SCHOOL HEALTH, GENERAL AND PERSONAL HYGIENE

TRAINING MANUAL FOR EDUCATION SUPERVISORS AND TEACHERS IN IRAQ

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MINISTRY OF EDUCATION

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**Introduction**

Community medicine sciences help provide health for all, develop and improve the health of individuals and communities alike. They address topics of interest for the whole society as much as they do for individuals; these topics are not restricted to physicians or health workers because they involve the universal perspective that links health to the behavioural, social, economic and environmental aspects. They also render health protection a common responsibility of the individuals, society and health and educational institutions. These topics are larger, broader and more significant than focusing only on curing illnesses. This manual provides school teachers with some basic information about environmental health, sanitation and general and personal hygiene. It also offers suggestions to implement activities to raise awareness about and enhance health and hygiene in schools. The manual also includes an explanation of the concepts of general and personal health, environmental education and general and personal hygiene. The document is mainly focused on creating a clean school environment and inculcating/instilling hygienic habits (within students) through applied in-school activities that take into consideration the cultural particularity of the community.

Active learning methods are used and the learning/teaching process is student-centred. Modern instructional/pedagogical strategies are also employed such as group work, role playing, modelling, learning-by-doing and learning-by-playing, drama performances, project developing, exchange of roles through peer training "child-on-child" at school, and child-on-parents in the households and community and so on. The manual also uses modern evaluation strategies such as pens/pencils and papers, observation, performance-based evaluation, communication and self-evaluation. The manual also includes an illustration of the way a school can access the community to help bring about its hygiene, health, disease-prevention and prosperity.

I. **Goals of the Manual**

The manual aims at enabling teachers jointly with the students to achieve the following goals:

- Know the concept of general and personal hygiene.
- Realize the factors influencing general and personal hygiene.
- Know the concept and identify the elements of environmental health.
- Realize the concepts, principles and essential inputs/components of in-school health management.
- Set the sanitation priorities.
- Become aware of the importance of personal hygiene and decorum/tidiness (neat clothing).
- Recognize the hygiene-related dermatitis (skin diseases).
- Know the specifications of a healthy household.
- Identify the damages caused by incorrect (unhealthy/unsafe) disposal of waste.
- Realize the basic principles of environmental education.
- Suggest advice and guidelines/instructions for the protection of the environment.
- Realize the importance of environmental education and the media in protecting the environment against pollution.

II. Instructions on how to use the manual (implementation):
- Explain the goals of the activities to students prior to implementation.
- Prepare pupil's/student’s* worksheets using separate worksheets as per the requirements of each activity and prior to its start.
- Make preparations and arrangements for the training workshops: adapting the material to the problems of the situation.
- Choose activities relevant to the topic.
- Choose activities relevant to the school setting/environment.
- Choose female-specific activities.
- Choose activities that encourage cooperative learning.
- Choose interesting and technically-sound activities.
- Choose activities with diverse models (messages) like posters, leaflets, maps … etc.
- Ensure that the training materials are relevant to all capabilities (place, tools and materials, and technology).
- Choose activities commensurate to age-groups; teachers can alter or simplify activities according to a school’s capabilities; activities should also be adequate to the level of students or classes selected.

Prior to training, the following should be made:
- Pre-training selection of participants to identify the targeted groups in terms of:
  - Number
  - Age
  - Sex
- Trainees receive basic information – promoting health at the school level.
- The basic components of the training manual are introduced at the school level.
- Training needs are identified.
- Training goals are set.
- The timeframe is defined.
- Training sessions are designed.

*Translator’s note: ‘Pupils’ and ‘students’ in singular and plural forms are used interchangeably.
A timetable for the training course and activities to be implemented is developed.

Training supplies (equipment stationary, furniture and food) are identified.

Budgeting for implementing the training activities is made.

**During the training: the goal(s) of the training should be clarified:**

- Raise awareness among participants about the concepts of environmental health, sanitation and general and personal health and hygiene.
- Acquaint the participants with hazardous practices that may expose them to contagious diseases.
- Introduce the participants to the concepts of prevention of diseases caused by environmental pollution.

**During actual training sessions, the following should be made:**

1. Creating an appropriate setting that is healthy, ventilated and illuminated, etc.
2. Having the participants seated properly; their posture enhances their interaction; they should therefore be informally seated, preferably in a ring-shape setup so that all participants can see each other. The trainer (facilitator) can move freely in the middle whereby everyone can see him/her.
3. Creating a positive and constraint-free atmosphere – one that makes the participants feel safe to raise questions and interact actively.
4. Creating opportunities to communicate with participants’ right from the first session, maintain focus on what arouses their interests, and stimulate questions.
5. Using positive communication, which is free of pre-judgment and negative criticism.
6. Continuously encouraging participants to pose questions, participate and give answers; they need to be involved in answering the questions raised by their colleagues.
7. Introducing the participants in advance to what is required of them and generally informing them about the topics to be discussed and the method to be employed in presentation.
8. Setting ground rules for the workshop jointly with the trainees during the first session, in order to ensure the desired atmosphere. With the consent of everyone, a list of these rules is to be mutually agreed upon and posted in a visible place in the classroom throughout the sessions – everyone can go back to the list if any of the rules is violated.

9. Starting the sessions by introducing the participants to each other, this is done when all or some are new to the group. This should be followed by an ice-breaker activity, particularly when the topics to be raised are sensitive.

10. Respecting privacy during training when males and females are involved. The WHO’s-concept of gender should also be observed during the training activities.

11. Handing out leaflets or booklets about the material or activities discussed.

12. Using simple language when addressing the various topics, and do away as much as possible with technical terms that might be difficult to grasp for some; in case it is necessary to use such terms, one (the teacher..) should explain them well to make sure that everyone understands what they mean.

13. Raising open-end questions to get the largest number of responses possible, this is meant to have the questions categorized and corrected in a manner that does not hurt the students’ feelings and prevents them from interaction.

14. Expecting a variety of possibly correct yet incongruent answers to the questions posed on values and attitudes.

15. Raising general impersonal questions; in other words, avoid posing questions that might compel participants to disclose information about themselves and their families – talking about the experiences of others is easier than talking about personal matters.

16. When using case studies or telling stories that involve some names, and in case certain participants have the same names:
   - Change the names employed, or
   - Explain at the outset that the names, used in a case study or story, have nothing to do with the participants who happen to have the same names.

- As time passes, an atmosphere of trust and openness is developed among the participants to facilitate raising sensitive topics relating to the impact of environmental pollution on society and the citizens’ roles in prevention.
- There should be no discussion of beliefs/faiths; no personal questions should be raised or answered. One should decline from expressing a personal point of view about a certain topic, particularly as far as attitudes are concerned.
Laughing can be allowed in some training situations to remove barriers if it would not make the session deviate from its goals or spin out of control; if disorder take place, some firmness would then help.

Post-training:
- Evaluate the training sessions.
- Evaluate the training activities in general.
- Adjust activities in light of the training.

III. Equipment, tools and materials needed to implement the Manual’s content:
- Computer system, compact discs (CDs), software, data show and overhead projectors;
- Stationary, flip charts, envelopes, pencils, pens, markers, worksheets of paper and cardboard;
- Tooth brushes, toothpaste, lice treatment shampoo, bath scrubs/sponges and hand wash/soap; and
- Water containers/jerry cans/pots.

IV. Applied Activities

Activity 1: Icebreaker
One of the following activities or methods can be used as an ice-breaker:

Getting started/introduced: the trainer (teacher) introduces himself/herself with a brief background about his/her work and experience; trainees (students) are then asked to sit in pairs and introduce themselves to each other. Each person introduces his/her colleague – first name, last name, responsibilities, hobbies or interests. Playing cards can also be used; cards are cut into two halves, and each trainee is to match his/her half card with the others’. The introduction process proceeds as previously mentioned.

Another option: “This Is My Dream” exercise; all persons/students are asked to draw pictures that represent their dreams, and to talk about the meanings of the drawings. Then, everyone carries around/hangs their pictures on their bodies.

The teacher can ask students to draw pictures with their names inscribed on them; students toss the pictures at the rest of the students. The one who catches the picture seeks to be introduced to the one who throws it and vice versa. The process is repeated until all students are introduced (the importance of communication).

"How much do we care for our health?” is another activity that can be used:
I have regular medical check-ups.
I have regular check-ups done for my teeth.
I exercise regularly (physical training).
I eat healthy food.

Another ice-breaker about self-expression skills can be performed; students can talk about their interests in sanitation and general and personal hygiene.

The last activity that can be used in this regard is "Thirty Seconds of Fame". A student is asked to talk about what matters most for him/her in 30 seconds provided that the topic should be relevant to the contents of the manual and the concepts and knowledge to be conveyed.

**Theoretical Background (1)**

**The Concept of Health**

The World Health Organization (WHO) defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"*. For some, health may mean the ability to perform the daily functions and activities in a normal fashion. For others, it means the absence of sickness symptoms and living in a safe environment. Improving health is a set of activities an individual performs to reach at the highest levels of health and wellbeing; it includes prevention of morbidity incidence through providing health and environmental care. These activities also include (keep-fit) exercising, healthy diets, getting enough rest and sleep, abandoning smoking and distancing oneself from harmful practices to one's health and environment.

Winslow defines general health as "the science and art of preventing disease, prolonging life and promoting health and efficiency through organized community effort for the sanitation of the environment, the control of communicable infections, the (health) education of the individual in personal hygiene, the organization of medical and nursing services for the early diagnosis and preventive treatment of disease, and for the development of the social machinery to insure everyone a standard of living adequate for the maintenance of health"*.

Health education is concerned with developing people's information, concepts and health behaviour. Their knowledge about health issues is the first step to adopt safe health practices and bear the responsibility to promote health levels and disease control. Health education means are words, pictures, dialogues, models/patterns, role models, education and practices. Health education

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*Translator: "these definitions are quoted from links on the Internet."
is considered a seemingly easy thing; everyone talks about it as if it was a matter that ends with conveying the information to others. However, its difficulty lies in the fact that conveying the information is not enough unless that information was internalized (and transformed into a psychological motive) and the attitude was transformed into behaviour.

Health management is defined as the group of concepts, principles and basic components that influence and interact with each other to provide health services in their various promotional, preventive, therapeutic and rehabilitation aspects.

Health management includes ways of identifying the need for and rates of accessibility to health services as well as the need for their planning, implementation and good management through implementation and review of their outcome. It also includes health system research, funding and the information systems needed for sound decision-taking. Sanitation is considered a basic imperative and top priority for the community health; sanitation is the safe disposal of human faecal excreta and animal dung/droppings.

The following questions should be addressed to students prior to the start of activities:
1. What is the WHO’s definition of ‘health’?
2. How does health management look like in schools?
3. What is your role in maintaining school health?
4. What is the impact of unsafe/unhealthy sanitation on individuals, community and the environment?

Activity 2: School hygiene and the students’ role
Time: 40 minutes.
Goals of the Activity (Goals):
Upon completing the activity, trainees are expected to be capable of:
1. Recognizing the importance of school hygiene.
2. Identifying their role in school hygiene.
3. Recognizing the school and households’ roles in general hygiene.
4. Contributing to school hygiene (to keeping the school clean).

Materials and tools needed to implement the activity (Materials and tools):
Two pupil's worksheets, flip chart sheets, pencils/pens, adhesive tape and a chalkboard
## Activity Implementation Steps (Steps):

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>- The teacher explains the goals of the activity and steps to carry it out.</td>
</tr>
<tr>
<td></td>
<td>- The teacher asks brainstorming questions about the importance of school hygiene to introduce the topic, writes the answers on the board and highlights the correct ones.</td>
</tr>
<tr>
<td>20</td>
<td>- The teacher divides (groups) students into five groups; each group appoints a rapporteur/reporter.</td>
</tr>
<tr>
<td></td>
<td>- The teacher gives each group two pupil's worksheets with one method of school hygiene written on the first and the student's role on the other.</td>
</tr>
<tr>
<td></td>
<td>- The teacher asks a student to draw a line that divides the chalkboard into two sides: one for ways to maintain school hygiene and the other for the students' roles.</td>
</tr>
<tr>
<td></td>
<td>- The teacher asks each group to read all and pick one of the statements written on the first worksheet; one of the group members writes it on the designated side of the chalkboard.</td>
</tr>
<tr>
<td></td>
<td>- The teacher asks each group to read the statements and choose one students’ role from those written on the other worksheet; one of the group members writes the statement on the designated side of the chalkboard.</td>
</tr>
<tr>
<td>10</td>
<td>- The teacher asks the students randomly to identify the correct answer on each side of the chalkboard and decide whether or not the answer is aptly placed.</td>
</tr>
<tr>
<td></td>
<td>- The teacher discusses the answers given by the students, corrects the mistaken ones and highlights correct responses.</td>
</tr>
<tr>
<td></td>
<td>- The teacher and the students arrive at realizing the importance of their roles in maintaining school hygiene.</td>
</tr>
<tr>
<td></td>
<td>- The teacher discusses with all of the students ways to improve school hygiene.</td>
</tr>
</tbody>
</table>

**Remember: The contribution of every student to school hygiene helps improve health.**
Skills derived from this activity (Acquired skills):
1. Analysis and deduction
2. Listening to and respecting others' opinions
3. Participation and group work

Strategies to evaluate this activity
1. Observation
2. Students’ rapport and interaction

Enriching (Booster) activity:
In cooperation with the school administration and teachers, the participants organize a one-day event for school hygiene – to be called ‘School Hygiene Day’.

Pupil’s worksheet No. 1
Pick and write a statement on the designated side of the chalkboard:

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disposal of waste by throwing it in the dustbin</td>
</tr>
<tr>
<td>2</td>
<td>Safe disposal of school yard waste</td>
</tr>
<tr>
<td>3</td>
<td>Personal hygiene</td>
</tr>
<tr>
<td>4</td>
<td>Hand washing</td>
</tr>
<tr>
<td>5</td>
<td>Safe disposal of human faeces excreta</td>
</tr>
<tr>
<td>6</td>
<td>Hygiene of sanitation facilities</td>
</tr>
<tr>
<td>7</td>
<td>Keeping the chalkboard clean</td>
</tr>
<tr>
<td>8</td>
<td>Keeping the desks clean</td>
</tr>
<tr>
<td>9</td>
<td>Keeping the classroom walls and other school facilities clean</td>
</tr>
<tr>
<td>10</td>
<td>Classroom hygiene</td>
</tr>
</tbody>
</table>

Pupil’s worksheet No. 2
Pick and write a statement on the designated side of the chalkboard:

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Students must dispose of dirt/waste in the school yard by throwing them in the garbage cans; they should also be responsible for picking waste thrown in the yard and put it in the right place.</td>
</tr>
</tbody>
</table>
Students should use the sanitation facilities to dispose of their faecal excreta.

Students should throw garbage in the dustbin.

Students must maintain personal hygiene because it reflects school hygiene.

Students must always help keep the chalkboard clean.

Students should dust off/wipe their desks clean and never write on them.

Students should use, keep and maintain sanitation facilities clean after use; they should always wash their hands after using these facilities.

Students must keep the classroom clean, tidy and organized.

Students should never write on classroom’s and school facilities’ walls nor should they make any markings with chalk or markers, save in the right places under the teacher’s or principal’s supervision.

Students should keep their hands clean so as not to pollute the tools and furniture in the classroom.

Activity 3: Improving the quality of life
Time: 40 minutes

Goals:
Upon completing the activity, trainees are expected to be capable of:
1. Defining sanitation.
2. Identifying possible ways to improve the quality of life.
3. Understanding the role of the households and schools in improving the quality of life.
4. Appreciating the blessing of health (being healthy).

Materials and tools:
(Pupil’s worksheet, flip chart sheets, pencils/pens, adhesive tape and chalkboard)

Steps:

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>The teacher explains to the students the goals of the exercise and its implementation steps.</td>
</tr>
</tbody>
</table>
- The teacher divides the students into five groups; each group appoints a reporter.
- The teacher gives each group one pupil's worksheet with one method to improve personal and environmental health.
- The teacher asks a student to draw a line to divide the chalkboard into two sides: one for the personal method and the other for their environmental methods.
- The teacher asks each group to read the statement in the worksheet, and one of the group members writes it on the flip chart.
- The teacher asks each rapporteur to stick the flip chart sheet on the corresponding side of the board; he/she asks all students to walk around and read all chart sheets.

- Students are then seated in an orderly fashion when the time allocated lapses.

- The teacher randomly asks the students to identify the correct answer on each side of the chalkboard and decide whether or not the answer was put in the right place.
- The teacher discusses the answers given by the students, corrects the mistaken ones and highlights correct responses.
- The teacher and students arrive at how to differentiate between the personal and environmental methods/ways of sanitation.
- The teacher and students discuss ways/methods to improve sanitation.

The teacher summarizes the topic and asks questions about the various themes tackled.

Remember: The individual's contribution in selecting one personal or environmental way to improve health will promote the overall health situation.

