MODULE

School Health

Diploma Program
For the Ethiopian Health Center Team

Ethiopia Public Health
Training Initiative

Abraham Alano B.S., M.P.H; Henock Ambachew, B.S.;
Dejene Hailu, B.Sc., M.A.; Takele Tilaye, M.D.;
Wossen Tafere, B.S.

Debub University

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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 environment at different angles and for their effective team work.

For this reason separate satellite modules are prepared for each professional category based on the tasks expected from them. This module can also be used for in-service training and quick reference for other health professionals, but it isn't intended to replace standard text books or other reference materials.

1.2. Direction for using the module

Before starting to read this module, follow the directions given below:

1. Go through all the contents of the core module by starting with the pre-test
2. Uses a separate answer sheet paper and label it" pre-test answers"
3. The pre test has two parts:

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 virtually every nation could do more than any other single institutions to improve the well-being and competence of children and youth. Yet the evidence suggests that schools around the world have difficulty meeting critical physical, mental, and social health needs of children and youth."(1)

An effective school health service provides invaluable support for schools in order to achieve the collective goals of promoting healthier environments. This

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 health is now seen as a priority for schools. In countries around the world including Ethiopia this issue is being addressed through school health services, that ma include health education and school meal programs. Although the physical environment in schools is now seen as one of the major elements of health promotion, relatively little work is done so far to this end in our country. The aim of school health services are therefore to:

- Raise awareness and understanding of the health impact on children of the physical environment of schools.
- Increase the priority given to developing environments in schools that promote health
- Define areas where interventions are feasible and suggest what can be done and how particularly under difficult conditions and within severe budgetary constraints.

Objectives of school health service include:

1. To build schools taking into account modern sanitary constructions.
2. To appoint suitable medical inspectors or school medical officers.
3. To make provision of an adequate system of medical inspection and screening of all children and suggest the possible remedies.
4. To establish school clinics
5. To segregate cases of infectious disease and establish centres for the prevention of spread of these diseases.

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 holes are observed in the walls of most of the buildings and most of the classrooms are full of dust. The corrugated iron sheets roof covers are old, rusted and perforated, thus allows light rays to pass.

Exercise:

List at least four health-related problems and their solutions in the above-mentioned school.

2.5. Health and health related aspects of school.

A range of physical aspects of the school environment can influence the physical and mental health of children. These can be listed as sanitation (or the lack of it); dirty hands; water quality; the microclimate; indoor air quality; noise; light (both too little and glare as a result of too much light); dangerous structures; inadequate furniture, and a hazardous location.

Added to these is the fact that, for many children, going to school is the first opportunity to mix with people other than close relatives and neighbours. Consequently, such situations may represent their first exposure to a range of infectious diseases.

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.

However, the impact of the actual fabric and management of school premises on child health has been relatively neglected. Many schools fail to provide healthy environments for their pupils. Poorly designed and maintained schools can be a source of disease and ill health. Sick children also make poor learners.

It is therefore, in this concept tempting to suggest that all these problems are the products of poverty and that the answer is improved socio economic status of one's nation. Many developing countries can boast showpiece examples of good, clean, well-equipped schools - schools with in-house health services, pristine washrooms, well-tended grounds, and well-trained teachers working in classrooms equipped with computers, televisions and videos. For the lucky few these model schools are undoubtedly delivering a high quality of education in an environment conducive to physical and mental health. Where both money and focused attention is available, such things are possible. And there is no doubt that education does merit a larger share of the world's resources. But the evidence suggests that, aside from these showpiece examples, simply throwing more money at the problem does not necessarily result in sustainable solutions. Many examples exist where well-intentioned governments and donors have made significant investments in new and improved schools but with disappointing results

2.5.1. Location of the School:

The dangerous aspect of a school, in some cases, is its location. When informal urban settlements grow up, residential houses, heavy and petty industries closely surround schools. There are also situations where schools are built on the least

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 designs. Yet, results have often been poor either because the designers did not recognise that conditions on the ground are not standard, or because provision for complementary aspects such as water and sanitation facilities, security, furniture and maintenance were neglected. Besides well as protecting children and staff from the elements, the structure of a school building is intended to enhance health and well being. But badly designed or poorly maintained structures may in fact threaten health.

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, heat stroke. (7) · Much teaching and learning can also take place outside of classrooms. Figure 1 below is an illustration of an outdoor lesson.

