite module focuses on the roles more specific to Health Extension Workers.

### **3.5.2. Directions for using this module**

- § Try to read the core module prepared for all categories.
- § Do the pre-test.
- § Continue studying this satellite module.
- § Identify specific tasks relevant to your profession in school health services.
- § Do the post-test and evaluate your knowledge.

### 3.5.3. Pre-test

Answer the following questions and write the letter of your answer on a separate sheet.

1. Which of the following is not true about the site for schools?
  - A) it has to be centrally located
  - B) it has to be reasonably away from marshy areas.
  - C) It has to be placed on the side of main street
  - D) It has to be situated on well-drained sites.
  
4. Which of the following is



6. School health programs include:

- A) Immunization
- B) Health education
- C) Treatment of simple infections such as intestinal parasites
- D) All of the above

### **3.5.3 Learning Objectives:**

After completing this module, the reader will be able to:

1. Describe the objective of school health services.
2. Select appropriate site for the school buildings
3. List basic school health services.
4. Evaluate the physical features of schools
5. List potential health threatening factors in school compounds.

### **3.5.4. Basic School Health Services.**



to prepare a check list with respect to



- § The furniture should be taken out of the room and the floors scrupulously scrubbed and swept once a week. Every effort should be made to prevent a dusty atmosphere in schools.
- § Regular inspection of school compounds for any physical hazards or risks.

**d) Water Supply.**

- § There should be a continuous supply of safe and potable water through taps.
- § In the areas with piped water supply, a small reservoir with one tap for 100 students must be provided.
- § The use of a common glass or a tumbler should be prohibited unless it can be properly cleaned, each time after use.
- § It is better to drink water directly from the tap than from storage tanks.

**3.5.4.2. Screening and follow ups:**

Screening and follow up services are rendered by combined efforts of health team. The health extension workers are expected to play a key role in the team particularly in making assessments of the school environment and taking an immediate action to tackle the identified problems. Children having medical problems require frequent inspections and follow-ups in order to:

- § Prevent the spread of any infectious disease.
- § Protect the children from parasitic infestations
- § Treat any mental or physical defect, or other abnormalities.

Specific screening activities health extension workers may perform include:

1. Physical observation of the children, to identify visible defects such as

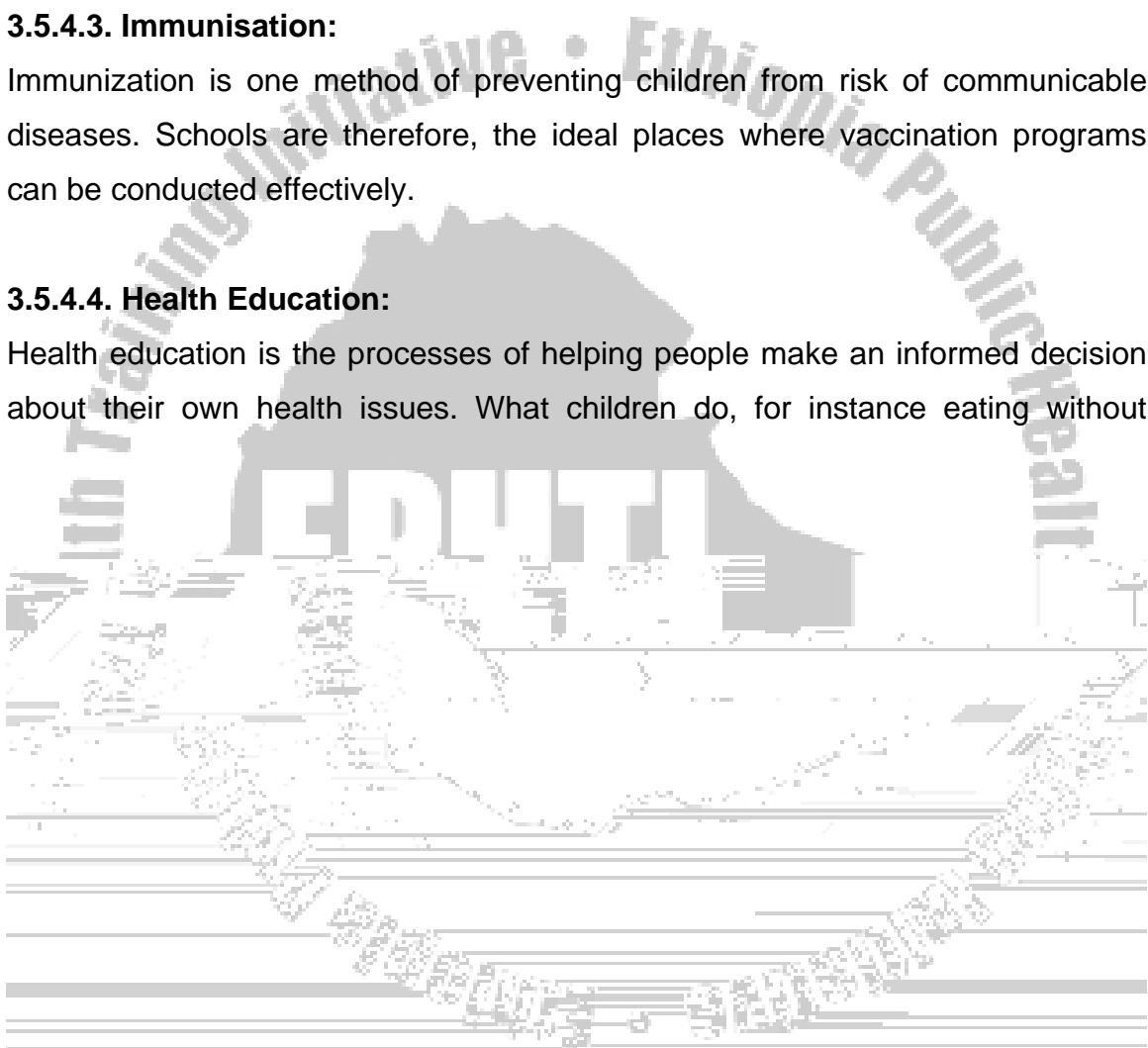
4. Referring children with health problems that cannot be treated at the schools to the health centres.
5. Make regular follow-ups for the children on the treatment for identified health problems.
6. Assessment of personal hygiene (face, fingers, hair, clothing, etc)

#### **3.5.4.3. Immunisation:**

Immunization is one method of preventing children from risk of communicable diseases. Schools are therefore, the ideal places where vaccination programs can be conducted effectively.

#### **3.5.4.4. Health Education:**

Health education is the processes of helping people make an informed decision about their own health issues. What children do, for instance eating without





#### 3.5.4.5. Control of communicable diseases in schools:

- Detection of early signs and symptoms of infectious diseases
- Referring students with suspected infections to the local health centre and then to make a close follow up.
- Inspection/visiting homes of the cases and investigating risk factors for health problems.

#### 3.5.4.6. Provision of Meals:

Provision of school meals is important because of several reasons:

- (i) School age population is a vulnerable group. The school child often gets hungry in school because the child leaves home after a hurried meal and returns late in the afternoon. In rural areas the child may have to walk several miles.
- (ii) Educational performance of the child would improve by improving nutrition.
- (iii) School meals provide opportunities for nutrition, education, and food hygiene.

#### 3.5.5. Post-test:

Answer the following questions and write the letter of your answer on a separate sheet.

1. Which of the following is not true about the site of schools?

- A. it has to be centrally located
- B. it has to be reasonably away from marshy areas.
- C. It has to be placed on the side of main street
- D. It has to be situated on well-drained sites.

2. Which of the following is true about school buildings?

- A. They better be built from fireproof materials
- B. All rooms have to be adequately ventilated
- C. The buildings have to provided with adequate natural light
- D. All of the above.

3. Provision of good sanitation and hygien



## UNIT FOUR

### ROLES AND TASK ANALYSIS

At the end of reading thoroughly the module, the health professionals should acquire a basic knowledge, attitude and practice towards school health.