Acquired skills:
1. Analysis and deduction
2. Listening to and respecting others' opinions
3. Participation and group work
4. Order and distribution of roles
**Strategies to evaluate the activity**
1. Observation
2. Students’ rapport and interaction

**Enriching (Booster) activity:**
1. In cooperation with the school’s administration and teachers, participants will organize an education/awareness campaign or health exhibition about the topic at hand; parents, the rest of the school’s students and those from other schools will be invited.
2. Make one or more students fetch a cardboard box or plastic bag to be used as a dust bin; have it placed in one of the corners of the classroom.

**Pupil's worksheet No. 3**
Pick one statement and write it on the flip chart board:

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Safe disposal of faecal excreta</td>
</tr>
<tr>
<td>2</td>
<td>Safe disposal of urine</td>
</tr>
<tr>
<td>3</td>
<td>Personal hygiene</td>
</tr>
<tr>
<td>4</td>
<td>Hand washing</td>
</tr>
<tr>
<td>5</td>
<td>Food hygiene</td>
</tr>
<tr>
<td>6</td>
<td>Safe disposal of solid waste</td>
</tr>
<tr>
<td>7</td>
<td>Safe disposal of fluid /liquid waste</td>
</tr>
<tr>
<td>8</td>
<td>Safe storage of drinking water</td>
</tr>
<tr>
<td>9</td>
<td>Safe water collection</td>
</tr>
<tr>
<td>10</td>
<td>Elimination/Extermination of disease vectors like bugs and rodents (mosquitoes and mice)</td>
</tr>
<tr>
<td>11</td>
<td>Incineration of waste</td>
</tr>
<tr>
<td>12</td>
<td>Landfill dumping of waste</td>
</tr>
</tbody>
</table>

**Activity 4: Polluted water disposal (wastewater; i.e., that is, water used in cleaning the household and its utensils).**
Time: 40 minutes

**Goals:**
Upon implementing this activity, students/trainees are expected to be capable of:
1. Realizing the importance of wastewater/polluted water disposal
2. Knowing ways of human faecal excreta disposal
3. Recognizing the conditions needed for availability of school sanitation facilities

Materials and tools:
Chalkboard and chalk

Steps:

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>- Discuss with the students’ health and social problems that might result from having a large number of people living in a confined environment without adequate sanitation facilities, which leaves these populations with the option to defecate outdoors/in the open.</td>
</tr>
<tr>
<td></td>
<td>- Ask the trainees (students) the following questions for brainstorming:</td>
</tr>
<tr>
<td></td>
<td>• Why is safe wastewater disposal necessary and important?</td>
</tr>
<tr>
<td></td>
<td>• Why is safe disposal of human faecal excreta necessary?</td>
</tr>
<tr>
<td></td>
<td>• Why is it necessary to have sanitation facilities available at school?</td>
</tr>
<tr>
<td>25</td>
<td>- A student writes the answers to question one on the chalkboard.</td>
</tr>
<tr>
<td></td>
<td>- Another writes the answers to question two on the chalkboard.</td>
</tr>
<tr>
<td></td>
<td>- A third writes the answers to question three on the chalkboard.</td>
</tr>
<tr>
<td></td>
<td>- The teacher summarizes and underlines the correct answers; he/she discusses with the students/arrives with them at the importance of safe disposal of wastewater and human faecal excreta and the necessity to have sanitation facilities in schools for the safety and health of the children.</td>
</tr>
<tr>
<td></td>
<td>- Students should be reminded that norms, customs and traditions prevent defecating in the open.</td>
</tr>
</tbody>
</table>

Remember: Safe and healthy disposal of polluted (waste) water and faecal excreta helps decrease disease incidence and provides a safe environment.
Remember: It is important to get used to using latrines in the households or at schools when needed and never defecate in the open.

Acquired skills:
1. Participation and respecting others' opinions
2. Objective listening and objective discussion
3. Deduction and conclusion

**Enriching (Booster) activity:**
Using the preceding method, the teacher asks the students to summarize safe ways to dispose of animal dung/droppings.

**Activity 5: Impacts of unsafe sanitation**
Time: 40 minutes
**Goals:**
Upon completing this activity, students are expected to be capable of:
1. Realizing the impact of safe sanitation systems
2. Knowing the risks of unsafe sanitation
3. Recognizing the social, psychological and health risks involved in unsafe sanitation.
4. Designing modes/patterns for unsafe sanitation.

**Materials and Tools:**
1. Pupil's worksheet; i.e., flip chart sheets for all groups with two different drawings/forms on them
2. Papers for all students and drawing pencils/crayons

**Steps:**

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>- The teacher divides students into groups; each group appoints a rapporteur.</td>
</tr>
<tr>
<td></td>
<td>- The teacher gives pupil's worksheets to all groups, i.e., flip chart sheets for each group with two different figures/shapes/drawings on them.</td>
</tr>
<tr>
<td>15</td>
<td>- The teacher asks the students to contemplate and discuss within their groups the two shapes before them.</td>
</tr>
<tr>
<td></td>
<td>- The teacher asks the students in the groups to explain the two shapes; the rapporteur explains what the group thinks.</td>
</tr>
<tr>
<td></td>
<td>- The students conclude that both drawings make two chains of sequences that illustrate the impact of sanitation systems on society in general and on the students’ community in particular.</td>
</tr>
</tbody>
</table>
The teacher asks the following:
- What could happen in case the sequence/chain is disrupted and safe sanitation is not available?
- The teacher asks the students to make a sequence/chain similar to those in the drawings but for unsafe sanitation; each rapporteur presents the group's work.

The teacher and students discuss the consequences of unsafe sanitation on community and individual health, particularly (school) students.

Remember: Students' performance is negatively influenced by lack of a sanitation system.

Acquired skills:
1. Contemplation and analysis
2. Deduction and conclusion
3. Respecting others' opinions
4. Designing shapes/drawings/flow charts

Enriching (Booster) activity:
The teacher asks half the students to write a report on the psycho-social outcome of unsafe sanitation, and the other half to write a report on the health status and diseases that unsafe sanitation causes. The teacher then discusses these reports with the class.

Pupil's worksheet:
<table>
<thead>
<tr>
<th>Safe sanitation</th>
<th>Sanitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe environment</td>
<td>Good health free of illnesses</td>
</tr>
<tr>
<td>Sound social and economic status</td>
<td>Active learning</td>
</tr>
<tr>
<td>Good social and educational status</td>
<td>Good academic performance</td>
</tr>
</tbody>
</table>

Pupil's worksheet:
| Unsafe sanitation | Unsafe sanitation |

Theoretical Background 2
General and Personal Health
General/public and personal health are concerned with all that influences and surrounds an individual in terms of personal hygiene, maintaining safe drinking water and disposal of
wastewater, human and animal waste and faeces/excreta/dung. They are also concerned with household and food hygiene. All of these items are feasible only when a hygienic and healthy community is guaranteed.

Personal health is the ability of a person to perform ordinarily various daily functions, activities and practices. It also involves paying attention to clean/hygienic food, drinks and clothes and addressing psychological needs in order to maintain all aspects of a human’s health and to keep an individual physically and mentally fit, capable of working, and producing/giving.

Personal health includes three major elements: physical, psychological and social health. As far as physical health is concerned, one should protect himself/herself against diseases before they become critical. The most important yet simplest means to achieve this result is paying attention to personal hygiene and balanced diet. Psychological health supports personal health by acquiring practices that help one adapt to or face problems in a positive way. Social health, however, is a person’s ability to cope with the society and to perform his/her roles actively. Practices that maintain one's personal health vary according to the stages of growth and development.

Full recognition, awareness and enjoyment by a student/trainee of his/her personal health will help them deliver their duties more actively, give them a better sense of safety, self-respect, sound thinking and increased giving to the community where they live.

The following factors influence personal hygiene and (personal) health:

1. **Biological factors:** One's age plays significantly in the type of activities related to personal health and hygiene; children need help with bathing, for instance. A person might fall sick. And that person's personal hygiene-and-health-related habits might be influenced accordingly. Physical disability is a major factor that influences people's ability to perform the personal hygiene-and-health-related activities and their dependence on others to satisfy their needs.

2. **Psychological factors:** The psychological state is a foundation for one's willingness to care for his/her personal hygiene and health and for choosing the right clothing, for example. A person's perspective of himself/herself – one that is based on the individual's satisfaction with his/her physical and psychological state - leads them to perform activities related to hygiene, clothing and neatness.

   It is found that non-satisfaction by a person with his/her appearance may lead them to ignore their decorum and cleanliness.
3. **Environmental factors:** General environmental elements like high temperatures and humidity and air pollution influence hygiene and health. As a result, there will be need for more personal hygiene and health activities like bathing, washing hair and changing clothes. Lack of hot water and places to bathe hinders carrying out these activities.

4. **Social and cultural factors:** A person acquires hygiene and tidiness habits from his/her family/household. One might also acquire other skills through learning from a role model, like teachers at school or through outside exposure. Likewise, people's friends and companions have a great influence on their negative or positive approach to personal hygiene and decorum/clothes. Personal health is also influenced by community traditions. Religion plays a basic role in personal hygiene and health activities, particularly those related to rituals; cleansing/cleanliness and *Wud’u* (Ablution) are inherent imperatives for a Muslim before each prayer.

5. **Economic factors:** The financial aspect has a significant role to play in personal hygiene practices and an individual’s appearance. Availability or lack of hot/lukewarm clean water and soap influence the quality and manner of personal hygiene practices.

6. **Knowledge:** Knowledge about the significance and influence of hygiene on personal health will urge an individual to maintain personal hygiene and follow safe healthy practices. Sometimes, knowledge intertwines with incentives, individual desire and financial capabilities to maintain personal health. Perfecting the necessary skills has a basic role to play in maintaining personal health. Upon health education of a person, in terms of personal hygiene and health, focus should be made on knowledge, skills and attitudes.

**Importance of personal hygiene and clothing/decorum**

Hygiene plays an important role in preventing many bodily diseases. Prevention is brought about by focusing on personal hygiene of the human body, particularly the parts that require special care/cleaning from hair, and the apertures/holes that are exposed more to dirt – the eyes, ears, urinals and anus. These body parts also include places that are not exposed to sunlight and air like the arm pits and pubic regions in addition to the human skin - the prime focus of hygienic cleaning.

Human beings feel physically and psychologically relaxed after bathing; they also feel their morale boosted. Clean skin, nails, teeth, hair and clothes indicate physical, mental and social health. Clothing hygiene/cleanliness and tidiness are two necessary activities to bring about/enjoy health; both healthy and sick individuals perform the two activities that have many benefits like:

- Creating a sense of rest and relaxation.
- Improving a person’s self-esteem by improving his/her appearance and removing odours.
- Activating/boosting blood circulation.
• Maintaining healthy skin, excrescences/outgrowths and mucous membranes/mucosa.

**Personal Hygiene and Personal Health Skills**

There are many skills that are practiced daily to maintain personal hygiene and personal health. The most important skills include:

1. **Bathing:** It is washing all parts of the body with clean warm water and soap. What are the benefits of bathing? Putting on clean clothes and bathing are the bases for personal health. Bathing cleanses the skin from excess excrescence/secretion, perspiration, cumulative dirt and odoriferous germs. Since the skin is the body's first line of defence in its fight against germs, hygiene supports skin health. Other advantages of bathing include activating the blood circulation, relaxation and feeling refreshed. The quality, manner and time of bathing vary from one person to another; this practice is often subject to the person's habits and availability of necessary means. While some prefer to bathe daily, others do so every now and then. The latter stay clean though a person's skin condition, type of work and activities are the factors that determine the amount of dermal secretion. Perspiration increases as temperatures rise, and doing more physical training necessitates that one needs to bathe.

2. **Hair washing:** As one of the skin's outgrowths, hair gets its nutrition from the hair roots. Upon washing/cleaning or combing one's hair, blood circulation in hair roots is activated by rubbing/massaging the scalp with the tips of one's fingers. The way hair looks, its growth and apparition are indications of health. Combing and cleaning a person’s hair are signs that the person cares about his/her look and personal health. Therefore, hair needs a lot of care: washing, combing and exposing it to air and sunlight – though there are individual differences in caring for one's hair according to its type. For example, greasy hair needs to be rinsed more than dry hair since the former gathers more dirt than the latter. Likewise, people who are exposed to more dust and smoke need to wash their hair more. For washing hair, it is preferable to use a sufficient amount of lukewarm water with soap foam or shampoo to melt away grease and dirt. Rubbing/massaging the scalp helps remove dirt and activate blood circulation; then, hair is rinsed a few times with lukewarm water to remove dirt and soap. Hair is then dried, but it is better not to expose it to dry heat – from hairdryers, because it will become dry with broken hair ends. Hair is afterwards combed and made to look tidy to add a feeling of refreshment. It is necessary to wash hair at least once a week. It should also be kept tidy and nice-looking; a person should also avoid touching his/her hair or allowing their long loose hair to touch their faces, clothes or food.
3. **Oral and dental care:** Oral and dental hygiene is among the foundations of good health. Hence, each person should be brought up to brush his/her teeth at least twice a day or after each meal to prevent caries. A safe way is by using toothpaste and a brush; the maxilla teeth are brushed top-down; the mandible teeth are brushed the other way round. The inner side of the teeth is brushed the same way. The tips/occlusion surface of the teeth and molars are brushed in a circular movement as well. Then one should strongly rinse his/her mouth with water to remove the toothpaste and food remains. If one's mouth was odorous, he/she could rinse the mouth with a special mouthwash. Oral care also includes keeping the lips moist to prevent sore lips by using a soothing ointment. Oral care has the following goals:

a) To create a soothing feeling.
b) To prevent food remains from causing germ-infestation.
c) To maintain one's good look and public health.
d) To prevent caries.
e) To contribute to the prevention of germs from gaining access to the blood circulation in the human body.

4. **Eyes, ears and nose care:** Senses have an important role in effective communication, keeping the body and environment safe and avoiding the risks to human life and health. Eyes are washed daily and their inner corners (that are close to the nose) are wiped with a cotton pad or soft handkerchief/tissue towards the outer corners in order to remove eye secretion and dust and prevent them from entering to the nasal tear tube/canal. As for the ears, they are to be wiped (after bathing) with a smooth towel or cotton swab, which should not be pushed into the ear canal because that would cause the earwax to clog the canal and weaken hearing. Using hair pins or the like is among the bad habits to remove earwax; such a practice might cause eardrum perforation and hearing loss. The best way for nose care is to gently wipe it with a handkerchief and cleanse the area around nostrils with lukewarm water and soap.

5. **Facial/hand care and Manicure:** Washing one's face in the morning helps both healthy and sick persons feel active and full of vitality. The face is then well-wiped with a smooth towel; it is also advisable to repeatedly wash one's hands with soap and water to prevent germs infection, particularly before and after meals or when coming into contact with sick people. Nails are clipped and filed in an oval way; one should avoid over-clipping the nails in order not to infect or injure the surrounding skin.

6. **Pedicure:** Foot care takes place during bathing as the feet are rubbed and massaged with lukewarm water and soap. Longer toe nails are then clipped in a straight shape, and
moisturizing cream is applied to prevent the toe nails from cracking. In case they become cracked, they should be put in a hot water tub for a period of no less than 15 minutes; they are then rubbed well, anointed with Vaseline before wearing socks made of cotton. Another requirement for foot care is selecting/using proper and comfortable shoes.

7. *Genitalia care*: This area needs special care for healthy and sick males and females alike. Hence, it should be washed/cleaned numerous times a day with soap and water to remove dirt caused by various types of body secretions like sweat, urine, faeces, vaginal discharges and odours. Women have to have special care for these body parts particularly during menstruation; the pads should be constantly changed. They are usually placed starting from front to back; the area is also cleaned in the same direction (from front to back). Unlike what is wrongly and commonly believed, it is preferable to take daily showers during menstruation – laymen/non-professionals believe that bathing is harmful during menstruation.

**Remember: One should be moderate and reasonable when using personal hygiene cosmetics.**

*Hygiene-related skin diseases*

Key skin diseases directly related to hygiene include:

1. **Pediculosis:**

   Lice (Phthiriasis) can infect hair, pubic and arm-pit areas and skin. Based on the place where it exists on the human body, Pediculosis can be divided into three types: *Phthiriasis Corpus, Phthiriasis Capita* and *Phthiriasis Pubis*. Phthiriasis is transmitted from one person to another upon rubbing or touching the infected body parts and using the infected person's tools and clothes. Its symptoms include severe itching of the head and body; it is very difficult to remove even when washed. Pediculosis is treated with *Gamma Benzene Hexchloride*.

2. **Dandruff:**

   Dandruff forms on the skin; it is a state of scaling and itching of the scalp. Dandruff is often accompanied by an infection that results from constant scratching of the scalp with finger nails or hair brush that has sharp teeth – to help ease the generated itch. The hearing canal and eyebrows might be infected with dandruff; it might also cause people some embarrassment.

   People can reduce dandruff formation by washing their hair repeatedly and daily with lukewarm water and soap to get rid of the greasy substance/secretion and its accompanying itch. To the same effect, hair can be constantly combed as well, and some anti-dandruff substance available on the market can be used.
Prior to the activities, ask the students the following questions:
1. Define and list the elements of personal health.
2. Define and list the elements of public health.
   a) What are the symptoms of Pediculosis?
   b) What are the reasons for gum diseases and caries?