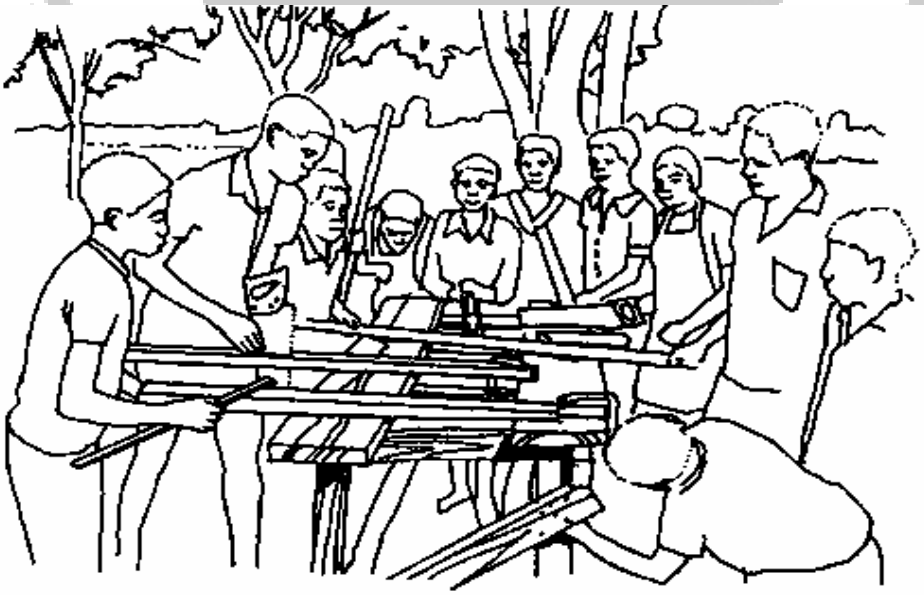

Fig.1: A carpentry lesson held outdoors in Technique and skills training school.

- 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 respiratory diseases and carcinomas. In a crowded environment, airborne bacteria and viruses can cause cross-infection. Other threats include; rotten matter produced by moulds and fungal growths; fine dust; gaseous and particulate compounds from building materials, and radon gas. Many health problems are associated with these pollutants, including acute respiratory infections and asthma. (7)

2.5.5. Noise

High levels of noise can cause irritation, encourage aggressiveness, reduce physical and mental performance, and cause discomfort and headaches. Exceedingly loud and continual noise can lead to more serious problems.(7) Children with hearing problems, visually impaired children, and children with learning difficulties are particularly dependent on a good acoustic environment(8).

2.5.6. Light

Bad lighting can affect the well being of both pupils and staff. Eyestrain is a frequent complaint in classrooms and other teaching spaces where light levels are low, or where glare is excessive. Eyestrain probably largely accounts for the higher prevalence of headaches in the afternoons that have been reported by children and teachers. Poor light conditions can cause children to adopt poor posture, which itself can eventually lead to physical strain.(9)

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.