#### Knowledge

The health officer student should know about:

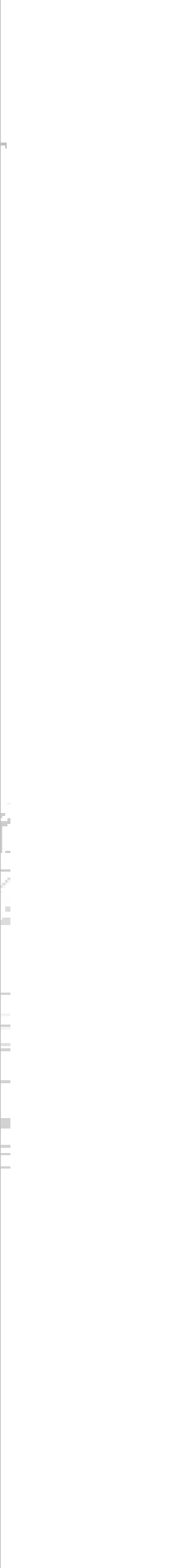
- the importance of school health
- the role of a proper school location
- the need of a school clinic
- the common diseases acquired in a school environment

Nursing students should

- state the underpinning principles of school health
- list types of community health services
- mention the role of nurses in school health
- identify feasible strategy to provide school health service
- list standards of school health nursing practice

Environmental health professionals:

- Define and describe school health services
- List the commonest health problems prevalent in schools
- Describe the magnitude of health problems among school children.
- Explain basic physical environmental factors that may affect school children.
- Know how to properly collect and dispose solid wastes produced in the schools.



	<ul style="list-style-type: none"> <li>- Believe Health education in schools is of paramount importance for positive behavioural changes among children.</li> <li>- Believe that regular inspections and follow-ups help identify risk factors in advance and take action.</li> <li>- Agree with the facts that young school children are risk groups and thus need a close care.</li> </ul> <p>Laboratory technologists should</p> <ul style="list-style-type: none"> <li>- Help believe that early detection of school health problems helps in the appropriate management</li> <li>- Promote the importance of screening tests</li> </ul> <p>Health Extension Workers</p> <ul style="list-style-type: none"> <li>- Believe in the relevance of school health programs.</li> <li>- Give attention to the importance of school sanitation.</li> </ul>
<p><b>Practice</b></p>	<p>A health should regularly practice</p> <ul style="list-style-type: none"> <li>- coordination and playing a leading role of the team in school health service delivery</li> <li>- undergo regular follow up</li> <li>- identify common diseases and manage accordingly</li> <li>- facilitate immunization programmes toward infectious diseases</li> </ul> <p>- proper recording and reporting of cases identified</p> <p>Nurses are responsible to</p> <ul style="list-style-type: none"> <li>- assess health problems prevalent in school health</li> <li>- list the major health problems and set priority order</li> </ul>

- established goals based on the identified problems
- provide health education
- treat common diseases
- establish functional referral system
- prevent accident and injuries
- give first aid measures

Environmental health professionals should

- identify health-threatening conditions in schools and take appropriate measures.
- Give health education in schools to increase the awareness of the student population about safety of their environment.
- Carry out regular inspections in schools and be actively involved in solving the problems.
- Demonstrate the recommended and standard parameters used to improve the wellbeing of the children in schools.

Laboratory technologists should

- Identify the micro organism which highly affect school children
- Involve in school health service
- Perform different investigations which assist in identification of microorganisms
- Give any technical assistance for school health service

Health Extension Workers:

- Carry out school health regular programs.
- Make a necessary screening and assessments.

## REFERENCES

(1) WHO. WHO Expert Committee on Comp



**Part I: Answer for questions of all categories of health professionals**

1. d
2. d
3. e
4. e

**Part 2: True /false**

1. True
2. True
3. True
4. False

**For Health officers**

1. D
2. E
3. E
4. D
5. E

**For Nurses**

1. E
2. E
3. E

**For Environmental Health professionals**

1. D



2. E
3. D
4. D
5. A

For Medical laboratory technicians

1. C
2. D
3. D
4. A
5. B
6. C

Answer keys for pre-and post tests for Health Extension Workers:

1. C
2. D
3. D
4. C
5. D
6. D