**Activity 6: Hand Washing**

**Time:** 40 minutes

**Goals:**
Upon implementing this activity, students/trainees are expected to be capable of:
1. Realizing the importance of hand washing
2. Fetching/preparing the tools needed for washing hands
3. Properly washing their hands with soap and water
4. Keeping their hands clean as much as possible

**Materials and tools:**
1. A bar of soap or liquid soap
2. Lukewarm running water (water tap and sink)
3. A towel or paper towels

*Note:* This activity is to be carried out by the students under the teacher's supervision; therefore, the students are addressed directly in this activity.

*Note:* The teacher should do this activity about daily life at least once before the students and whenever needed because this activity is very important in our daily lives.

Train a student or more on using the soap on the sink. Should there be no sink and water tap available at your school, you should make sure that the situation is taken care of; ask the principal, your colleagues or the mayor for help in this regard. Draw the students’ attention to the fact that a big bar of soap is difficult to use even by adults; in winter, it might take longer to get foam from the soap because cold water is used; it is therefore advisable to use lukewarm water.

**Executive Procedures**
1. Take off your watch and jewellery and fold up your sleeves to avoid soaking them in water.
2. Check and clip your finger nails so that dirt and germs will not gather underneath them. If your nails were long, they might cause a scratch to any of your colleagues or siblings.
3. Stand in front of the sink, or the water source, while making sure that it is not in contact with your clothes, as illustrated in the figure.
4. Turn on the water tap to have water flow at a reasonable amount and warmth; lukewarm water minimizes the loss of protective oils that cover the skin in comparison to hot water as illustrated in the figure.
5. Rinse your hands to the wrists; keep them at a lower level than the elbows' to prevent the transmission of water-borne germs to the wrists as the figure illustrates.
6. Wet and rub the piece of soap with water until foam covers your hands.
7. Wash up the piece of soap when you are done. Put it gently back in its place/holder without touching it to prevent the germs from being transmitted to your hands.
8. Apply the foam to all areas of your hands ensuring full coverage.
9. Rub your right hand with the left one in a circular movement; rub the palm of the hand, its outer surface and then your wrist/forearm. The circular movement helps one get rid of the germs in the hand plies.
10. Clean you right hand finger nails by rubbing them against the palm of your left hand.
11. Repeat steps 8 and 9 with the left hand.
12. Cross your fingers and rub them together back and forth for 10-15 seconds in order to get rid of germs between the finger gaps as illustrated in the figure.
13. Clean your thumb by putting it inside your left hand palm, close your hand and rub that thumb in a circular motion; since the two thumbs are kind of far from the other fingers; repeat the same procedure to clean the left hand thumb.
14. Rinse your hands well with water and keep them in a lower position than the elbows'.
15. Repeat steps 5-13 for 1-3 minutes.
16. Dry up your hands well using a towel or paper towel.
17. Turn off the water tap using the paper towels then throw them in the dustbin.

Remember: Washing your hands before and after eating as well as after using the toilets prevents the transmission of germs and helps maintain your health.

Activity 7: Personal health and personal hygiene
Time: 40 minutes

Goals:
After finishing this activity, students/trainees are expected to be capable of:
1. Realizing the concept of personal health and personal hygiene
2. Identifying ways of preventing diseases related to personal hygiene
3. Enumerating means of care for hands and feet (manicure and pedicure?)
4. Identifying ways of Pediculosis prevention

**Materials and Tools:**
Envelops with pupil's worksheets inside (a caricature illustration of the human body, water source (tap), soap and towel

**Steps:**

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
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<tbody>
<tr>
<td>5</td>
<td>The teacher hands out envelops to the students with pupil's worksheets inside.</td>
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<td></td>
<td>The teacher asks the students the following question: ▪ How can personal health and personal hygiene be maintained? The teacher requests the students to open the envelops that have the pupil's worksheets and to mention the body organs they see in the drawing and explain what is needed to ensure true personal health for each of the body parts.</td>
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<td>25</td>
<td>▪ What are the diseases that can infect the various body parts as a result of neglecting personal hygiene? The teacher presents to students some practical procedures for safe/healthy/proper personal hygiene, and asks them to implement such procedures through simulation, actual performance or role play; examples include the right way for hand washing or washing and drying up and the feet.</td>
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<tr>
<td>10</td>
<td>The teacher explains how to care for personal hygiene</td>
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**Acquired skills:**
1. Role simulation
2. Actual performance
3. The skill of washing and drying up the feet
4. The skill of hand washing

The following diseases result from neglecting the hygiene of various body parts:
Enriching (Booster) activity:
The teacher asks the students to observe the personal students' hygiene in a school each of them should visit; they are also asked to write a report on that experience and to discuss it in class.

Alternative Activity
The teacher asks students to write reports on Pediculosis and its prevention and treatment methods in case of infection.

Remember: It is important to wash one's feet with soap and water on a daily basis and dry them up well; such a habit prevents foul odour that irritates others.

A pupil's worksheet
A drawing of the human body

Activity 8: Personal hygiene and environmental hygiene (how to care for our hygiene)
Time: 40 minutes
Goals:
Upon completing this activity, a student or trainee is expected to be capable of:
1. Realizing the importance of personal hygiene
2. Realizing the importance of environmental hygiene
3. Enumerating ways for body hygiene
4. Enumerating ways for environmental hygiene

Materials and Tools:
Chalkboard, chalk, flip chart, special pencils, adhesive tape and pupil's worksheet

Steps:

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<td>5</td>
<td>The teacher introduces the activity by asking the following brain-storming question: Why is hygiene important for us? Students write down the answer on the chalkboard or the flip chart.</td>
</tr>
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</table>
- The teacher asks the following question:
  How can we maintain our body hygiene (pupil’s worksheet)?
- The teacher divides students into groups; each group appoints a reporter;
  the teacher hands out to each student a small card/paper carrying body
  parts’ drawings and their names
- The teacher hands out to each group the pupil’s worksheet with statements
  on ways how to keep a person’s body clean.
- The teacher asks a student to draw lines to divide the chalkboard into four
  parts for the head and face, body, hands, and feet – one section each.
- The teacher asks each student to pick a statement from the worksheet and
  write it on the small card/paper.
- The teacher asks each student to post the statement he/she deems fit on the
  corresponding part of the chalkboard.
- The teacher discusses with the class (the larger group) issues to be observed
  to maintain the hygiene of the above mentioned body parts.
- The teacher and students link the same to the environmental factors that
  help keep the body clean.
- The teacher explains ways to maintain the environment clean.

**Remember: Hygiene is necessary for all body parts, with special focus on some.**

**Important note: teach or train students to:**
1. Use handkerchiefs when spitting and throw paper tissues used for this purpose in the dustbin.
2. Cover their mouths and noses when coughing, sneezing and yawning.
3. Always clip their fingers and toes’ nails.

**Skills acquired:**
- Group work
- Selection and distinguishing

**Enriching (Booster) activity:**
The teacher asks the students to write a report on the relationship between general hygiene and
environmental health.

**Pupil's worksheet**
Ways to maintain body hygiene (keep body clean):
- Bathing at least twice a week with special care of sensitive areas.
- Cleaning the armpits prior to using deodorants.
- Washing faces every morning; wash your face whenever it gets dirty during the day.
- Cleaning your eyes daily.
- Wiping your eyes with clean towels or cotton to remove the eye-dirt/secretion after bathing.
- Brushing your teeth with toothpaste twice a day and after eating sweets/confectionery.
- Cleaning the ears daily, particularly after bathing.
- Cleaning your neck when bathing.
- Washing your hands before and after meals.
- Washing your hands with soap and water after using latrines.
- Washing and drying up your feet daily, particularly prior to sleep.
- Using hair shampoo and rinsing your hair when bathing.

Ways to maintain environmental hygiene
- Throwing/dropping waste in the dustbins, not in the playgrounds and corridors.
- Abstaining from throwing garbage from car windows; put them in designated places.
- Evacuating faecal excreta in sanitation facilities and flushing water after using the latrine.
- Maintaining water sources from pollution and rationalizing the use of water.

**Activity 9: Maintaining Dental Health**

**Time:** 40 minutes

**Goals:**
Upon implementation of this activity, it trainees are expected to be capable of:
1. Realizing the importance of maintaining teeth
2. Distinguishing healthy dental behaviour
3. Distancing themselves from unsafe dental behaviour
4. Following health behaviour to maintain their teeth

**Materials and tools:**
1. Pupil's worksheet No. 1
2. Pupil's worksheet No. 2

**Steps:**

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1. The teacher explains the goals of the activity to students.
2. The teacher introduces the topic by talking about the importance of the beauty, health and functional aspects of teeth; he/she shows the class two pictures/photographs:
   - One for a laughing/smiling child with some of his/her teeth missing.
   - Another for a beautiful picture of a child smiling/laughing with all of his/her teeth shown.
   - A group of smiling/laughing persons of different ages

- The teacher divides the students into five groups; each appoints a rapporteur.
- The teacher hands out pupil's worksheets No. 1 and 2.
- The teacher asks each group to discuss and compare a statement in the pupil's worksheets.

The teacher asks each rapporteur to present the group's findings before the rest of the students; the reporter should also differentiate between healthy and unhealthy behaviour statements.

The teacher and students summarize all these statements as healthy behaviour; students are encouraged to acquire such behaviour; the other statements indicate negative behaviour and students should be warned against its risks to dental health. The teacher offers students tips on dental care.

Remember: Dental care is a necessity, not a luxury.
Remember to practice the right behaviour in dental care and to check the information with specialists.

**Acquired Skills:**
1. Analysis and deduction
2. Respecting others' opinions
3. Participation in group work

**Enriching (Booster) activity:**
Ask students to write reports on milk teeth and their number and relation to permanent teeth.
**Pupil's worksheet No. 1**

Read the following statements, pick one with your group and discuss it with your class.

1. Use toothpaste to brush your teeth well in a circular movement after each meal.
2. Go low on sugar-rich diet.
3. Have more of food that is good for teeth, like milk and dairy products.
4. Eat more fruits and vegetables, particularly citrus like oranges and lemon that keep your gum safe.

Visit your dentist once every six months for teeth and gum safety checkups; visit him/her whenever you see caries/cavity or have toothache.

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**Pupil's worksheet No. 2**

Read the following statements, pick one with your group and discuss it with your class.

1. Eating too much food that has a lot of sugar like sweets, pies and biscuits.
2. Drinking a lot of soda that leads to gradual tooth decay.
3. Having very cold food and drinks immediately after hot meals or vice versa.
4. Breaking hard items with one's teeth, e.g. nuts and almonds, cutting lines/threads or twisting metal wires or other items.
5. Leaving food remains to build on teeth surfaces and between teeth (gaps).

---

**Activity 10: Dental care**

Time: 40 minutes

**Goals:**

Upon completing this activity, a trainee is expected to be capable of:

1. Realizing the importance of protecting one's teeth against any harm.
2. Following healthy behaviours in dental care.
3. Eating food items that are good for teeth.
4. Drinking purified/clean water for teeth protection.

**Materials and tools:**

Chalkboard and chalk
### Steps:

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<thead>
<tr>
<th>Time (in minutes)</th>
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| 5                 | The teacher gives an introduction by explaining the goals of the activity and asking students: what would you do if you saw your colleague was using his/her teeth to:  
|                   | a. open a soft drink bottle?  
|                   | b. cut a plastic rope?  
| 10                | The teacher divides students into three groups; each group appoints a rapporteur.  
|                   | The teacher asks the first group to discuss the following:  
|                   | • The impact of the habits below on teeth:  
|                   | - Sucking one's finger.  
|                   | - Breaking/crushing hard stuff using one's teeth.  
|                   | - Drinking ice-cold water.  
|                   | The second group discusses the following:  
|                   | • The impact of the following healthy habits on teeth:  
|                   | - Always brushing one's teeth with toothpaste and brush.  
|                   | - Eating fresh fruits and vegetables.  
|                   | - Paying regular visits to a dentist.  
|                   | The third group discusses the following:  
|                   | • Impact of food and water additives on teeth:  
|                   | - Sugar.  
|                   | - Colouring materials.  
|                   | - Salts.  
| 15                | - The teacher asks each rapporteur to present before class his/her group's finding.  
|                   | - The teacher discusses the answers with the students.  
|                   | - The teacher requests a student from each group to write down the correct answers on the chalkboard.  

**Remember:** Teeth make a person's face and mouth look nice and beautiful when smiling, laughing or speaking; therefore, caring for and maintaining teeth is a must.  
**Remember:** teeth help an individual speak and talk clearly.
Advice: Natural teeth are unique; so keep them safe.
Tooth care necessitates adopting safe/healthy behaviour patterns.
Eating sweets leads to caries.

Acquired skills:
1. Respecting others' points of view.
2. Listening and comprehension.

Enriching (Booster) activity:
Ask students to write reports about the impact of not brushing one's teeth with toothpaste before sleep.

Activity 11: Priorities in maintaining dental health
Time: 40 minutes
Goals:
Upon carrying out this activity, trainees are expected to be capable of:
1. Following the pieces of advice in the pupil's worksheet.
2. Realizing the importance of drinking milk.
3. Recognizing the benefit milk and dairy products have for healthy teeth.

Materials and tools:
Pupil's worksheet, chalkboard and chalk

Steps:

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<tr>
<td>10</td>
<td>1. The teacher hands out the pupil's worksheet to students who should be working individually.</td>
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<td>15</td>
<td>2. Every student presents his/her view before the whole group.</td>
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<td>5</td>
<td>3. The teacher moderates a discussion about the importance of following the advice given in the pupil's worksheet.</td>
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<td>10</td>
<td>4. The teacher moderates the brainstorming by asking the following question: How do milk and dairy products help keep healthy/strong teeth?</td>
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<td>- One student writes down all colleagues’ answers on the chalkboard.</td>
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<td></td>
<td>- The teacher and students arrive at the correct answers.</td>
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</table>
Remember: When a cavity occurs in one of your teeth, do not wait long until it starts aching. Visit a dentist to treat them as soon as possible.

Remember: For the sake of early detection of gum and tooth injuries, all of us, young and adults, have to visit the dentist regularly; we should not wait until we feel pain.

Remember: Eating fibre-rich vegetables helps maintain healthy and hygiene teeth.

Remember: Regular visits to the dentist ensure early prevention and cure.

**Acquired Skills:**
1. Analysis and deduction.
2. Participation and expressing one's opinion.
3. Recognizing the difference between things.

**Enriching (Booster) activity:**
1. Ask the students to talk about their experience with dental caries/tooth decay; how did it happen? How did they feel and what did they feel and do?
2. Ask the students to visit a dental clinic and interview a dentist about the importance of regular visits.

**Pupil's worksheet**
1. Using the following list, set your priorities in the order you would follow to maintain healthy teeth:
   - Brush your teeth on a regular basis.
   - Pay regular visits to your dentist.
   - Eat fibre-rich food.
   - Have milk and dairy products.
   - Use the *Siwak* (a small part of traditional Arabian tree used to brush teeth)
   - Do not break/crush hard items using your teeth.

   Justify your answer and your way of setting these priorities.

2. How do milk and dairy products help develop strong teeth?

**Activity 12: What do you know about Pediculosis?**
Time: 40 minutes.

**Goals:**
Upon finishing this activity, trainees are expected to be capable of:
1. Maintaining their head and body hygiene and know its importance in Pediculosis prevention.
2. Knowing the places that are infected with phthiriasis (Pediculosis).
3. Recognizing lice and nits.
4. Becoming interested in prevention of and knowing the ways to treat Pediculosis.
5. Knowing the characteristics/symptoms of Pediculosis.
6. Realizing the role general and personal hygiene play in Pediculosis prevention.

Materials and tools
Pupil's worksheet, chalkboard and chalk

Steps:

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<tr>
<td>5</td>
<td>The teacher introduces the activity by asking the students about conditions conducive to Pediculosis.</td>
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<tr>
<td>15</td>
<td>The teacher asks each student to give an answer on his/her own, using the attached worksheet (pupil's worksheet).</td>
</tr>
<tr>
<td>10</td>
<td>The teacher discusses with the students the answers given to arrive at the correct ones.</td>
</tr>
<tr>
<td>10</td>
<td>The teacher asks one of the students to write the correct answers on the chalkboard.</td>
</tr>
</tbody>
</table>

Remember: Pediculosis infects the head and body; it is common in crowded environments.
Remember: Knowing a louse's life cycle helps in prevention and knowing how to treat Pediculosis whenever it occurs.

Acquired skills
1. Thinking about the discussion.
2. Participating in the discussion.

Enriching (Booster) activity:
The teacher asks the students to propose a plan to protect their schoolmates from Pediculosis.

Pupil's worksheet

<table>
<thead>
<tr>
<th>Answer, Yes/No</th>
<th>Pediculosis Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pediculosis infects the head, pubis and armpits.</td>
</tr>
</tbody>
</table>
Pediculosis is treated by using insecticides.

Lice have wings to fly from one person to another.

Lice feeds on the scalp layer of hair.