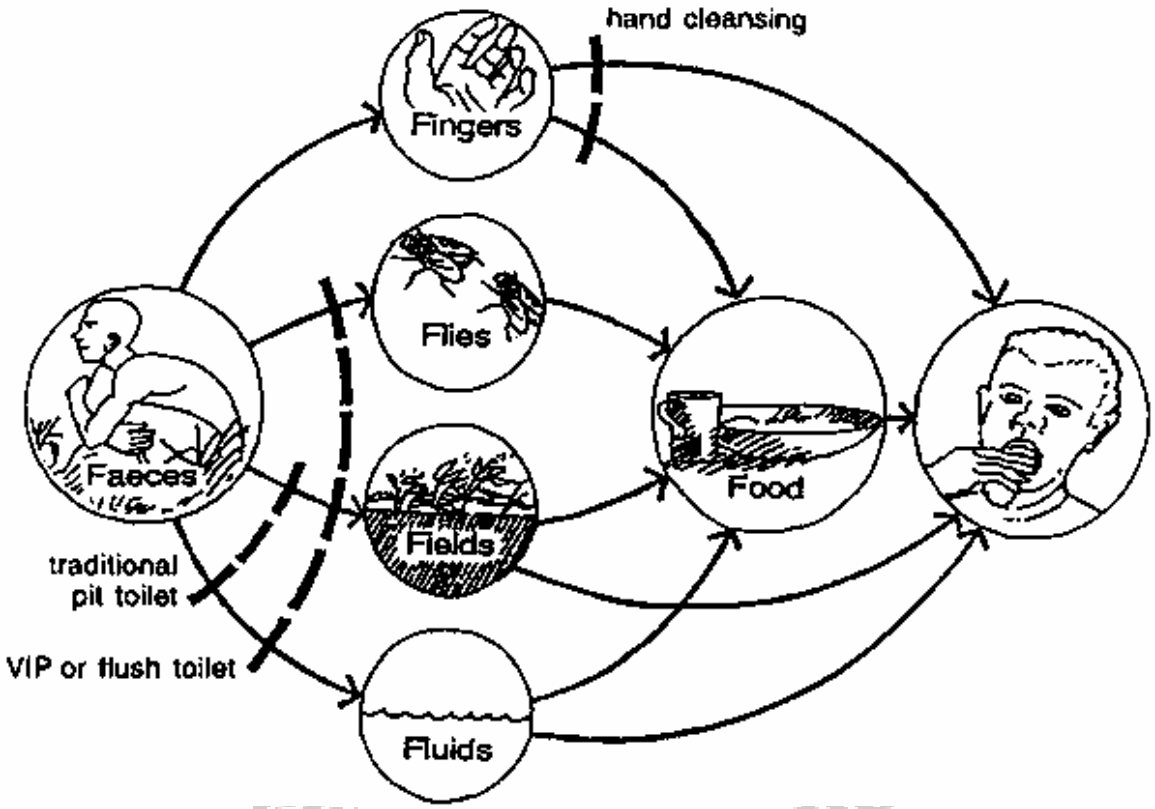

Figure2. The “F-diagram” summarizes the main ways in which diarrhoeal disease is spread - by faecal germs contaminating fields, fluids, fingers, flies or food. Most toilets will stop the “fluids” and “fields” transmission routes. The VIP toilet and the flush (pour-flush) toilet may also break the “flies” route. No type of toilet can, however, prevent contamination of hands. But, availing ample water with soap near toilets is the remedy to cleaning the contaminated hands.

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 monitor the hygiene of the children including, their hair, clothes, and body cleanliness, so that we can prevent diseases acquired due to poor personal hygiene.

2.5.12.2. Follow up

The growth, development, and health status of children should be regularly monitored. It will help the health professionals to early detect diseases and act accordingly to prevent the occurrences of life threatening complications.

Schools may provide a health safety net for children from disadvantaged homes. Where meals or food supplements are supplied, schools can be a vital source of nutrition. Schools can be a focal point for vaccination programmes and a means for health and social workers to identify and make contact with deprived families

2.6. Ways to resolve health related problems in schools

In section 2.5, the potential health hazards of school environment are mentioned. Here the possible solutions for tackling these problems are described. It must be stressed that there is no simple technical fix for achieving a healthy school environment; hence there is a need to synchronize the following solutions.

2.6.1. Commitment and motivation

There is no doubt that the single most important factor in achieving a healthy school environment is the presence of committed and informed people. The emphasis should be on the commitment. There is plenty of evidence that shows information alone is not enough. For example, people are often well aware of the health risks and the theories of contamination but do not act on that knowledge. People who are not committed will always find reasons for not acting, while a committed person will seek ways around apparently insuperable problems. When necessary, committed people will also seek out information.

There is no simple formula for making people committed. However, recognizing and valuing people's efforts, and ensuring that there is sufficient scope for their own decision-making and creativity can go a long way towards encouraging sustained commitment. This point is particularly important since, again, it argues against standard designs. There are many manuals for school design, which prescribe every detail, down to the layout of pin boards and the arrangement of storerooms. Such advice may be technically valid but if teachers on the ground lack the interest and commitment for shaping their own environment, the end result is likely to be disappointing. The essence of commitment is a person's belief that his or her efforts can make a difference. If not, they will feel there is little reason to fight for change.

As well as encouraging the commitment of local people, seven other basic tasks can be done which can be achieved by taking simple practical measures and which, once achieved, will go a long way towards creating a healthier school

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 defecating in the compound;
- toilets which are conveniently located, reliable, clean, reasonably odour-free and reasonably private.

B. Safe drinking-water

The conditions required for clean water are well known, but often they are unachievable. Recommendations to boil all water are of little value in a society where fuel is expensive and scarce. Advice about deep boreholes is also of no use to resource-starved schools in Ethiopia. On of the achievable measures that greatly help improve the quality of drinking water is concerned with the handling of available water.

Frequently, water from a tap or pump is reasonably clean, but has become contaminated by the time it reaches someone's mouth. For example, if people are dipping their hands into a water container to scoop up water in a cup, it is

likely that they are contaminating it with germs from their hands. Simply providing a ladle can be an extremely low-cost solution. Similarly, in some circumstances, covering the water container with a lid may be an important step.

C. Convenient hand-washing arrangements

In many countries awareness is widespread of the importance of washing one's hands after defecation. It is reasonable to suppose that it is one of the central planks of all school health-education programmes. However, it is equally clear that hand-washing is a practice that is widely ignored. Spreading the message of the importance of hand-washing is not enough; it must also be an easy and convenient thing to do. People will not normally go out of their way to wash their hands.

If the tap or water source is distant from the toilet, people are unlikely to use it. If water is stored in a relatively high-sided tank it may be awkward for younger children to use. Similarly, wells with high sides may discourage people from drawing water. Taps or water tanks, which are constantly surrounded by mud, may also be discouraging. Hand pumps may be too stiff for a small child to use, or it may be difficult to pump and wash one's hands at the same time.

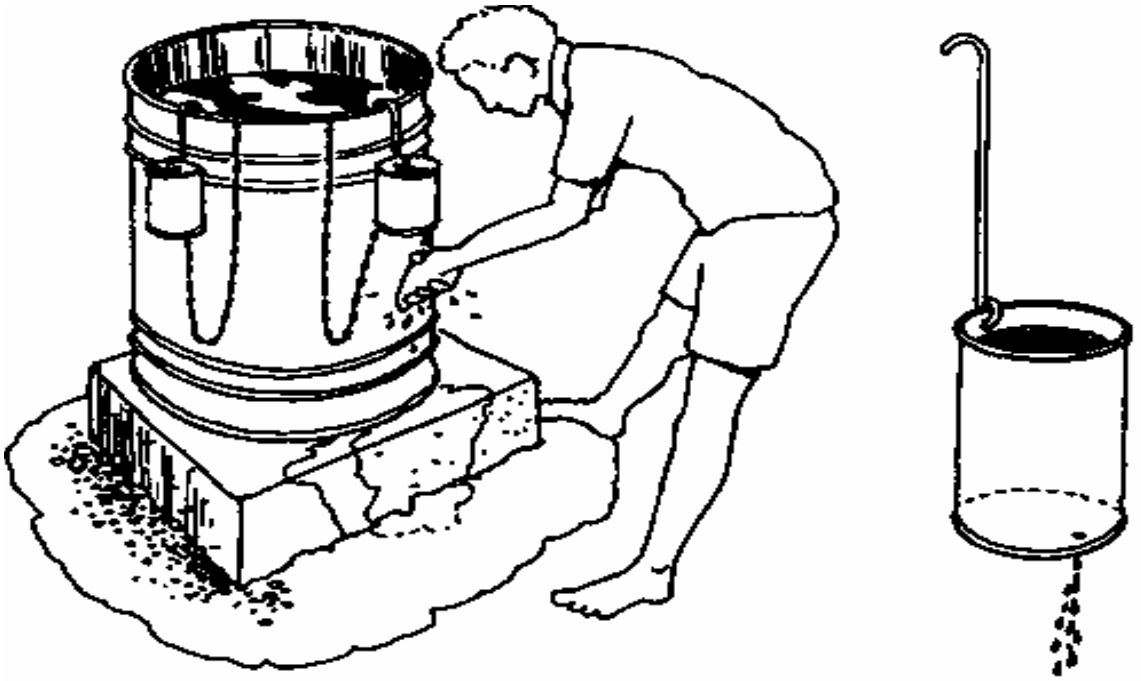

Figure 3. *A hand-washing arrangements with a "leaking tin", made of an oil-drum placed on a stone footing over a drainage pit filled with gravel. The small leaking container is made of a recycled tin with a handle of steel wire.*

A number of studies have shown that the use of soap, sand or ash for hand-washing can make a significant difference to hygiene levels. (10, 11) Moreover, as well as its purely functional value, the provision of soap can become a means of focusing attention on the issue of hand-washing. For example, teachers may need to start a small fund to raise money from parents to pay for a regular supply of soap. This in itself can help to raise awareness among both pupils and parents.

D. Well-lit learning spaces

Many teaching spaces depend on natural light. Good lighting is especially important if resources for school books are limited and learning depends on the children seeing the blackboard clearly.

The perforated screen wall can be used to provide good lighting especially in rural school settings. This is a solid masonry wall punctured by numerous

closely-spaced holes through which light can filter. If the wall is built of bricks the perforation effect can be achieved by simply leaving spaces between the bricks at regular intervals. If it is made of concrete (or earth-cement) blocks, special moulds can be used to produce blocks with decorative holes. If the inside surfaces of the holes are made light in colour, either by painting them or by using plain white cement for the blocks, the amount of light reflected through the holes is considerably increased. Where masonry is not used for construction, or where there are existing large window openings, other kinds of screens can be created, for example, using horizontal bamboos.

The advantages of a perforated screen wall are that it provides security and a relatively even distribution of light. The disadvantages are that it does not protect against wind, cold, and dust, and classrooms (particularly if large) can remain rather dark unless the internal walls are also light-coloured. Care must also be taken to orient the building so that direct sunlight does not penetrate the screen wall, since this will almost certainly lead to glare.

In cold climates, where small windows are necessary to reduce heat loss, it makes sense to maximize the light which can enter through a small opening. A roof light lets in considerably more light than a window of equal size in a wall. It can also help to bring more light into the centre of the room, which is often poorly served by wall windows. However, care has to be taken to avoid direct sunlight falling onto desks. With any window, the light entering can be increased to a surprising extent simply by painting white the surfaces of the reveal (the hole in the wall) and the window frame.

E. Structural safety

It is obvious that the health of children will not be enhanced if the school building falls down. This is more the concern of engineers and builders, but teaching staff should check their schoolrooms on an occasional basis for cracks in the main structure. Of more immediate importance are small-scale structural issues: doors

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 required. But a school environment is like a living organism, and therefore requires continuous sustenance. The construction of the school building should be seen as the birth of a "living school", rather than as an end in itself. A living school has many components (children, parents, staff) and needs (the supply of water, the removal of waste). Again, like any living organism, its relationship with the outside world is highly important. If the school is seen as being apart from the community, rather than integral to it, it will soon become neglected.

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 keen important nowadays in all health care facilities, this doesn't deny the specific roles to be played by each category of health professional .This in turn necessitates preparing a satellite module ,which is more of a specific field ,compared to the more general core module. This module is going to help the health officer students acquiring the importance of maintaining healthy school environment.