Lice lay eggs called nits that stick to the hair.

Using the infected person's paraphernalia (personal belongings) would infect the healthy person.

Shaving the hair (completely) helps treat Pediculosis.

A female louse lays 50 eggs a day.

Lice eggs/nits hatch in 7-10 days.

Pupil's worksheet

<table>
<thead>
<tr>
<th>Pediculosis Test/Answers using Yes or No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
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<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
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<tr>
<td>No</td>
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<td>Yes</td>
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<tr>
<td>Yes</td>
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<tr>
<td>Yes</td>
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<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

Activity 13: A louse's life cycle

Time: 40 minutes

Goals:

Upon finishing this activity, trainees are expected to be capable of:

1. Knowing the louse's life cycle
2. Preparing a plan to treat Pediculosis
3. Preparing a plan to prevent Pediculosis
4. Caring for general and personal hygiene
Materials and tools:
Pens/pencils and drawing papers

Steps:

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>The teacher introduces the activity by presenting its goals.</td>
</tr>
</tbody>
</table>
| 20                | The teacher divides the students into three groups; each group appoints a rapporteur; the groups should do the following:  
                    1. Group (1) describes and draws a louse's life cycle.  
                    2. Group (2) prepares a plan to treat Pediculosis incidents in one of the classrooms.  
                    3. Group (3) prepares a plan to prevent Pediculosis in a certain school.  
| 15                | Rapporteurs present their groups' findings before the whole class.  
                    The teacher discusses the answers with the students to arrive at the correct ones. |

Remember: When planning to treat Pediculosis, one has to become acquainted with a louse's life cycle to be able to administer treatment according to the phases of that cycle.

Guidelines/instructions: Should you see symptoms of Pediculosis incidence among students, coordinate with the school administration and health centre to provide necessary medicine. Notify their families about the incidence and inform them about the need to treat the case. Send health messages to the households of infected students explaining how to use the lice treatment medicine/shampoo; you should also remind them that washing the head with only soap and water is not enough to kill lice and nits.

Acquired skills:
1. Description and drawing.
2. Preparation of a plan.
3. Discussion and respect of others' opinions.

Enriching (Booster) activity:
The teacher asks the students to write a report about general and personal hygiene methods to prevent Pediculosis.
Activity 14: Various roles in prevention of Pediculosis

Time: 40 minutes.

Goals:

Upon completion of this activity, trainees are expected to be capable of:

1. Realizing the procedures to follow in Pediculosis prevention.
2. Understanding the various roles of teachers, parents and community in Pediculosis prevention.
3. Knowing the negative psychological damage resulting from Pediculosis.
4. Having a role in Pediculosis prevention.

Materials and Tools:
Papers, pencils, chalkboard and chalk

Steps:

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>The teacher introduces the activity by explaining its goals.</td>
</tr>
<tr>
<td>10</td>
<td>The teacher divides the students into three groups; each group appoints a rapporteur. The first group is to discuss the measures teachers could do to curb/curtail/reduce Pediculosis incidence. The second group is to discuss the measures parents could do to curb Pediculosis incidence. The third group is to discuss the measures the community could do to curb Pediculosis incidence.</td>
</tr>
<tr>
<td>15</td>
<td>Every rapporteur presents his/her group's findings. The teacher discusses with the students the ideas on the chalkboard. A student notes the summary of his/her group's findings.</td>
</tr>
<tr>
<td>10</td>
<td>The teacher asks students to consider the psychological aftermath of Pediculosis on infected persons and their colleagues. The teacher engages students in a discussion on what they have reached.</td>
</tr>
</tbody>
</table>

Remember: Curbing Pediculosis is a result of concerted efforts by parents, teachers and the community.
Guidelines (instructions): Should you see symptoms of Pediculosis incidence among students, coordinate with the school administration and health centre to provide necessary medicine. Notify parents about the incidence and inform them about the need to treat the case. Send health messages to households of infected students explaining how to use the lice treatment medicine/shampoo; you should also indicate to them that washing the head with only soap and water is (not)* enough to kill lice and nits.

Acquired skills:
1. Contemplation and thinking.
2. Participation in group work
3. Self expression

Enriching (Booster) activity:
The teacher asks the students to visit the nearby pharmacies in their neighbourhood to see the medication used to treat Pediculosis, and how it is used.

VII. Theoretical Background (3): Healthy environment in the household

Healthy Households
A house is the place where humans live; it accommodates people's daily needs and serves as a shelter for their activities. A house plays significantly in a person's health and psychological aspects. An individual becomes an effective community member when he/she enjoys the tranquillity and security a house offers. A healthy house must meet the following conditions:

1. Cleanliness and removal of dirt/garbage:
   Both are parts of a person's daily practices. Constant interest in hygiene reduces accumulation of dirt, germs and harmful insect infestation. Maintaining hygiene is not restricted to housing units; it also includes their surroundings, workplaces, schools and streets.

2. Lighting:
   Proper lighting is essential for a healthy house. The source of lighting during daylight comes from direct and indirect sun rays; therefore, windows should be opened and curtains moved aside to get enough light. At night, electric lights are used as a source of lighting; a house should have enough light and avoid dim or strong lighting because both harm the eyesight, the eyes themselves and the nervous system.

*Translator’s note: The Arabic version reads “enough”; I added 'not'.
There are several impacts that result from lack of proper lighting such as:

A- Lack of enough sunlight in the house leads to an increase in dampness, which causes rheumatic diseases; lack of sufficient exposure of children to sunlight causes vitamin-D deficiency and rickets.

B- Bright/strong lighting would cause eyes fatigue and headache, particularly if the walls were smooth and bright/coloured.

C- Darkness or poor lighting prevents seeing; this leads to lack of cleanliness and dirt and germs pile up. These factors may become vectors and would increase accidents inside the house.

3. Ventilation:
Ventilation is finding the proper means to renew/refresh the air in the place human beings use; it is two folds:

A. Outdoor ventilation:
   Outdoor ventilation means leaving sufficient space between buildings to provide fresh air. This matter should be taken into consideration when planning/zoning cities and villages provided that many green areas and gardens (landscaping) are accounted for. The height of buildings should correspond to the width of adjacent streets; spaces for proper ventilation should be left around each house.

B. Indoor ventilation:
   Indoor ventilation is the use of natural/ordinary means like windows or artificial like AC units to provide fresh clean air and dispose of bad air from the house. Symptoms of being in contact with bad air appear when a person is exposed to polluted air; they include inability to think or focus, yawning and sleepiness. Longer periods of staying in bad air surroundings can cause a person to lose appetite and have weak immunity. It is, therefore, necessary to ventilate the house often, particularly during winter to avoid the hazards of poor ventilation.

4. Waste/Excreta Disposal:
Domestic waste is divided into two parts:

A. Human faecal excreta and sewage
   These include urine, faeces and water left after domestic cleaning and laundry.

B. Solid/dry waste:
   It is also known as garbage; it includes kitchen waste, street garbage close to home, animal dung/droppings or others. Some cities have sewage networks that facilitate disposal of
human excreta and sewage. However, methods of disposal might vary/differ according to the place of residence, whether in cities or villages. These methods include pit latrines and the sewage system. Necessary precautionary measures to maintain safety and house hygiene and environmental health should be taken upon using such methods.

As for dry/solid waste (garbage), it should be collected inside the house in sealed containers or bags; they are then collected using mobile coaches, to be dumped in special landfills, where they will be buried, incinerated or used in natural fertilizer industry.

Lack of safe disposal of waste creates several damages, including:

- Piling of waste-creating an environment conducive to insects and rodents' proliferation and infestation.
- Polluting water, soil, produce and food items.
- Producing foul and irritating odours.
- Infestation of germs that cause diseases like cholera, typhoid, polio, hepatitis-B and others.

5. Domestic insects control:

Usual domestic flies and mosquitoes are the most commonly known insects during summer. Flies convey germs automatically; they carry them on the tips of their wings causing diseases like intestinal fevers, cholera and food poisoning. Mosquitoes are nocturnal parasites that rest during daylight and become more active at night. Often found near stagnant waters, mosquitoes suck human or animal blood and pass on diseases like malaria and jaundice to them. These diseases can be avoided by controlling and exterminating the insects causing them in the following ways:

a. Maintaining general hygiene in households, streets and neighbourhoods.

b. Placing garbage in sealed containers.

c. Installing metal screens on windows and doors to prevent insects from entering inside.

d. Safe and effective use of insecticides.

e. Removing mosquitoes’ infestation locations by filling up swamps, covering water wells and killing mosquitoes’ larvae by spraying kerosene on the surface of swamps and collection wells.

6. Heating and Cooling:

Safe heating methods during winter are necessary for a healthy household. Since the climate in our country is hot, we need cooling systems for a longer period of time in summer - unlike heating techniques, which are needed for a shorter period only. There are several heating
methods, such as central heating that operates on oil products, electricity or firewood. Regardless of the heater types, one has to remember that each has its advantages and disadvantages like causing burn injuries and carbon monoxide poisoning. Therefore, these heaters should be used safely with caution; they need to be always maintained, particularly if there are children living in the house. One should not also forget to open rooms every now and then to bring fresh air into the place when any of these heaters are used.

Cooling methods include use of electrically operated fans and air conditioners (AC units). Hence, one should take into consideration their electrical hazards and operate them in a safe mode.

7. Healthy facilities

Household facilities include drinking water sources, proper places to cook/prepare food, toilets (WC) and bathing places/showers. Safe/potable water is supplied to houses through the public water supply systems, which should be regularly tested to ensure they are not polluted. In some few areas in Iraq, households might get their water supplies form springs and artisan wells that should also be tested to ensure drinkability and usage for domestic purposes. WC's should always be kept clean; they should be supplied with water and water washbasins for washing our hands after use. Toilets should also have good ventilation so that they will not become sources of infections. Kitchens should be healthy and provided with proper walls, tiles and closets that are polished to prevent infestation, particularly cockroaches and mice.

Lack of safe/hygiene conditions in a kitchen would lead to wastewater leaking into safe water sources; likewise, punctured/broken pipes will lead to water sources pollution. Using polluted/contaminated water for drinking and other domestic purposes causes many germ and parasite-born diseases. Therefore, water has to be tested to ensure drinkability. In case water is no longer potable, the following methods might help in purification and disinfection:

a. Boiling: boiling takes place when water put in a clean pot is left to reach the boiling point for 7-10 minutes.

b. Using household filters.

c. Disinfecting water sources using chlorine gas (Chlorination).

d. Disinfecting the water in wells and tanks/reservoirs using chlorine powder.

Before carrying out the activities, ask the students the following questions:

1. What are the methods of safe sanitation?
2. What is the number of students who use the bathroom (one latrine) in school; can this be a healthy phenomenon? How did you notice that?
3. What do we mean by "waste management"?
4. Why "waste management"?

**Activity 15: Waste management**

Time: 40 minutes

**Goals:**

Upon completing this activity, students (trainees) are expected to be capable of:
1. Designing a special container/dumpster for recyclable waste.
2. Identifying the spots where the neighbourhood, city or village’s waste is dumped.
3. Developing a procedural plan to minimize and safely dispose of waste.
4. Designing posters or slogans to encourage better handling of waste.

**Materials and tools:**

Papers, cardboards, scissors and coloured markers

**Steps:**

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
</table>
| 5                 | The teacher introduces the topic by asking the following two questions:  
|                   | 1. What do we mean by waste management?  
|                   | 2. Why waste management? |
| 25                | The teacher divides students into four groups:  
|                   | Group one to:  
|                   | 1. Design a special container for recyclable waste (maybe several containers) |
|                   | Group two to:  
|                   | 2. Identify the spots where neighbourhood, city or villages, waste is dumped.  
|                   | Group three to:  
<p>|                   | 3. Develop a procedural plan to minimize and safely dispose of school waste; the plan should include necessary materials, human resources, |</p>
<table>
<thead>
<tr>
<th><strong>Group four to:</strong></th>
<th><strong>Targeted group, time, place and any other procedures.</strong></th>
</tr>
</thead>
</table>

| 4. | Design posters or slogans to encourage better handling of waste. |
| 10 | All group members should see the work of their peers in the other groups; the teacher discusses what students have developed. |

**Remember: Waste management is a process to improve the community health conditions.**

**Acquired skills:**
1. Learning by doing.
3. Enjoying the application/use of skills.
4. Participation and appreciation of group work.
5. Respecting and appreciating other people's work.

**Enriching (Booster) activity:**
Once they are done with their projects, the students can reach out to the local community’s officials in charge of waste recycling with their work. It can help officials benefit from students' ideas to develop containers and pick locations to put them in order to maintain environmental wealth.

**Activity 16: Components of a sanitation system**
**Time:** 40 minutes

**Goals:**
Upon implementation of this activity, trainees are expected to be capable of:
1. Mentioning the components of a sanitation system.
2. Realizing the risks of defecation in the open.
3. Explaining that faeces left in the open causes germs infestation and spread of diseases.
4. Observing hygienic practices after defecation.
5. Enumerating the official and popular bodies concerned with sanitation.
6. Knowing the school infrastructure needed for sanitation.
7. Fetching the disposable material necessary for use in sanitation.

**Materials and tools:**
Flip chart sheets, flow masters (markers) for each group and a table (form).
Steps:

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>The teacher divides students into groups; each group appoints their rapporteur</td>
</tr>
</tbody>
</table>
| 12                | Each group writes down the following on the flip chart sheets they have:  
|                   | - A component of a sanitation system.  
|                   | - Popular, governmental and non-governmental organizations and institutions/agencies that can offer support.  
|                   | - The infrastructure needed at school.  
|                   | - Disposable materials needed. |
| 10                | Each rapporteur presents the group's findings to all other groups. |
| 10                | The teacher asks rapporteurs to categorize their groups' work in the attached table. |
| 5                 | The teacher derives the hazards of outdoor defecation and its role in the spread of germs and disease. |

A table showing a sanitation system’s components:

<table>
<thead>
<tr>
<th>Number</th>
<th>Needed disposable materials</th>
<th>Required infrastructure</th>
<th>Organizations/agencies that can offer support</th>
<th>Components of a sanitation system</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</table>

Remember: The collaboration of all parties concerned ensures the availability of a sanitation system.
Acquired skills:
1. Note-taking.
2. Summarizing ideas.
3. Identifying/Recognizing the components of a sanitation system.
4. Collaboration in group work

Enriching (Booster) activity:
Under his/her supervision, the teacher asks the students to coordinate with a representative of one of the popular/grassroots and official organizations/agencies supporting sanitation systems to visit the school and deliver a lecture about the nature and manner of their work in this field.

VIII. Theoretical Background (4): Basic principles of environmental education
Environmental Health is the science that involves all environmental factors that surround and relate to human beings. So it includes air, water, food, excreta/waste and the places of residence and work.

Throughout human history on Earth, never have there been conditions and reasons more compelling to reconsider human interaction with the environment and sound planning of using resources than those we are nowadays experiencing. Thousands of years ago, human beings started exploiting environmental resources – on a limited scale, to address their basic food, drink and clothing needs.

Populations on this planet have doubled and their environment-based needs increased over the years. They now have modern and developed means that augment their ability to control the environmental conditions and exploitation of resources. With this doubled population growth, human beings have excessively exploited the resources without taking heed of environmental balance and the needs of other creatures on earth. Many developments, which have taken place, have heralded great risks and turned numerous parts of the planet into polluted areas of poor quality - barely inhabitable for all types of living creatures.

Prominent examples of these developments include population explosion; the world population growth far exceeds human ability to develop and provide food and other resources. More than half of the world population live below quality standards. Desertification is on the rise in many corners of the world as the area of barren and uncultivable lands has increased on account of those human beings’ need for agricultural production. Mountainous and hilly areas rendered barren by human activities have increased; human beings have destroyed the vegetation and forestry because of excessive wood logging for fuel and overgrazing.
The world of today experiences an alarming increase in the number of endangered animals and plants species each year. More lakes, rivers and seashores are increasingly polluted because of various solid and fluid waste discharged by factories, cities and others. Some basic principles of environmental education had to be developed in order to save what can be saved - encountering the reality that jeopardizes human life itself. These principles can be summarized as follows:

1. **The economic dimension/perspective**: Safe handling of the environment and maintaining it against degradation conforms with the goals of economic development and growth. International agencies, including UNESCO and FAO have agreed that the best definition of maintenance and good treatment of the environment would be "the safe and rational use of environmental resources to reach optimum quality of human life." Sound development of agricultural resources, for instance, has to take into consideration preserving the resources of soil, forests, fauna and flora because of the significant role they play in the ecological balance. Another example is the construction of dams or factories; their biological, social and health impact on the surroundings has to be factored in. Maintaining the environment does not necessarily mean refraining from constructing dams or factories; what is needed is regulating such structures in light of the society and environment’s requirements in order not to incur any damages or introduce new elements that would cause drastic and harmful changes in the elements of the environment.

2. **The scientific dimension/perspective**: The scientific foundations for exploiting environmental resources make it incumbent upon human beings to maintain the ecological balance throughout the ages. This means basically that the environment should never be changed in a way that would undermine its vitality and ability to rejuvenate its resources; thus, the existence of all types of living creatures will be sustained on this planet.