3.1.2. Purpose and use of this module

This satellite module is prepared to further identify and determine the specific roles of health officer students. They are expected to know the main health problems seen in the school. By enhancing the acquisition of knowledge, attitudes and skills through interactive and self learning processes s/he can effectively and efficiently carry out interventions that can significantly reduce problems encountered in the school environment.

3.1.3. Direction for using this satellite module

1. Read the information in the core module.
2. Do the pr-test questions before proceeding to the satellite module.
3. Read thoroughly the information in the satellite module.
4. Refer to the core module for certain sections if needed.
5. Do the post-test after completing the satellite.
6. For pre-and post-test questions look answer keys in the appendix and evaluate your knowledge
7. Use further reference, if needed, for further information on the subject

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
   B. viruses can cause cross-infection in a crowded environment.
   C. fine dust causes acute respiratory infections and asthma.
   D. not important to maintain indoor air quality.

2. High levels of noise in a school environment can cause
   A. irritation, B. encourage aggressiveness,
   C. reduce physical and mental performance.
   D. cause discomfort and headaches
   E, all

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, theses 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

3.1.5. 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. Clean, functioning and adequate toilets are keen important in the maintenance of a healthy school environment. Its absence will result in children to defecate in and around the school compound. In such situations the school and its surroundings are likely to become infested with parasitic helminthes. The availability of convenient hand washing facilities is as important as safe disposal of urine and faeces. Staff and pupils must be able to wash their hands after defecation as well as before eating food. Children dipping their unwashed hands into a shared drinking-water supply are a typical route of contamination infectious diseases which can be spread via the faecal-oral route including hepatitis A, diarrhoea caused by Escherichia coli, amoebic and bacillary dysentery, cholera and typhoid. Besides this a collection of water could also be a site for multiplication of vectors like mosquitoes, snails etc.

Poorly nourished and inadequately clothed pupils are particularly vulnerable to acute respiratory infections. Conversely, excessively warm conditions may lead to thermal stress, fatigue, reduced learning capacity and, in extreme cases, heat stroke. Whereas in a crowded environment, airborne bacteria and viruses can cause cross-infection, in addition dust particles could also accumulate to make the children susceptible to acute respiratory infections and asthma. High levels of noise can cause irritation, encourage aggressiveness, reduce physical and mental performance, and cause discomfort and headaches.

In many cases the most dangerous aspect of a school is its location. (refer to core module).As well as protecting children and staff from the elements, the structure and location of a school building is intended to enhance health and well-being. But badly designed or poorly maintained structures may in fact threaten health. With a widespread shortage of furniture in primary schools, many children spend much of their school day seated on possibly damp or contaminated mud floors or cold concrete floors. This can lead to infections from hookworm, urinary tract infections and problems with joints. Overcrowding in

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 infections and asthma, etc require due attention in schools. So specific measures should be taken based on the diagnosis to alleviate the problem and take preventive measures to stop further incidences. Among them planned immunization programme against infectious diseases common in children and against other anticipated epidemic outbreaks in the area. As school age children typically have the highest intensity of worm infections of any age group, the most effective way

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 keen important in the prevention of their chronic complication in the child growth and development.

He should note the effects of desks on the posture of the students, and also undergo periodical inspection of school premises with particular attention to lighting, ventilation and other sanitary installation.

3.1.8. Post-test

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

1. Indoor air quality influences the health of schoolchildren,
   A. airborne bacteria can cause cross-infection in a crowded environment
   B. viruses can cause cross-infection in a crowded environment.
   C. fine dust causes acute respiratory infections and asthma.
   D. not important to maintain indoor air quality.

2. High levels of noise in a school environment can cause
   A. irritation, B. encourage aggressiveness,
   C. reduces physical and mental performance.
   D. cause discomfort and headaches

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, theses 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 groups of people such as students, teachers, and support staff. It also greatly involves parents and community members. This pattern of the institute provides intrinsic able relation among various societal sectors. Therefore, provision of proper and well organized school health services in not only benefits the school community in preventing and control of health problems but also acts as one of the important set points in addressing health promotion activities. To achieve the objectives of school health services, the focus of school health nursing services should be on meeting the health need of each school community. Services should readily accessible and acceptable to all and involve full school community participation. An effective partnership, which calls for an imaginative and flexible approach, between health care professionals, School personnel (teachers and students) and the community is essential to translate this belief in to action.

3.2.2. Direction to use the module

The satellite module is the continuation of the core module in the same text, it is very vital to bear in mind that the concepts and ideas stated under the core module are useful for satellite module.

- Read thoroughly and link the concepts in the core module to the satellite module
- Do the pre-test
- Read the learning objectives
- Read satellite module content
- Attempt the post test questions accordingly
- Look answer keys in the appendix
- Use additional references material to increase scope of your knowledge.

3.2.3. Pre 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 include:
    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

3.2.4. Learning objectives

Up on completion of the satellite module, the nurse students should be able to:

- Mention the underpinning principles of school nursing
- List components of comprehensive nursing school health services
- Apply nursing process in school health services
- State the important role of nurse in the team of school health program

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 providers and teachers to improve health and safety.
- Schools need assistances in developing standards for hygiene, sanitation, and disinfections to prevent the spread of disease. This may include hand washing, food reparation and cleaning of toys and equipment
- Guidelines how to care for sick children should be developed

- 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 program development.