3. **The ethical dimension/perspective**: Today's citizens in each community have a moral responsibility to safeguard the environment and exploit its resources in a way that would not incur negative durable effects. These would in turn create a poor environment for generations to come. Should certain plant or animal species become extinct, it would deny the future generations the chance of studying and benefiting from these species. It would also lead to denying the environment one of its elements with severe consequences that will certainly influence human beings.

Ask the students the following questions prior to carrying out the activities:

1. What is your role in maintaining sanitation?
2. What are the elements of personal hygiene?

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*A literal translation of this word in the Arabic version can be “foundation”, pivot*

*A literal translation of this word in the Arabic version can be “foundation”, pivot*
3. How do you care for your personal hygiene?
4. What are the elements of general hygiene?
5. What is the relationship between general hygiene and personal hygiene? What is your role in both of them?

*Activity 17: Bodies concerned with sanitation and general and personal hygiene.*

**Time:** 40 minutes

**Goals:**
Upon finishing this activity, students (trainees) are expected to be capable of:

1. Identifying the bodies and roles relating to awareness-raising, sanitation and hygiene.
2. Identifying the roles parents and local community could play in sanitation.
3. Categorising measures and tools through which monitoring and following up on changes, which take place in school, can be made.
4. Realising the importance of performance evaluation for concerned parties.

**Materials and tools:**
Flip chart, special pencils, chalkboard and chalk

**Steps:**

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>The teacher introduces the topic by asking students: Should any of you, while playing, see a colleague urinating near one of a house’s walls in the neighbourhood, what would you tell him/her? Why? If you saw one of the women in the neighbourhood disposing of laundry water in the main or secondary street, what would you tell her? Why? The teacher indicates the bodies concerned with sanitation and general and personal hygiene.</td>
</tr>
</tbody>
</table>
| 10                | The teacher divides students/trainees into three groups; each group appoints their rapporteur. He/she requests: 
* Group I to identify teachers’ roles in raising awareness among students and parents about sanitation and personal hygiene, and to summarize these roles on the flip chart;* 
* Group II to identify the things parents and local community can offer to support observation of sanitation and school environmental |
hygiene, and to summarize the ideas on the flip chart; and

- Group III to identify the measures and tools to monitor and follow up on changes and development in school as well as to evaluate performance, and to summarize them on the flip chart.

| 15 | - Each rapporteur presents the group's findings.
     - The teacher discusses with the rest of the groups any additions or ideas to be included in the other groups' work. |
| 10 | The teacher and students reach consensus and summarize on the chalkboard the bodies, roles, measures and tools that would help support hygiene and sanitation. |

Remember: Monitoring and following up on the work of parents, local community and teachers give a clear picture about the environmental progress the society would achieve.

Remember: Continued (unsafe) discharging of fluid waste/sewage will create an environment conducive to disease-causing mosquitoes and other insects and micro-organism’s infestation. Besides, discharges would be an irritating odour for passers-by and create problems in the neighbourhood as a health-related issue.

Acquired skills:
1. Group work.
2. Listening to and respecting others' perspectives.
3. Dialogue and discussion.

Enriching (Booster) activity:
Invite parents to a school meeting to go over their role in sustainable sanitation and school environment hygiene. A plan of action for an implementation mechanism can be jointly developed.

Activity 18: Activating the roles of the bodies concerned with sanitation, environmental health, general and personal hygiene

Time: 40 minutes

Goals:
Upon finishing this activity, students/trainees are expected to be capable of:
1. Identifying the bodies and roles concerned with awareness-raising, sanitation and hygiene.
2. Identifying the roles parents and local community could play in sanitation.
3. Categorising measures and tools to monitor and follow up on changes that take place in school.
4. Realising the importance of performance evaluation for concerned parties.

**Materials and tools:**
Flip chart, special pencils, chalkboard and chalk

**Steps:**

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>The teacher introduces the topic and bodies concerned with sanitation and general and personal hygiene.</td>
</tr>
</tbody>
</table>
| 15                | The teacher divides the students (trainees) into three groups; each group appoints a rapporteur. He/she asks:  
  - Group I to identify the role of the Ministry of Education in raising awareness among students and parents about sanitation and personal hygiene, and to summarize that role on the flip chart;  
  - Group II to identify the things the Ministry of Environment can offer in sanitation and school hygiene, and summarize such things on the flip chart; and  
  - Group III to identify the procedures and tools, which enable the Ministry of Health to introduce the change and development in school; and to list those tools and procedures on the flip chart. |
| 15                | - Rapporteurs present the group's findings.  
  - The teacher discusses with the rest of the groups any additions and ideas to be included in the work of other groups. (Roles of other ministries and NGOs). |
| 10                | The teacher and students jointly identify and write on the chalkboard how the bodies involved in hygiene and sanitation can cooperate for a better sanitation in the region. |

**Remember:** The ministries of education, health and environment cooperate to improve sanitation.

**Acquired skills:**
1. Group work
2. Listening and respecting others' opinions
3. Dialogue and discussion
Enriching (Booster) activity:
Invite specialists to give further information about their roles in sustainable school hygiene and sanitation. Develop a plan of action and propose a mechanism for implementation.

IX. Theoretical Background (5): Characteristics of environmental education
- Environmental education takes into consideration the natural, social, political, economic, legislative, cultural and moral aspects of the environment; it also seeks to understand the ways to maintain and optimally make use of these aspects.
- Environmental education is concerned with contemporary and future circumstances such as the necessity to have the community members cooperate to solve the environmental problems that encounter their environment, and to work towards improving them.
- Understanding the human beings within their environmental framework and identifying the elements of mutual relations that influence humans' attachment to their environment.
- Illustrating the role of science and technology in developing the human relationship to the environment and realizing the likely impact of imbalanced relationships on human life.
- Highlighting the (notion of) interaction between the social and civilizational elements and natural forces.
- Developing integrated environmental awareness "coupled" with the skills, experiences and attitudes that render citizens positive in their handling of and dealing with the environment.

As environmental education has become very important, educational institutions face a significant challenge nowadays - to find an effective way to mainstream environmental education in the plan for the various cycles of public education. Following are some foundations that help design and develop educational programmes for environmental education:

1. Environmental education heavily relies on a scientific theme. It is necessary that schooling material and the activities supervised by schools or academic institutions contribute to environmental education.
2. Environmental education is a life-long process and the responsibility of all cycles – from preschool and primary to the tertiary levels and beyond.
3. Environmental education should be emphasized within all other subjects, particularly science and social studies. Science provides students with needed information about and principles of natural sources/resources and the relationships among environmental components. The subject ‘social studies’ helps deepen the consideration of the social impact these sources have
– this focus should not undermine the link between the general trend (mainstream) of environmental education and the various forms of knowledge.

4. The programme should allow the students the chance of studying and investigating various aspects of society. Programmes should also identify the problems facing the environment so that individuals would have the motives and tools needed to solve these problems.

5. Sound/safe attitudes are among the most important of the goals of environmental education. Information should therefore help create the skills and attitudes that render people capable of understanding the human and natural sides of the mutual relationship between humans and their environment.

6. Environmental education programmes should constitute a progressive process to include all education cycles.

7. Environmental education should provide/maintain continuity and logical sequence to create an opportunity for early development and growth that extends for years to come.

8. Such programmes should aim at arousing the students’ interest in the environment and at mobilizing their capacities, stimulating their emotions and increasing their cooperation to improve the environment and overcome its obstacles.

9. The programmes should also focus on and promote behaviour; they should explain values and skills and how to use them environmentally.

Advice and guidelines to protect the environment:

**Durable/Constant hygiene for a safe life:**

- Collection of garbage in a civilized fashion and its disposal by placing it in designated spaces help protect the environmental elements against pollution and safeguard natural resources from overuse.
- Do not throw domestic garbage from balconies or shafts (in buildings).
- Do not throw garbage from car windows; keep them till you can safely dispose of them in designated places.
- Do not burn garbage or plastic material; incineration pollutes the air.
- Do not leave debris piled up in streets; it blemishes the scenery, pollutes the environment and obstructs traffic.
- Do not allow use of all types of domestic insecticides because they pollute the air and cause respiratory diseases.

**Our children’s health lies in our clean environment:**

To the children of today and those of the future, the hope and renaissance of the home country - you can help sustain the beauty of our homeland through:
Abstaining from throwing papers in the courtyards, streets and corridors; place them in dustbins.
Establishing environment service groups to maintain general hygiene and grow trees and beautiful plants.
Using both sides of a paper to reduce the number of trees cut for paper production and decrease the amount of waste paper to be incinerated.
No smoking! Quit this bad habit that damages one's health; smoking causes serious diseases to you and to passive smokers.

Environmental issues:
- Water is the source of life; we should maintain/safeguard our water sources and rationalize our use of water.
- Car exhaust pipes (mufflers) are among the most dangerous air pollutants; we have to tune our car engines, use public transportation as much as possible, rationalize the use of energy and grow trees.
- Noise is one of the most serious diseases of modern times; it has impact on human psychological and neurological health, distress, tension, anxiety and stress. Noise also violates human beings’ comfortability and right to serenity.
- Natural reserves safeguard resources and maintain the health of ecological processes and biodiversity.
- The depletion of the ozone layer reduces its ability to absorb ultraviolet rays, which can then permeate to the earth's surface.
  Fellow citizens: stop using resources that deplete the ozone layer, particularly the aerosols and air-freshener containers, etc.

Activity 19: Health behaviour change
Time: 40 minutes

Goals:
Upon finishing this activity, students/trainees are expected to be capable of:
1. Knowing the term "behaviour change".
2. Establishing a link between the terminology in the activity and health behaviour change.
3. Knowing the significance of health behaviour change during the early stages of their lives.
4. Practicing a healthy behaviour.

Materials and tools:
Scrap papers, pupil's worksheet (for each group), chalkboard and chalk
Steps:

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<tr>
<th>Times (in minutes)</th>
<th>Procedures and Guidelines</th>
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<tr>
<td>5</td>
<td>- The teacher divides students into five groups; each group appoints a rapporteur.&lt;br&gt;- The teacher hands out pupil's worksheet – scrap papers, to each group.&lt;br&gt;- Each scrap paper has three words from among the ones included in the attached pupil's worksheet.</td>
</tr>
<tr>
<td>20</td>
<td>- The teacher asks each group to draw a paper (that has three words) and to discuss each term.&lt;br&gt;- The teacher asks each group to describe each term in no more than two lines and connects it to the concepts and themes of the required students’ behaviour change.&lt;br&gt;- Each rapporteur presents the findings of his/her group before class (the whole group).</td>
</tr>
<tr>
<td>5</td>
<td>- The teacher then asks each rapporteur to write on the board the definitions the group has agreed upon.</td>
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<tr>
<td>10</td>
<td>- Afterwards, the teacher and students discuss the inter-relationship among these terms and how to use them to bring about behaviour change.</td>
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</table>

Remember: Health behaviour change requires knowledge of correct information and simplicity of its stages.

Acquired skills:
1. Identifying and writing down the important observations.
2. Dialogue and discussion.
3. Analysis, linkage and deduction.

Enriching (Booster) activity:
The teacher asks the students to suggest, justify the choice of and define to their colleagues, additional terms related to health behaviour change.

Pupil's worksheet
Behaviour change related terminology:
1. Simplicity and lucidity
2. Correct information
3. Habits/customs and traditions
4. Cost
5. Time
6. Timetable
7. Oversight and monitoring
8. Group work
9. Participation and competition
10. Showing interest
11. How and why?
12. Facilitations
13. Modelling
14. Cooperation
15. Values

Activity 20: The participatory approach and student behaviour change
Time: 40 minutes

Goals:
Upon finishing this activity, students/trainees are expected to be capable of:
1. Realizing the importance of the participatory approach in behaviour change.
2. Knowing methods of behaviour change in terms of hygiene and sanitation.
3. Recognizing the age groups appropriate to each method of behaviour change.
4. Knowing the ways to be used to bring about behaviour change.

Materials and tools:
Pupil's worksheet, papers and pencils for all groups

Steps:

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<tr>
<td>10</td>
<td>The teacher introduces the activity by explaining that the participatory approach in behaviour change is an important method to effect change in students' behaviour related to hygiene and sanitation; teachers should also explain that there are many ways constituting parts of this approach and depend on the age group.</td>
</tr>
</tbody>
</table>
The teacher divides students into five groups; each group appoints their rapporteur.

The teacher hands out pupil's worksheets to all groups. Each group addresses two of the methods the worksheet states; they also give/write an example or two on each of the methods.

Rapporteurs present their groups' findings; the teacher goes over the proposed method with the rest of the students.

The teacher rewards students who came up with brilliant/creative ideas and means.

Remember: There is a specific method for each age group to introduce health behaviour change.

**Acquired skills:**
1. Respect for group work
2. Ability to choose
3. Recognition and analysis

**Enriching (Booster) activity:**
1. Students interview other teachers or the principal on their roles in students' health behaviour change and contributions to maintaining sanitation in school, community and the surrounding environment.
2. Students prepare a project and demonstrate it at the end-of-school-year exhibition.

**Pupil's worksheet:**
Examples on and ways/methods of health behaviour change

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<td>The teacher rewards students who came up with brilliant/creative ideas and means.</td>
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- **Age:**
  - 4 years
  - 6 years
  - 7 years
  - 9 years
  - 10 years
  - 11 years
  - 12-13 years
  - 10-13 years

Acquired skills:

1. Respect for group work
2. Ability to choose
3. Recognition and analysis

Enriching (Booster) activity:

1. Students interview other teachers or the principal on their roles in students' health behaviour change and contributions to maintaining sanitation in school, community and the surrounding environment.
2. Students prepare a project and demonstrate it at the end-of-school-year exhibition.

Pupil's worksheet:
Examples on and ways/methods of health behaviour change

1. Games
2. Drawing/Painting
3. Performance/Demonstration and then observation
4. Role-playing
5. Writing about a topic
6. Performance/Demonstration
7. Project
8. Exhibitions/School shows
9. Drama
10. School radio (health media/information)
A note for the teacher/ instructor:
1. Games for four-year olds: in-class games and hand washing cards.
2. Drawing/Painting for six-year olds: pupils prepare things through drawing/painting; they draw/paint and analyze the drawing/painting.
3. Performance/Demonstration for seven-year olds: pupils are capable of washing their hands using soap and water in the bathroom.
4. Role-playing for nine-year olds: a hygienic child talking to an unhygienic classmate.
5. Writing about a topic for ten-year olds: any topic on school sanitation (e.g. using the Internet)
7. Projects for twelve-year olds: septic tank, waste recycling, information/media campaign and brochures.
9. Drama for ten-to-thirteen-year olds: Advocating a topic, assigning roles to students and acting a play.
10. School radio for ten-to-thirteen-year olds: students prepare health-related topics and broadcast them on school radio.

X. Theoretical background (6): The importance of environmental education and the media in protecting the environment against pollution

Environmental education is meant to prepare human beings for successful interaction with the various resources of their environment. This interaction requires people to acquire environmental knowledge to help them understand the mutual relationships between humans and the elements of their environment on the one hand, and among these elements on the other. Development of human skills is also needed to better-improve the conditions of their environment. Environmental education also entails development of attitudes and values that govern individuals’ interaction with the environment, arouse their interests and tendencies towards it and make them appreciate the importance of maintaining, sustaining and developing the resources of the environment.

The recommendation by the Muslim Caliph, Abu Baker Assiddeeq – May Allah be pleased with him, to one of his commanders, Osama bin Zaid, involves a lesson on environmental education:

"Do not commit betrayal and treachery or be extravagant. Never kill children, the elderly and women; do not cut down or burn palm and fruit-bearing trees; do not slaughter a sheep, cow and camel, save for your meals."
The following points illustrate the goals of environmental education:

- **Awareness**: to help individuals and social groups acquire/develop awareness of and care for relevant environmental problems.
- **Knowledge**: to help individuals and social groups acquire/develop awareness and basic understanding of environmental problems.
- **Skills**: to help individuals and social groups develop/acquire the skills needed to identify and solve environmental problems.
- **Contribution**: to offer individuals and social groups opportunities to contribute effectively at all levels to overcoming environmental problems.
- **Evaluation**: to assist individuals and social groups evaluate environmental education standards and programmes in context.

Though the goals of environmental education vary from one stage to another for some, they involve the following items:

- Helping individuals understand their attitudes in an environmental context and contribute to the elements of the mutual human-environment relationships.
- Helping individuals realize the outcome of imbalanced environmental relationships.
- Supporting the role of science and technology in developing the relationship between human beings and the environment.
- Helping individuals achieve an integrated perception of the role of human beings and highlighting the interaction of the social and cultural factors with the forces of nature.
- Emphasizing the environmental awareness, skills, values and attitudes human beings should have to bring about positive interaction with the environment.