3.2.7. Modified nursing process application in school health using three levels of prevention

Primary prevention

Objective:

- To promote health and welfare
- To provide specific protection from health and safety hazards

Assessment

- Assess knowledge level of school community about health promotion and diseases and injuries prevention
- Conduct epidemiological survey about common diseases occurring in school environment

Interventions

- Provision of health education by identifying priority school health problems and ways to tackle the problems
- Establish health programming, through listing different duties and activities and coordinating similar activities for objective accomplishment.
- Conduct program evaluation

- 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 form 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

- Follow up
- Problem oriented teaching
- Modification of environment, activities, services and programs
- Definition and communication of management plans
- Reassessment

On top of the three preventive approaches, conduct operational research and use its outcome to improve service quality.

Now, you are through with the core and satellite modules. But there are still some activities remaining as stated below.

- Read the task analysis of the different categories of the health team in unit four.
- Do the post test questions using a separate answer sheet. Finally, compare your answer to the answers given in annex 1, and evaluate your progress.

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.

3.3.3. Pre-test

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

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^3 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 parks.
   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

3.3.4. Learning Objectives:

After completing this module the reader will be able to:

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

3.3.5. Physical features of schools:

1. Site of the school:

Site selection for new school building has to involve team of professionals including environmental health personnel. During site selection, the Environmental Health Technicians have to check the following parameters:

- The school should be centrally located and easily accessible to students.
- It should be situated at a reasonable distance from the main street or road to eliminate the nuisance of noise.
- The site should be elevated, well drained and should not be overshadowed by tall buildings or trees.
- Sufficient playground per child should be provided.
- The school site needs to be at least 1 km away from marshy areas.

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^3 space and 0.93-1.39 m^2 floor area per pupil is recommended. This allows 42.47-50.17 m^3 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 preferably be rectangular, the width being two thirds of the length.
- A clear space of not less than 2.19 metres extending the full width of the room should be left between the first row students and the teacher.
- Floors should be made of impermeable materials with smooth surface to facilitate easy cleansing. The interior walls should be of white colour and should be whitewashed as and when required.
- Windows are to be placed on the opposite sides of the room and should be made to open, if possible, to the external side.

3. Lighting and Temperature:

Vision is a tool of learning. Natural lighting should be provided to the school buildings by the provision of adequate number of windows since ideal lighting enables the students to sit anywhere in a classroom with visual comfort. One of the responsibilities of environmental health technicians in school health service therefore includes making sure that:

- The proportion of the glass area provided in the walls should not be less than one- sixth of the floor area. The main light should come from the left side or from above. Because, when one writes with the right hand, his shadow should not fall on the book.
- The room temperature is one of the factors that cause discomfort in classroom situations. Inside room temperature therefore, should be maintained at optimum level through air conditioning system.

4. Furniture:

The most important items of furniture of the classrooms are seats and desks. Single seats are considered to be the best in schools. Moreover, providing single seats to students can check the spread of infectious diseases and vermin conditions. The Sheffield type of continuous desk with six separate seats is preferable to a long common seat and a desk.

- The seat should hold two-thirds of the thigh. The front edge of seat should be rounded and its height should be such that the feet of the students should not remain suspended in the air and the student should be able to rest his elbows without raising or depressing the shoulders.

There should be a provision for back rest suitably curved to the body reaching the level of the shoulder blade. Desks should be from 15-18inches (0.38-0.46metre) broad, and slope at an angle of 15^0 and 45^0 for writing and reading respectively. It should be vertically distant from the seat. The edge of the writing surface should almost fall in a straight vertical line with edge of the seat. Seats

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 dinning room in the school building.

6. Sanitary Conveniences.

- Privies and urinals should preferably be provided and situated near the playgrounds.
- A separate wash room adjoining the bathroom so that the children may use it for cleansing their hands after a visit to the closet.
- There should be a provision of at least 5 closets and an equal number of urinals for every 100 students. Water closets are of course, the best arrangement, but in villages and in places where water carriage system is not

in vogue, conservancy arrangements should be made. In the case of privies, a sweeper should be engaged to clean the privy after each visit.

- Provision of sanitary conveniences for the boys and girls must be made separately and at a sufficient distance from each other.
- At the end of the days work all the schoolrooms should be swept. Once a week the furniture should be taken out of the room and the floors scrupulously scrubbed and swept. Every effort should be made to prevent a dusty atmosphere in schools.

7. Water Supply.

- There should be a provision for the 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.
- In places where there is no public water supply, the well or the tank should be periodically inspected and a sample of water taken for chemical and bacteriological examination periodically.
- 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. Drinking fountain, which delivers a jet upwards, may be installed where possible. Provision of one fountain for every seventy-five students is the standard aimed at.