Environmental awareness means recognition by individuals of their roles vis-à-vis the environment. Such perception is based upon knowledge of good exploitation of the natural resources in the environment and of its problems - coupled with proposing the most appropriate methods for encountering such problems. Environmental awareness involves different dimensions:

1. Good exploitation, preservation and rationalization of natural resources – in terms of their significance to human beings and the risks involved in wasting and depleting these resources.
2. Necessity of tackling some major environmental problems, like air pollution and water and food contamination because of pesticides and other pollutants. There are many means to raise environmental awareness such as the following:

   Holding meetings and seminars; setting up camps; delivering training courses, lectures, symposiums, discussions, competitions and various types of instructional aids – movies, slides, videos and posters. Other means include syndicates/trade unions, political organizations, youth
centres and local councils, libraries, exhibitions, museums, visitor exchange programmes and use of all media outlets and the like. In all of the preceding means, the environmental content/theme and its relevance to future culture, as well as the right means to be used in the light of the circumstances and available capabilities, shall be made clear.

Generally, environmental hygiene and protection against pollution is not the sole responsibility of the government or a certain agency or institution; it is the responsibility of all citizens of society, rather.

**Activity 21: Health Media**

**Time:** 40 minutes

**Goals:**

Upon completion of this activity, trainees are expected to be capable of:

1. Knowing the good performance indicators that can be adopted to measure how successful a programme is.
2. Realizing the importance of gathering information about participating schools.
3. Stimulating students through activities and competitions to maintain safe environment, sanitation and good health.

**Materials and tools:**

1. Pupil's worksheet
2. Flip chart sheets for all groups
3. Papers for all students
4. Markers

**Steps:**

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<td>5</td>
<td>* The teacher divides students into groups; each group appoints their rapporteur.</td>
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<tr>
<td></td>
<td>* The teacher hands out the pupil's worksheets to groups – flip chart sheets to all groups.</td>
</tr>
</tbody>
</table>
The teacher asks each group to prepare/conduct the following:

a. A list of the performance indicators to measure programme success.

b. Discussions of the importance of gathering information about a participant school and non-participant schools and drawing a comparison. Discussion should also involve the type of information to be gathered.

c. A competition between two schools; the themes would be about a safer environment, sanitation and personal hygiene.

Each group presents its findings.

- The teacher engages the students in a discussion about the presentations of the groups on health media/information.

Remember: It is necessary to have indicators to evaluate the success made through health media programmes. List these indicators.

Acquired skills:
1. Deduction and conclusion
2. Employing information
3. Problem solving
4. Respecting others' opinions
5. Analysis

Enriching (Booster) activity:
The teacher asks a number of students to develop a pilot programme for the participating schools. He/she asks the rest of the students to develop a report form/template for periodic performance evaluation of involved schools; they should document the information in an independent file and give the officials access to the programme and periodic reports.

XI. Theoretical background (7): Human need for water

Human beings, animals, plants and the rest of the living creatures depend on water to maintain life; this fact is a reiteration of the Noble Qur'anic verse "And we have created every living thing from water." Once water is absent, people realize the significance of water for life, which would then become impossible. People have to give up their necessary requirements: rest, happiness and life joys amongst others, when water is insufficiently accessible. Water has been pivotal in gathering people, building cities and development of urbanism. One can see that cities, particularly ancient urban concentrations, were built near water sources. Fortunately, water is a renewable element.
This renewal/rejuvenation can take place naturally, like rainwater, or artificially like desalination and sewage water treatment. People can play a role in saving water through rationalizing its use, protecting it against pollution and preserving it from evaporation and loss.

**Water uses:**
Various uses of water can be classified into three types:

- **Hygienic and health uses:** Water is used for meeting physical needs like drinking and personal hygiene; cooking; household hygiene and flushing/disposal of domestic waste through private or public sewage systems.

- **Economic uses:** Water is used in industrial, agricultural, animal and fishery production as well as to produce energy, in transportation and extinguishing fires.

- **Recreational uses:** Water is used in activities like swimming and other water sports; this use is limited when compared to the other uses.

**Water Sources:**
Water used in the Arab region comes from the five following sources:

1. **Surface water:** rivers, fresh water lakes and natural and man-made dams; it is one of the oldest, cheapest and most accessible sources.

2. **Under ground water:** wells, fountains and springs. Underground water is known to be free of any plankton or bio-pollutants because it is isolated from the earth's atmosphere and is always filtered as it passes through the layers of soil. Unlike surface water, ground water might be more brackish.

3. **Desalinated water:** sea water is abundant; therefore, this source holds hope for the future to fulfil the increasing demand on water all over the world. Desalination is receiving more attention because of increased polluted surface and underground waters, which renders their future de-contamination/treatment more costly and involves greater difficulty.

4. **Rain water:** rain water is used by individuals; it is rarely used as general water source. The quality of rain water collected depends on the purity or pollution of the air in the area where it is collected and the surface where it runs over/accumulate.

5. **Effluents of treatment plants:** Although it is possible to obtain water quality that meets the specifications for drinking water – after treatment of wastewater, such affluent are rarely used as drinkable water source. However, they can be used in feeding underground water, industry and irrigation of crops and decoration trees. The best example on exploitation of these waters is the good treatment and use of treated water in irrigating public parks by some Arab city municipalities.
**Water Pollution:** Regardless of the water source, it is very rare to find completely pure water in nature. On its way down, rain water absorbs some gases and attracts some of the dust particles in the air. Surface water in rivers, streams and lakes carry on with them many types of organic and mineral materials and germs. Salt particles are dissolved as ground water passes through. Water pollution can be divided into three types:

1. **Physical contamination:** it includes turbidity and any colour, smell or taste in water. Moreover, there is the increase of water temperature as a result of heating it or discharging hot water into water accumulations.

2. **Chemical contamination:** it results from dissolved chemicals in water as a result of the dissolved salt particles in the soil or water; another reason for chemical contamination is the discharge of industrial debris into water sources. This type of contamination might cause many diseases, like cancer.

3. **Biological pollution:** it results from micro-organisms like germs, viruses, parasites and algae finding their way to water sources. These pollutants cause contagious/communicable diseases.

**Different types of pollutants gain access to water through various ways. Key methods are:**

- Dumping waste and dirt directly into water sources.
- Leaking of sewage and septic tanks’ pollutants into the drinking water system or sources.
- Leaking or discharging of industrial waste and hazardous materials like medical waste from hospitals into water sources.
- Pollution that results from animals and human activities (like bathing and washing).
- Access of air pollutants like rain borne gases, vapours and small particles to surface water.
- Access of rain borne fertilizers, pesticides and rodenticides to water sources during winter – whether through flows into rivers or ground water after dissolving and filtration.
- Discharging industrial (solid) waste and fluid sewage of urban areas directly into water sources, like rivers. This is the greatest cause of river pollution, particularly when that waste is not treated before dumping.

Prior to carrying out the activities, ask the students the following questions:

1. Mention the most important health problems in Iraq nowadays.
2. What are the diseases caused by polluted/contaminated food?
3. What are the diseases polluted water cause?
4. What are the symptoms and signs of cholera?
5. What are the ways to prevent water pollution?
6. What are the reasons of diarrhoea? What are the ways to prevent it?
Activity 22: Water Pollution

Time: 40 minutes

Goals:
After finishing this activity, trainees are expected to be capable of:
1. Knowing how water pollution takes place.
2. Enumerating ways to protect water against pollution.
3. Realizing the stages where water pollution takes place.

Materials and Tools:
Chalkboard, chalk, flipchart, pencils and a computer – if any

Steps:

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<tr>
<td>5</td>
<td>The teacher introduces the activity by defining water pollution; he/she then explains the stages where water pollution takes place – collection, storage and use.</td>
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</table>
| 25                | - The teacher divides the students into three groups; each group assigns a rapporteur. He/she asks them to:  
                   - Explain how pollution takes place in each of the three stages.  
                   - Present the best of ways to protect water against pollution during each of the three stages.  
                   - Make a demonstration/a presentation using Microsoft PowerPoint application to illustrate the said ways. |
| 10                | - Rapporteurs present their groups' findings; groups agree upon the correct answers and rapporteurs write them down on the flip chart or chalkboard.  
                   - With the ability to produce a PowerPoint product, the groups will present their works.  
                   - With the necessary tools and setting available, the groups can apply their work to one of the water pollution stages – collection, storage or usage. |

Remember: Water pollution might take place during collection, storage or usage.

Guidelines: Disease prevention is possible through:
- Using safe and clean water.
- Boiling drinking water if its source was not safe.

Advice: Households can keep water containers clean through the following:
- Storing drinking water in clean and covered pots/tanks/containers.
- Taking water from the container using a scoop or clean cup.
- Not allowing anyone to put their hands in or drinking directly from the water pot.
- Keeping animals away from home.
- Cleaning water tanks twice a year.

Acquired skills:
1. Learning by doing.
2. Learning from the group.
3. Computer skills.

Enriching (Booster) activity:
The teacher asks the students to visit places where drinkable water is treated and become acquainted with the means to prevent water pollution during collection, storage or usage.

Water-borne diseases and hazards:
- Viral diseases like hepatitis-B and meningitis.
- Germ-borne diseases such as typhoid fever and cholera
- Parasite-borne diseases; e.g. amoebaean dysentery and bilharzias
- Cancerous diseases resulting from high chemical concentrations.
- Caries due to lack of fluoride concentration in water (less than 1mg/litre).
- Tooth plaques due to extra fluoride concentration in water (more than 5.1mg/litre).
- Chemical poisoning owing to high chemical concentrations.
- Thyroiditis resulting from iodine deficiency in drinking water.

Characteristics of these diseases:
- Infect large numbers of the population who use the same water source.
- Infect a large number of people regardless of age or gender.
- Cease to spread as epidemics once the source is treated or when it is no longer used or replaced with a clean source.

The most important means of transmitting water-borne diseases include the following:
1. Drinking polluted/contaminated water.
2. Bathing in polluted/contaminated water.
3. Using polluted/contaminated water for washing clothes or body.
4. Using polluted/contaminated water to irrigate freshly-eaten produce.
5. Using ice made from polluted/contaminated water to cool drinks.
6. Using polluted/contaminated water in preparing food, washing up the utensils used for drinks or food.
7. Water can also become polluted/contaminated while in the water supply system as repairs are being done, a new pipeline is installed, a crack/damage in the connections, back-siphonage or leakage of polluted water into the pipe system. Such incidence takes place when there is a fault/defect/malfunction that leads to depressurization in the network - allowing outside water to leak into the system. This pressure is then less than the atmospheric.

**Activity 23: Diarrhoea (The Story about Sameer and Aida)**

**Time:** 40 minutes

**Goals:**

Upon completing the activity, trainees are expected to be capable of:

1. Recognizing the signs and symptoms of diarrhoea diseases.
2. Realizing the relationship between diarrhoea and polluted/contaminated water.
3. Recognizing the ways to prevent diarrhoea.
4. Taking part in their colleagues’ discussions.

**Materials and tools:**

Pupil's worksheet (1): (Story about Sameer)

Pupil's worksheet (2): (Story about Aida)

Chalkboard, chalk and flip chart

**Steps:**

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<td>- The teacher introduces the lesson by asking whether any of the students ever suffered from diarrhoea and to mention the signs and symptoms.</td>
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<td>- The teacher asks a student to read out story about Sameer from pupil's worksheet No. 1, or the story is written on a transparency or the board. Another student is requested to read out Aida's story from pupil's worksheet No. 2.</td>
</tr>
</tbody>
</table>
Guidelines: Diarrhoea prevention involves using latrines for defecation, safe disposal of faecal excreta and keeping food and water clean. Hands should be washed with soap before and after meals and after using latrines/toilets.

Remember: Diarrhoea is the most common childhood disease.
Remember: Diarrhoea often results from drinking or eating polluted/contaminated water or food.

Skills acquired:
1. Analysis and deduction
2. Listening
3. Discussion

Enriching (Booster) activity:
The teacher asks the students to write a report on diseases caused by polluted/contaminated water other than those mentioned in the activity.

Pupil's worksheet No. 1

The story about Sameer
A seven-year-old school boy once buys a drink from a peddler standing in front of the boy’s school. Two days later, he feels severe stomach-ache, followed by severe diarrhoea and vomiting. He now suffers from overall exhaustion and has to stay in bed. His ability to concentrate weakens; he shows symptoms of dehydration and cannot go to school.
**Pupil's worksheet No. 2**

### The story about Aida

A nine-year-old school girl once buys a bread and cheese sandwich from the peddler outside the girl’s school. Two days later, she suffers from severe stomach-ache, followed by severe diarrhoea and vomiting. She now suffers from overall exhaustion and has to stay in bed. Her ability to concentrate weakens; she shows signs of dehydration and cannot go to school.

### Water pollution/contamination control

**Water treatment**

Treatment of various types of water aims at achieving the following:

- Removing colour, taste, smell and impurities in water.
- Doing away with harmful dissolved salts in water like iron and manganese, hardness causes, and detrimental gases such as hydrogen sulphide.
- Ensuring the internationally approved ratios of (dissolved) salts in water that the human body needs, particularly NaCl (sodium chloride).
- Terminating the water-borne causes of disease.
- Ensuring that the water meets the specifications for drinking or industrial uses.

**Methods of water treatment:**

Water treatment methods vary according to the following:

- **Water source:** Treatment of surface water differs from that of ground or sea waters.
- **Amount of water to be treated:** Treatment of a few litres of water is completely different from treatment of larger amounts like potable water for the whole city.
- **Level and type of water pollution/contamination:** Treatment of unpolluted water is different from the treatment of mildly or severely polluted water. Chemical treatment of polluted/contaminated water differs according to the types and concentration levels of such chemicals. Biological or physical treatment of polluted/contaminated water is also different.
- **Uses of treated water:** Specifications of water vary according to its use; specifications of drinking water differ from those of the water used for agriculture or industry purposes. In cases where the water source is commonly used for drinking, industrial and agricultural purposes, water treatment is done to meet the specifications of potable water.

More than one method can be applied to treat the same type of water; key methods used in water treatment are:

1. **Water storage:**
   
   It is sometimes considered the first step in water treatment in general. Long-term storage of water can suffice in other cases. The result is deficiency in organic matter that germs feed on
and consume; germs cannot stay for longer periods in the absence of these organics. Water storage enables protozoa to feed on germs, renders water germ-free and allows for the sedimentation of some of the germs with plankton/suspended matter.

2. Sedimentation:
It means sedimentation of suspended matter in water including germs and algae; there are two types of sedimentation:
A. Spontaneous sedimentation: it takes place when water is left in huge tanks/reservoirs for a period from 3-24 hours pending the size, form and weight of suspended matter and water temperature.
B. Chemical sedimentation: it takes place by adding special chemicals that can collect the suspended matter and germs in the form of large flakes; these fall easily towards the bottom because they become heavy once they accumulate the added chemical substance. Most frequently used substance in this regard are the alum (aluminium sulphate) and iron chloride.

3. Filtration:
After sedimentation, water goes through the filtration process to achieve the following purposes:
- Removing the remaining germs
- Removing the remaining suspended particles/planktons

Filtration takes place as water is made to pass through layers of sand or any other porous substance; water passes through the filter leaving germs and suspended matter behind – to be later removed.

4. Disinfection:
Disinfection takes place by adding chemicals like chlorine, iodine or ozone to water; they are then subjected to physical elements like ultraviolet rays to kill germs that might have managed to survive after treatment.

Treatment of water pollution/contamination:
All necessary measures should be taken to prevent pollutants from accessing water; these measures can be done through:

Health control of drinking water:
People usually depend on their own senses to assess the quality of drinking water because many pollutants have impact on water's colour, taste or smell. Lack of colour, taste and smell used to be
a criterion for safe drinking water. Human beings refrain from drinking turbid, coloured or tasteful water for it creates detrimental health hazards. It has presently been proved that depending solely on our senses would not suffice to judge water quality; not all colourless, tasteless and odourless water is drinkable. There are many toxic substances or germs that cannot be detected by human senses.

That is why drinking water is controlled for health purposes to ensure it is safe, pollutant-free and compliant with adopted specifications. Water health control includes investigating/monitoring the sources, the system and transmission/delivery to consumers.

Drinking water is controlled through sanitary surveillance, i.e., direct hands-on monitoring that an academically qualified and well-trained person performs. This monitoring takes place at the source; it measures the source's capacity, the quantity and quality of available water and the level of protection against pollution. Monitoring also gauges the evaluation of treatment methods in terms of relevance, efficiency, the system quality and the efficiency of employee performance to provide water that meets healthy conditions. In other words, hands-on/physical monitoring and inspection covers all procedures related to water supplies. One should take into consideration that regardless of the accuracy and care observed in laboratory sampling and analysis, lab tests should never be a replacement for sanitary surveillance of the water source, distribution network and workers. The reason is that lab analysis of water samples gives results related to the sample at the time and in the place it was taken. Pollution might take place immediately after taking the sample or it might not show up in the analysis results.

Food is indispensable for human beings to perform physiological functions and generate the energy needed to perform their daily activities. Human beings take their food from the surrounding fauna and flora. They gain access to these sources either directly or after circulating and processing them – these processes include collecting, storage, peeling of cereals and legumes, squeezing, drying, cooking, transporting … etc. Food can become polluted and damaging to human health during any of these processes.

**Activity 24: How to purify/disinfect polluted water and ways of preserving clean water**

**Time:** 40 minutes

**Goals:**

After this activity, trainees are expected to be capable of:

1. Realizing the importance of disinfection/purification of polluted/contaminated water.
2. Knowing ways to keep water clean.
3. Enumerating ways to collect drinking water.
4. Respecting group work.

**Materials and tools:**
Two buckets of water, soil, five flip charts, pencils and chalkboard.

**Steps:**

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
</table>
| 5                 | The teacher introduces the activity:  
|                   | 1. He/she brings two buckets of water and puts some soil in the first one and his/her hands in the other.  
|                   | 2. Asks the trainees to say what they think about water in both buckets in terms of cleanliness  
|                   | 3. Asks the trainees the following question: if we were to drink from one of these buckets, what would be the safest way to get drinking water? |
| 10                | - The trainer divides trainees into five groups; each group assigns a rapporteur. He/she requests the groups’ members to write both whatever they find proper for collecting drinking water, and how they will use it, on their group's flip chart.  
|                   | The teacher/trainer gives the trainees 7-10 minutes to do the task. |
| 10                | Rapporteurs fix their groups’ flip charts on the chalkboard and a group member reads the findings.  
| 15                | - The trainer documents on a separate paper – fixed next to the others - the points all five groups would agree upon.  
|                   | - The trainer:  
|                   |  ▪ Emphasizes and clarifies the points.  
|                   |  ▪ Discusses the other points that are not agreed upon as correct and concludes with the results.  
|                   |  ▪ - Stresses safe collection and storage of water. |

**Remember:** Water might not be germ-free though it might look clear and clean.  
**Remember:** There are many methods to disinfect/purify and safeguard water.
Guidelines: boiling the water kills germs; water from pools, springs, wells and tanks should be boiled for 15 minutes and cooled before drinking.

Acquired skills:
1. Learning from mistakes.
2. Differentiating (between things)
3. Deduction
4. Mastering role play

Enriching (Booster) activity:
The teacher asks the students to write a report on drinking water sources in their locality and discusses it with their classmates.

Activity 25: Ways to prevent water pollution/contamination
Time: 60 minutes
Goals:
Upon finishing this activity, trainees are expected to be capable of:
1. Differentiating between clean and polluted/contaminated water.
2. Recognizing the factors and sources of water pollution/contamination.
3. Realizing methods of protecting water against pollution.
4. Appreciating the value of being healthy.

Materials and tools:
Cups filled with clean water, cups filled with polluted water, soap.

Steps:

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>- The teacher arranges in advance with two students to fetch water that is polluted in various ways such as:</td>
</tr>
<tr>
<td></td>
<td>- A cup filled with water and soil (or hay).</td>
</tr>
<tr>
<td></td>
<td>- A cup filled with water and a fly (or ink).</td>
</tr>
<tr>
<td></td>
<td>- Or fetch clean water and soap and asks the students to wash their hands using that water/soap foam; then he/she fills a cup with the output water.</td>
</tr>
</tbody>
</table>
10 - The teacher asks some students to volunteer to drink water from the three cups; some do volunteer, but it is expected that they will refuse to drink.
- The teacher thanks the volunteers and those targeted by the activity, and explains to them that what their colleagues have done was for the purposes of the activity.

15 - The teacher asks the targeted group the following questions:
1. What did you feel on the physical level? Why?
2. What did you feel on the psychological level? Why?
3. We now ask the ones who brought the cups: what did you feel? Why?
- The teacher listens to the students' answers.

10 - The teacher asks the group as a whole:
1. Were your colleagues right in refusing to drink that water?
2. Do we have the right to harm our bodies?

10 - The teacher focuses on the importance of healthy bodies to be able to perform the daily activities and life tasks; the teacher also explains that the human body and soul are in the custody of the person who should protect them in return.

10 - The teacher initiates brainstorming by asking the following questions:
1. What do we mean by water pollution?
2. What are the sources of water pollution?
3. What are the ways to protect water against pollution?
- The teacher engages the students in a discussion about the answers and concentrates on the importance of protecting water against pollution to protect the human body from diseases.

**Remember: Keeping water clean is something of utmost significance.**

**Acquired skills:**
1. Choosing/Selection
2. Analysis and deduction
3. Decision-making
4. Problem solving
Enriching (Booster) activity:
The teacher asks the students to inspect and write a report on the drinking water reservoir/tank at school to see whether the water is clean/pure or polluted. The school hygiene officer should be informed about the water condition; solutions should be suggested in case the water was found to be polluted.

Food Contamination:
Like its surrounding environment, food will be influenced by extraneous factors resulting in changes to its form, colour or characteristics. Despite being contaminated, food might maintain its same form, composition, colour and taste. It still remains very harmful for the person who eats it; this is particularly true in the case of microbes, which once digested with food, cause diseases and health hazards. Should the environment become conducive to common contagious diseases that are transmitted to humans from animals through food, food items carry these pathogens and infect humans with diseases. Regardless of the stage where contamination takes place, food contamination might be biological, chemical or radiological. Below is a brief explanation of each of the three types of contamination.

Environmental factors that cause food to become putrefied
1. Heat: it is a factor conducive to fungi growth and germ infestation that would spoil food; germs multiply and grow between 15 and 60 degrees Celsius.
2. Humidity: some food items, particularly fruits and vegetables need a certain level of humidity to prevent it from becoming rotten. If humidity is lower than the levels needed, water inside the food will evaporate rapidly leading to food putrefaction.
3. Packaging, storage and transport: These are important to prevent food decay and rottenness. For instance, wrapping with plastic and other material prevent water evaporation in food items. Using polyethylene wrapping causes the accumulation of CO$_2$ around the tissues, thus preventing "respiration" of the food item. Storage should prevent insects and rodents from accessing the food items as they transmit infection once they pass by those items.
4. Not observing general hygiene rules whether during handling or processing: The machines, tools and utensils used might themselves be unclean. Leftovers might become a place conducive to insect and micro-organisms infestation, which causes food to become rancid/putrefied.

Food preservation:
It is the creation of the right/adequate conditions that prevent or reduce the chemical, physical and biological changes befalling food, to keep it as long as possible retaining the same characteristics, qualities and nutritional value. Such a procedure will make delivery of food items to areas far
away from their place of production possible in various seasons of the year. By adding other substance like vitamins, preservation can help improve the nutritional value of food. Although food is essential for human life, it can also be the reason that brings diseases and germs.

<table>
<thead>
<tr>
<th>A topic for discussion: Ask a student to relate a real story to show that food causes some diseases; let the student discuss it with his/her classmates under your supervision.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>A topic for discussion: Let the students discuss the signs and symptoms of diseases caused by contaminated food. How do worms transmit the disease? Who are the persons more susceptible to suffer from worms?</th>
</tr>
</thead>
</table>

### XII. Theoretical background (8): Health Importance of Air

A normal human being needs 13 kgs/day of air to breathe and 2-3 litres/day of drinking water and one kilogram of food/day. Although a person can sustain hunger and thirst for several days, he/she cannot stay a live for few minutes without air. Until the safe alternative becomes available, human beings can avoid drinking polluted water or eating spoiled food. However, people cannot stop breathing for more than five minutes regardless of the quality of the available air. Breathing is a continuous and consensual process that causes life to cease should it be disrupted for a long period of time. Hence, air pollution is the severest and most dangerous type of environmental pollution, given the fact that the quantity of air that surrounds the earth's atmosphere is limited and non-renewable.

Air pollution is defined as "the emission of one or more impurities to the ambient air in certain quantities and characteristics and for a certain period of time that would be enough to incur a negative impact on creatures or properties." It seems that air pollution was the oldest of all types of environmental pollution. Forms of air pollution have been familiar since the ancient ages like eruption of volcanoes, forest fires, and gaseous leak/emissions from the ground and other recurrent and familiar events. In Italy, Mount Vesuvius eruption in 965 A.D. was an example of these events; large quantities of vapour and gas filled the air in the region. In the wake of the industrial revolution in Europe, the air pollution issue aggravated with the invention of the steam engine that burns large quantities of coal to run. In addition, there were chemical emissions from factories. As a result, some European states like Great Britain issued several laws to limit air pollution for the good of the public’s health.
Environmental and health risks of air pollution

It is not easy to tell which of the air pollutants is most hazardous because dangers depend on a number of factors. Key factors include type and concentration of the pollutant in the air, duration of exposure and its physical and chemical characteristics. What counts as well are the areas of human body that these elements target, overall health status of the infected person and whether or not he/she is allergic to that pollutant. Most vulnerable groups of people affected by air pollutants are:

- Newborn and premature babies because their respiratory systems are not yet fully fledged to cope with air pollutants.
- The sick, particularly those who suffer from respiratory diseases.
- The elderly since their respiratory systems immunity is low.

Groups allergic to particular types of air pollutants

Environmental and health damages resulting from pollution can also be outlined as follows:

- Increased mortality rates and incidence of respiratory infection, pneumonia, cardiac diseases and lung cancer, particularly among newborns, the elderly and the sick.
- Aggravated respiratory infections like pneumonia/asthma, chronic bronchitis, and cardiovascular diseases.
- Disrupted lung functions (pulmonary functions) and weakened overall lung immunity in particular and the body's in general.
- The world has seen numerous tragedies and losses of lives that were caused by pollution in many places – London, Mexico City, Italy and Bubal in India. Mortality rates would increase further in case of exposure to highly concentrated toxic pollutants.
- Blocking the sun's ultraviolet rays causing vitamin-D deficiency, polio and rickets in children.
- Forming fog and smoke, this reduces visibility and increases accident incidence. It also prevents enjoying the landscape and brings down economic property value.
- Damaging and killing marine life in some lakes because of acid rains owing to the existence of sulphur and nitrogen oxides in the air.
- Destroying and shortening the durability of properties like clothes, buildings, rubber and leather products and books.
- Infecting all types of plants with various diseases and decreasing the quantity and quality of agricultural production.

Air pollution control: Maximum reduction of the amount of hazardous gaseous emissions and particles is one of the most important sought for goals of air pollution control. Another key goal is
finding a means to make use of these gases or particles or transform them into benign products, or safe or less harmful compounds.

Prior to the implementation of the activities, address the students with the following questions:
1. What are the causes of air pollution?
2. What is your role in preventing air pollution?
3. What is your role in protection against polluted air?
4. What are the diseases caused by polluted air?

**Activity 26: Air Pollution**
Time: 40 minutes.

**Goals:**
Upon implementation of this activity, trainees are expected to be capable of:
1. Knowing how air pollution takes place.
2. Enumerating the ways to protect air against pollution.
3. Identifying major causes of air pollution.
4. Realizing the stages through which air pollution occur.
5. Protecting air against pollution.
6. Mentioning some diseases that air pollution causes.

**Material and tools:**
Chalkboard, chalk, flip chart, pencils and a computer, if any

**Steps:**

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>The teacher introduces the activity by defining air pollution, and explains the factors that cause air pollution.</td>
</tr>
</tbody>
</table>
| 25                | The teacher divides the students into four groups; each group assigns a rapporteur. The teacher:  
1. Explains the environmental and health risks of air pollution.  
2. Illustrates the best ways to protect air against pollution in each of the preceding stages.  
3. Identifies some of the diseases air pollution causes.  
4. Deliver a demonstration or PowerPoint about one of the preceding works. |
Rapporteurs present their groups' findings; groups agree on the correct answers and rapporteurs write them on the flip chart or chalkboard. If possible, the group makes a PowerPoint presentation about their work.

Remember: Smoke and dust pollute air and spoil its purity.
Remember: Polluted air contribute to many serious diseases like pneumonia/asthma, allergies and cancer.
Remember: Planting trees along the roads, around factories and in barren areas of land reduces air pollution.

Acquired skills:
1. Learning by doing
2. Learning with/from the group
3. Computer skills

Enriching (Booster) activity:
1. Ask the students to collect pictures that show the hazards and sources of pollution; ask them to post these pictures on the school bulletin board.
2. Under the teacher's supervision, students make a field visit to residential areas located near industrial zones or factories that cause air pollution; students are to write a report about the sufferings of the residents of that suburb and discuss it in class.

XIII. Theoretical Background (9): Solid and fluid waste

All creatures, be they humans, animals or plants, have their own way of defecation/excretion. Excreta produced by a living creature might be essential for the life of another living being who/which might intentionally or otherwise use, re-evacuate or live on such waste or even use it in favour of a superior creature. Examples include insects and rodents that feed and live on human, animal and plant excretions.

In the past when most communities were agricultural, nature had abundance of place to absorb and introduce human excreta in its natural cycle. Waste was then limited in quantity and quality mostly comprising organic matter used as animal feed while the rest decomposes into its main elements and goes back to the environment. Excreta/waste quantities were in the range that enabled other living beings to decompose and restore their basic elements without any impact on human life or the environment.
With today’s population growth, overcrowded cities, diversification and spread of industries, growth of transportation and higher standards of living, we have started witnessing increased and diversified waste sources. We are experiencing increases in daily production of varied industrial, agricultural, commercial and domestic waste products. Waste produced in certain regions like big cities have now become a burden for health care providers. The search for new healthy and safer means to collect, relocate, store and treat this waste has continued to protect human health and environment. The problem of various forms and types of waste became more pressing and visible when societies have realized the numerous risks involved in the piling, lack of recycling and reuse and unsafe disposal of waste, given that it is a major economic source.

Waste-related damages: If there was no safe treatment of waste, there would be many direct risks for public health and environment. Direct health risks pertain to relevant outreach workers whose bodies are in direct contact with waste. Scientific studies prove that incidence of respiratory, ophthalmic, dermal and intestinal parasitic/diseases and accidents increases among workers who collect solid waste vis-à-vis their counterparts in other fields. There are evidenced risks involved in handling the hazardous waste of hospitals, clinics/infirmaries and scientific research centres.

For the public, public health risks are indirect hazards resulting from infestations of vectors, particularly flies and mice. Visible public health damages caused by waste can be outlined as follows:

- Spread of foul odours and odd sceneries.
- Infestation of flies and other harmful insects like mosquitoes and cockroaches.
- Infestation of rodents.
- Spread of astray animals that cause contagious diseases.
- Pollution of ground and surface water.
- Obstructing traffic and transportation.
- Increasing the potential for fires with all the ensuing smokes and odorous and harmful gases.
- Blemishing the public aesthetic and moral values.
- Manufacturing produces other types of hazards; industrial waste is also hazardous during transportation and disposal stages. Some toxic waste and chemicals can cause traffic accidents while being transported from pesticide factories. Unsafe disposal of this waste can inadvertently cause the death of people and animals due to polluted crops and water sources.

Types and categories of waste:
Waste is divided into the following two main parts:
1. **Solid waste or garbage**: the term refers to non-fluid waste, which results from various forms of domestic, professional, commercial, industrial, agricultural and mining activities. Solid waste is composed of countless materials such as soil, glass, minerals, wood, food remnants, packaging materials, clothes and textile residues. They also include waste from factories, farms, hospitals, research centres, parks and dead animals in addition to the waste that contain radiological substances.

Producing solid waste is an ongoing process that consistently exists wherever we find human activity. Although basic components of solid waste are universally similar, they differ in their ratios intra- and inter-countries. This variation is often related to the level of income; the higher the level of income is, the more paper, mineral and glass waste and the less organic waste there would be. There are local variations of quantity and quality of waste on variant days and during different seasons; waste produced in summer is different from those in winter.

2. **Fluid (Liquid) Waste**: like faeces and urine, water used in cooking, and the waste generated in kitchens, bathrooms and sinks. They also include the water used for washing streets and the various fluids from factories, hospitals, scientific research centres and power plants, etc.

Components of fluid waste vary in quantity and quality according to their source. The volume of solid materials is estimated at 0.001 of the fluid waste in public sewage.

**Health damages caused by fluid waste**: There is no doubt that fluid waste, particularly faeces, are more risky to public health than solid waste. Fluid waste is polluted by human excreta that might carry many pathogens such as the following:

- When present in drinking water, coli forms are but evidence on faecal pollution.
- Pathogenic bacteria like typhoid and paratyphoid, cholera and bacillary dysentery.
- Viruses like poliomyelitis viral, poliomyelitis, and epidemic hepatitis.
- Parasites like scares* and amoebaean dysentery.

**Activity 27: The septic tank (eastern latrine)**

Time: 40 minutes

**Goals:**

Upon finishing this activity, trainees are expected to be capable of:

1. Realizing the health conditions needed for an eastern latrine
2. Taking part in individual answers and reading

*Translator: ‘Scares’ is copied as is from the Arabic version.*
3. Participating in group discussions
4. Inferring the health conditions to be met for an eastern latrine to reduce pollution.

Materials and tools:
Pupil's worksheets/conditions for an eastern latrine and pens for all students

Important note: this activity is to be carried out in the remote areas in Iraq like the marshes.