8. School Health Service.

School health services are rendered by combined efforts of health team. The environmental health technician is 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.

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^3 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.
3. Read the satellite module thoroughly.
4. After completing the satellite module answer all the questions that are listed under post-test and compare your results with answer key.

3.4.3. PRE-TEST

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 lumbricoids* C.*Strongloides stercoloris*
   B. *Entrobius vermicularis*. D. *Gardia lamblia*

2. One of the following parasitological test 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 C. Dobell's iodine
   B. Sodium carbonate D. A & C

4. During microscopical examination of stool, the objective of the microscope should be at which magnification power
   A. 10x & 40x C. Only 10x
   B. 40x& 100x D. Only 40x

5. The diluent used for shali-hellige hemoglobin quantitation is know 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%
B. 30%
C. 20%
D. 40%

3.4.4. LEARNING 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

3.4.5. 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:

Department	**Type of investigations**
- 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 30^0 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

- 10% formalin
- Ether substitute
- Pointed paper cup or funnel
- Gauze
- 15 ml centrifuge tube
- Normal saline
- Centrifuge

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 faces 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 acetic
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, feacal 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 stercolaris larval not be seen. The none-motile larvae can be easily recognized.
11. If required, count the nomber 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
- methanol
- microscope
- Spreader with sharp edge
- staining rack
- shallow tray
- A piece of gauze
- Giemsa stain

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*

1. Immediately before use, dilute the Giemsa stain as required:
   - 3 % solution for 30 minute staining
   - 10% solution for 10 minute staining
2. Place the slide face downwards * in a shallow tray supported on two rods, in a coplin jar, or in a staining rack for immersion in a staining trough. Thick blood films must be thoroughly dried and thin blood films must be fixed (methanol for 2 minutes).
   * This is necessary to prevent tine particles of stain being deposited on the film(s)
3. Pour the diluted stain into the shallow tray, coplin jar, or staining trough. Stain as follows:
   30 minutes if using a 3% stain solution
   10 minutes if using a 10% stain solution
4. Wash the stain from the staining container using clean water (need not be distilled or buffered.
5. Wipe the back of each slide clean and place it in a draining rack for the preparation to air- dry.

Reporting blood film results

1. When the blood film is completely dry, apply a drop of immersion oil to an area of the film, which appears mauve colored (usually around the edges).
2. Select an area that is well stained and not too thick. Change to the 100x objective (if required add a further small drop of oil).
3. Examine for haemoparasites.

D) HEMOGLOBIN QUANTITATION

I) Haemiglobincyanide (HICN) technique

Principle: whole blood is diluted 1 in 201 in a modified drabkin's solution, which contains potassium ferricyanide and potassium cyanide. The red cells are hemolysed and the hemoglobin is oxidized by the ferric cyanide to methaemoglobin. This is converted by the cyanide to stable haemiglobincyanide (HiCN). Absorbance of the HiCN solution is read in a spectrophotometer at a wavelength 540 nm or in a filter colorimeter using a yellow-green filter.

Materials

- Automatic micropipette
- Photometer
- Automatic micropipette tips.
- Haemiglobincyanide
- Drabkin diluting fluid

Procedure

1. Measure carefully 20 µl (0.02ml) of capillary blood or well mixed venous blood and dispense in to 4 ml drabkin's neutral diluting fluid
2. Stopper the tube, mix, and leave the diluted blood at room temperature, protected from sunlight, for 4-5 minutes.
3. Place a yellow green filter in the colorimeter or set the wavelength at 540 nm.
4. Zero the colorimeter with drabkin's fluid and read the absorbance of the patient's sample.
5. Using the table prepared from the calibration graph, read off the patient's haemoglobin value.

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 pippet
- Stirring glass rod
- Dropping pippet
- 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 pippet 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
3. Wipe the outside of the pippet with absorbent paper. Check that the blood is still on the mark
4. Blow the blood from the pippet into the graduated tube, which contain 0.1N HCl. Rinse, the pippet by drawing and blowing out the acid solution 3 times. The mixture of the blood and acid gives a brownish color. Allow to stand for 5 minutes

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
Pasture pippet (dropper)

Procedure

1. Into one drop of KOH reagent on slide, place a small portion of material (skin scrapings, hair, and nail) to be examined
2. Press cover slip down on sample
3. Warm slide gently to dissolve keratinized cells. Don't boil
4. Allow specimen to clear, approximately 20 minutes
5. Examine under low (10x) and high- dry (40x) magnification

Interpretation

Observe for the presence of characteristic fungal elements, including hypae, 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 asses 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 lumbricoids* C.*Strongloides stercoloris*

   B. *Entrobius vermicularis*. 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%

B. 30%

C. 20%

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 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.
5. Provision of good sanitation and hygienic practices in schools help minimize risk of the following infections except one:
   A) diarrheal diseases
   B) skin infections
   C) intestinal parasitosis
   D) heart diseases
6. The benefit of early assessment and screening of school children is that:
   A) it helps for early identification of potential health problems
   B) it helps to plan for appropriate measures to identified health defects.
   C) Both A&B
   D) None of the above
5. Which of the following is **not** true about school furniture?
   A) Furniture may not be the priority in school setups.
   B) Single seats are the best.
   C) The front edge of the seat should be rounded to avoid injuries.
   D) Students should seat at a fixed place through out the year.

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.

3.5.4.1. The School Environment:

a) Site:

The health extension workers have to be involved in selection of site for building of new rural schools. He/She has to make sure that the following criteria are fulfilled.

- The school should be centrally located and easily accessible to students.
- Schools should be situated at adequate distance from main streets to eliminate the nuisance of noise and reduce traffic accidents.
- The site should be elevated and well drained to avoid risk of flooding.
- The school site needs to be at least 1 km away from marshy area.

b) The School Building:

The building structure is another important factor that should draw the attention of health professionals both during the construction phase and regular inspections periods of the school. The health Extension worker therefore, needs

to prepare a check list with respect to the following points and make regular observation of the school compounds**.**

- Classrooms in the school are recommended to be separate and adequately ventilated.
- All parts of the school building preferably constructed fireproof.
- Each room should be able to accommodate 25-50 children. Rooms should preferably be rectangular, the width being tow- thirds of the length.
- Floors and walls should be made of impermeable materials with smooth surface to facilitate easy cleaning.
- Classrooms have to be provided with adequate natural light through construction of appropriate windows.
- The height of the seat should be such that the feet of the children should not remain suspended in the air.

c) Improving Hygiene and Sanitation Conditions in schools:

Preventable hygiene and sanitation related health problems are more relevant among children than any segment of population. Fulfilment of the following preventive measures in school compounds is therefore, mandatory to effectively tackle the occurrence of these diseases.

- All school should be provided with adequate number of latrines and urinals.
- There should be hand washing facilities so that students can wash their hands after a visit to the latrines or closet.
- The disposal of solid wastes must be regularly attended to.
- In the case of co-educational schools, provision of sanitary conveniences for the boys and girls must be made separately and at a sufficient distance from each other.
- All the schoolrooms should be swept at the end of the day's work.

- 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 hearing and sight problems.
2. Help Lab. Technicians collecting specimens.
3. Treat simple infections such as intestinal parasitic infestations, skin diseases like scabies, etc.

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 washing hands, open defecations, etc determines their health status. Changing and shaping the children towards desirable behaviour right from their childhood is therefore, critically important to promote health in school environment. Health education is one of the best tools to bring behavioural changes. The health extension professionals can largely contribute in the implementation of the following tasks:

1. Provision of health education in schools on regular bases on:
    - personal hygiene
    - sanitation of play grounds
    - sanitary campaigns
    - Environmental beautification.

2. Provision of health education to parents (focussing on mothers) of the children especially during household visits/inspections on a regular basis:
    - how to prepare and store children's food in a hygienic way.
    - cleanliness of play and sleeping places.

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 hygienic practices in schools help minimize risk of the following infections except one:

   A. diarrheal diseases
   B. skin infections
   C. intestinal parasitosis
   D. heart diseases

3. The benefit of early assessment and screening of school children is that:

   A. it helps for early identification of potential health problems
   B. it helps to plan for appropriate measures to identified health defects.
   C. Both A&B
   D. None of the above

4. Which of the following is **not** true about school furniture?

   A) Furniture may not be the priority in school setups.
   B) Single seats are the best.
   C) The front edge of the seat should be rounded to avoid injuries.
   D) Students should seat at a fixed place through out the year.

5. School health programs include:

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

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.

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.

	- Tell the appropriate type of human waste disposal facilities recommended for schools. Laboratory technicians should - Describe the different laboratory tests conducted in school health service - Study the different kinds of laboratory investigations required to provide school health service Health Extension Workers: - List basic school programs. - Explain factors that affect pupil's health
Attitude	The attitude of a health officer towards keeping a safe school environment should be: - Understanding the importance of health officer involvement in a school site selection - aware of the importance of healthy school environment - give high index of suspicion towards communicable and epidemic diseases in a school children Nurses should - develop strong feeling about school health problems - establish understanding about the role of nurse in school health - give value to school community Environmental health professionals should - Believe in the importance of school health services to minimise health problems arising in the schools.

	- Believe Health education in schools is of paramount importance for positive behavioural changes among children. - Believe that regular inspections and follow-ups help identify risk factors in advance and take action. - Agree with the facts that young school children are risk groups and thus need a close care. Laboratory technologists should - Help believe that early detection of school health problems helps in the appropriate management - Promote the importance of screening tests Health Extension Workers - Believe in the relevance of school health programs. - Give attention to the importance of school sanitation.
Practice	A health should regularly practice - coordination and playing a leading role of the team in school health service delivery - undergo regular follow up - identify common diseases and manage accordingly - facilitate immunization programmes toward infectious diseases - proper recording and reporting of cases identified Nurses are responsible to - assess health problems prevalent in school health - list the major health problems and set priority order

	- 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.

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Answer key for pre/post tests

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