Steps:

<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>The teacher hands out to all students the pupil's worksheets on eastern latrines.</td>
</tr>
<tr>
<td>15</td>
<td>The teacher asks each student to answer the questions on the sheet on his/her own.</td>
</tr>
<tr>
<td>10</td>
<td>The teacher requests a student to read out a statement and others respond (repeat with all statements).</td>
</tr>
<tr>
<td>5</td>
<td>The teacher discusses the groups' answers with the class.</td>
</tr>
<tr>
<td>5</td>
<td>The students derive the correct answers on the conditions to be met for eastern latrines.</td>
</tr>
</tbody>
</table>

Remember: Health conditions for eastern latrine limits pollution.

Acquired skills:
1. Individual work (independence)
2. Participation and group work
3. Inferring correct answers

Enriching (Booster) activity:
The teacher asks the students to visit nearby areas and be acquainted with the sanitation situation there, linking it to eastern latrines.

Pupil's Worksheet
Give answers to the following statements by ticking (√) the right field:

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>True</th>
<th>False</th>
<th>Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Grass and plants near the eastern latrine should always be</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sanitary methods for waste disposal:
Sanitary disposal of waste is an important criterion for public health in a country. Sanitation is provided in various ways depending on the economic level, environmental conditions, habits, type of population and population density in that country.

Ways to dispose of solid waste:
Sanitation of solid waste involves collection, transportation and treatment. Collecting and transporting solid waste is particularly important for general hygiene since they take place inside residential areas unlike treatment or disposal, which occurs in faraway areas. Collection and transportation of solid waste are costly processes – up to 80% of overall cost of disposal. Methods of collection and transportation vary from one place to another; it is advisable, however, that kitchen waste and residues with decomposing elements are kept in easy-to-clean and tightly-sealed containers. They should be also collected in short two-day, if not daily, intervals. There are many methods to dispose of solid waste; each has its advantages and disadvantages. The following methods are among the acceptable ways in terms of health:
1. **Sanitary Landfill**
Sanitary landfill is a process for safe sanitation of solid waste to ensure the safety of community and help it avoid health risks or hateful odoriferous things. It is one of the most common methods of solid waste disposal because it has a lower cost compared to other methods. In contrast sanitary landfill leads to complete disposal of solid waste vis-à-vis the situation in other methods where portions of the waste are not land-filled.

Sanitary landfill can take place in a low-lying area of land or in specially dug trenches. When a low-lying spot is chosen, the area is divided into cells, where each is filled prior to filling another one, and so on and so forth. In order not to allow foul odours to develop, fires to spread or rodents to infest, solid waste is pressed and covered with dirt/soil daily. The daily cover is 50 cm thick; afterwards, a thirty-centimetre-thick inter-medial cover of compressed dirt is applied. Once the whole area is filled, a 60 cm layer of compressed dirt is applied as a final cover. Land filled areas can be used later on for public projects like parks or sports fields. Building on these areas cannot take place before ten years – the time needed for full decomposition of most waste that become semi-stable.

2. **Composting**
Composting means biological stabilization of compostable organic matter in solid waste. Stabilization takes place in the presence of air – called aerobic/pneumatic(?) stabilization, or in the absence of air, called anaerobic stabilization. The final product of composting is a pathogen-free and odourless organic matter. It is used to improve soil quality it can also be used as organic fertilizers if nitrogen, potassium and phosphorus are added in limited concentrations.

3. **Incineration**
Human beings have since old days used incineration to dispose of their excreta/waste as most domestic, commercial and agricultural waste are combustible. Incineration has the following advantages:

- Reducing the size and weight of waste to the lowest possible levels; size can be reduced by 70-95% and weight by 50-80%.
- Exterminating all living pathogens like germs, parasites and many hazardous chemicals; it is therefore used to dispose of hospital waste.
- The heat produced by incineration can be used in heating, industry or lighting etc.
- Incineration can be used close to the place where solid waste is produced; it does not need vast areas of land.
This method has its own risks or defects, particularly if the incinerator was not designed correctly to accommodate adequately the type and quantity of waste to be incinerated, and if full and continued maintenance and care and unsafe incineration were lacking. Risks and disadvantages of incinerations include:

1. Smoke and foul odours emissions.
2. Creating an environment conducive to insects and rodents infestation.
3. Incineration is not a process that leads to final disposal of solid waste ash remnants, and incombustible material should be disposed of as well.
4. Incineration also needs sanitary landfill if the incinerator becomes in-operational for a while or is stopped for maintenance, apart from the high cost of installation, operation and maintenance.
5. Occupational hazards such as noise, dust, extreme heat and accidents to which workers exposed.

4. **Recycling**
   The idea of sorting solid waste according to its components has recently been introduced in order to make use of such components instead of spending time and money to get rid of them. This process is attracting the attention of increasing numbers of solid waste disposal officials and environmentalists. The number of advocates for this idea is on the rise following the promulgation of many pieces of legislation for environmental protection. This makes other waste disposal methods expensive – with the increase in the cost of production and manufacture of raw material that produce solid waste like paper, glass, aluminium and iron.

5. **Public Sewage**
   After garbage/waste is ground in a garbage grinder installed in dish sinks at home or in public kitchens, waste goes to the public sewage. However, this method increases the burden on sewage purification processes, needs high water pressure and uses additional quantities of water because grinding takes place while water is flowing. Only kitchen grindable garbage could be disposed of using this method; other ungrindable materials like metals, plastics and glass are collected and disposed of using the other methods.

6. **Disposal in the sea water**
   This method is used on countries with seashores where garbage is put onboard ships that sail up to five miles into the sea and dumps its cargo in the sea water. This method involves hazards like the return of the floating garbage to shores by wind or water currents.
Methods of sewage disposal

Liquid (fluid) waste is no doubt more dangerous to public health than solid waste because the former carries many microbes found in human faeces. Hence, sanitary disposal of fluid waste largely curbs the spread of contagious diseases, protects water against pollution, prevents foul odours and soil pollution and exterminates places of harmful insects' infestation like flies. Sanitary treatment of liquid waste creates an effective barrier between human beings and many pathogens.

There are two methods for sewage disposal:
1. The dry method:
   This method is used to dispose of human excreta: urine and faeces. It is often used in rural areas, temporary places of stay like scout camps and picnics, onboard transportation like planes, buses and trains. The method is also used in migrant concentrations and in case of emergency that call for providing sanitary services in a short period of time. This method is not considered sanitarily safe unless its design and use observe minimum requirements to prevent insect infestation and spread of diseases and foul odours/things. This method depends on all fluid waste found in a pit known as the latrine.

2. The pour-flush method
   This method is often used in households connected to running water from the public system or domestic water tank. Water is used to flush fluid waste from the domestic latrine and kitchen to the public sewage or individual septic tanks. In general, sewage purification aims at achieving the following:
   - Removing floating material
   - Removing suspended organic and inorganic matter
   - Removing dissolved organic material
   - Disposing of pathogens

   We will explain briefly how sewage/liquid waste is disposed of in municipal sewage treatment plants and in the individual systems as well.

Liquid waste sanitation in treatment plants:
A properly designed and efficiently run sewage treatment process guarantees removal of all materials found in sewage and eventually produces pollution-free clear water that can be safely used in various fields like irrigation and some industrial applications, etc.
There are various types of treatment plants that vary in terms of design, size, and area and technology level to be reached. In general, the sewage treatment process in plants consists of the following stages:

- **Preliminary treatment:**
  All floating material like wooden pieces, papers and plastics are removed using special metal screens; other borne material like pebbles and sand grains are also removed. These materials are sediment in grit chambers at the entry point in the plant.

- **Primary Treatment:**
  It contains three-meter-deep sedimentation or Clarifying/Purification tanks; these are used to clear/purify sewage from suspended and dissolved organic matter. They also create an oxygen-free setting where organic matter is decomposed using the anaerobic digestion method.

- **Secondary treatment:**
  During this stage, an environment conducive to aerobic germs is created to oxidize the decomposable organic matter. Thus, the suspended and dissolved organic matter is ridded of. Oxygen needed for the germs to thrive is pumped through the sewage; treated water is then made to go through sand tanks to remove the suspended matter.

- **Tertiary treatment:**
  This is an advanced treatment stage and is used in some clarifying/purification plants only. The stage is used to either remove or dilute chemicals in their dissolved state in water like phosphate, nitrogen and carbon compounds.

- **Chlorination:**
  Chlorine is added in this stage to kill germs that might have so far survived in the already purified water. Twenty minutes after adding chlorine, the residual chlorine has to be no less than 5.0 particles per million (PPM).

- **Discharge:**
  Treated water is then discharged into a large water body like a river or lake to be used in agriculture or industry.

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* Copied as is from the Arabic version.
** Copied as is from the Arabic version.
Individual sewage disposal systems:
Individual sewage sanitation systems are often used because public sewage systems are lacking in residential areas with running water supply and because certain households and institutions are not connected to public sewage; such systems are less efficient in purifying water when compared to public purification plants. These systems offer minimum levels of household sewage sanitation if properly designed and monitored to avoid disruption of service.

| Question: Can you differentiate between domestic waste/excreta and those in the public environment? Can you propose ways for excreta/waste disposal in the society? |

Activity 28: Health Committees in School
Time: 40 minutes
Goals:
Upon finishing this activity, students/trainees are expected to be capable of:
1- Knowing the tasks of health committees in schools
2- Realizing the relationship between sanitation and public health
3- Knowing the planning and implementation mechanisms, which health committees use
4- Knowing some of the means of health media

Materials and tools
Chalkboard and chalk

Steps:
<table>
<thead>
<tr>
<th>Time (in minutes)</th>
<th>Procedures and Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>The teacher introduces the activity by highlighting the importance, and illustrating the tasks of a school public health care committee. He/she presents the idea that a committee has already been formed with sub-committees including one that oversees sanitation.</td>
</tr>
</tbody>
</table>
- The teacher asks the trainees (students) to carry out the activity according to the following strategy: individual work, thinking in pairs and then group discussion.

- He/she then proposes the following ideas:
  * Developing a general job description for this sub-committee.
  * Developing the tasks of the sub-committee.
  * Developing a planning and implementation mechanism for the sub-committee.
  * Set the media/publicity methods to be adopted.

- Each student thinks about the preceding ideas on his/her own.
- He/she shares his/her ideas with the classmate sitting next to him/her.

- The teacher:
  - Invites all class to discuss the ideas.
  - Asks a student to write on the chalkboard the notes agreed upon in relation to the first idea.
  - Asks another to write on the chalkboard the notes agreed upon in relation to the second idea.
  - A third to write the agreed upon implementation and planning mechanism.
  - A fourth to write down the agreed upon media/publicity ways.
  - Summarizes the following tasks of the health committee:
    Inspecting sanitation facilities; developing media/information health programmes; taking part in school health programmes and helping provide general and personal hygiene as well as involvement in sanitation in the local community.

**Remember:** A school health committee supports the items and applications of and the programmes for personal hygiene and preventive and therapeutic environment.

**Acquired skills:**
1. Organization of ideas
2. Independence and participation
3. Respect for others’ opinions
**Enriching (Booster) activity:**
The teacher asks the students to look for ways to disseminate information other than those proposed in the discussions during the implementation of the activity. He/she also asks them to write a report on the topic and discuss such ways in future classes.

**Conclusion:** This training manual can be used in schools, youth clubs and any entity concerned with sanitation, environmental health, general and personal hygiene and training of trainers (TOT).

**Annexes:**

A. **Proposed evaluation form for the training workshops to be used by educational supervisors and teachers/trainers of trainers**

<table>
<thead>
<tr>
<th>Evaluation aspect</th>
<th>Excellent</th>
<th>Very Good</th>
<th>Good</th>
<th>Fair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation and training methods and skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number and setup of the training sessions</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>The skill of working in groups</td>
<td></td>
<td></td>
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<tr>
<td>Availability of materials for group work</td>
<td></td>
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<tr>
<td>Use of audio-visual aids</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Efficiency of the facilitators – those participating in the training</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquiring new ideas and training skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Giving trainees the opportunity to express their various opinions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time allotted for the group work session</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reaching at a common understanding of the topics raised</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Achieving the workshop goals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall workshop organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training venue and halls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accommodations</td>
<td></td>
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<tr>
<td>Entertainment and food services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stationary and training materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What is your overall impression about the workshop? What do you suggest?

B. Some proposed projects in Iraqi schools:

**Personal Hygiene Project**
For students of the first three grades

*The rationale:*
Personal hygiene has been selected as a topic to be implemented as a project for primary grades’ students in Iraqi schools because it is important and should be learned and trained on in earlier stages. It is also an 'enlightened behaviour' that can continue with the students throughout various stages of life. Furthermore, personal hygiene is chosen because students of the first three grades in basic education do not care a lot about such hygiene in this stage of their lives.

Learning hand washing, clipping one's nails and keeping the hair, face, clothes and body clean is a very important issue that reflect positively on the appearance and psychology of students. Teachers can train the students on these skills during activity classes and breaks; the skills can be further followed up on to become an established students’ behaviour.

Personal hygiene helps protect against many diseases like scabies, Pediculosis, fungi infections, intestinal parasites and others. Eventually, students can be motivated through simple and inexpensive means to observe daily personal hygiene behaviour.

*The problem:* Students of the three first grades of basic education in Iraqi schools do not observe personal hygiene rules that include hands, faces, heads, bodies and clothes hygiene.

*The goals:* Upon completing this project, students are expected to be capable of:
1- Identifying the advantages and significance of personal hygiene.
2- Identifying some personal-hygiene-related diseases.
3- Cleaning properly their bodies, faces, hands, hair, teeth and clothes, with a coverage of at least 80% during the school year.
**The method:** Launching an awareness programme and implementing a training programme on the importance and means of personal hygiene to include the following:

1. Forming a team from each school to work on this project.
2. Developing a checklist to monitor and apply elements of personal hygiene to a student-representative sample.
3. Designing a questionnaire to measure the students' knowledge of and attitude towards personal hygiene methods; the questionnaire should be filled in through personal interviews.
4. Compiling and analyzing results as well as identifying the aspects that need more work.
5. Developing the awareness raising programme that includes drawings, charts and TV shows for students as well as printed materials for teachers to use as references.
6. Implementing the educational/awareness-raising programme in a way that corresponds to students' levels.
7. Implementing the training programme using the school facilities.
8. Implementing behaviour reinforcement programmes by holding a student drawing/painting contest on the theme of personal hygiene; organizing an exhibition for the drawings/paintings and establishing a committee to select the best chart eligible for a reward.
9. Organizing a contest for the most hygienic male/female student in each class – awards available.
10. Preparing for the cleanest class contest; the winner will receive the hygiene trophy.
11. Training students on sketches.

**The evaluation:**
- Applying the post-monitoring checklist on a student sample.
- Filling in the post-questionnaire using the same previous method.
- Compiling results and comparing them to the preliminary information.
- Measuring the level of change and judging whether this change delivers its goals.
- Deciding on whether or not it would be useful to apply the programme to the same or different student categories, in the same or other schools.

**The required materials:**
- Stationary (pens/pencils, papers, and transparencies).
- A video camera.
- A video set.
- Transparency overhead projector.
- Video shows on hygiene and relevant issues.
- Cleaning materials like soap, toothpastes and brushes.
- Water for cleansing.
- Towels (one for each student).
- Student awards.
- A camera for photographing and documentation.
- Entertainment items.
- Materials for the exhibition like coloured cardboards, clips/pins, … etc.

**Timetable**

<table>
<thead>
<tr>
<th>Phase I: preparation</th>
<th>September + October</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase II: implementation</td>
<td>November + December</td>
<td>2006</td>
</tr>
<tr>
<td>Phase III: reinforcement</td>
<td>February + March + April</td>
<td>2007</td>
</tr>
<tr>
<td>Phase IV: evaluation</td>
<td>May + June</td>
<td>2007</td>
</tr>
</tbody>
</table>

**Environmental Health Project**

For students of basic education/grades one to six

*The rationale:* Every human being is either positively influencing or negatively influenced by the environment where he/she lives. Air, water, soil and food pollution are all man-made. The pollution, in turn, influences humans and their health, other surrounding creatures and the ecological balance.

In its broadest sense, the environment is all biological, physical, economic and social factors that surround human beings. Every individual in society has a role in maintaining environmental health and safeguarding its safety against pollution.

Health education instructors have a great role to deepen, enhance and create positive attitudes towards environmental health concepts.
The problem: Lack of teachers' awareness about their roles in adopting the behaviour that contributes to the improvement and development of positive attitudes towards environmental health.

The goals: Teachers will be capable of the following upon completing the project:
- Identifying the environmental health problems in schools.
- Developing practical plans to minimize the impact of those problems, where students will be assigned a major role in implementation and follow up.

Examples on environmental health problems in schools:
- Poor classroom hygiene – lack of dustbins in classrooms and barrels in the courtyards.
- Poor hygiene in the school's WC/toilets/latrines.
- Papers and garbage accumulating in the school yard.
- Improper waste disposal.
- Poor classroom ventilation.
- Poor classroom lighting.
- The cafeteria workers are not committed to keep the cafeteria and food items clean.

The method: Hold a three-day workshop for health education school teachers as follows:
- The workshop supervisor delivers a presentation on environmental health and its relationship with the school environment.
- Participants are divided into three groups so that every participant/teacher identifies a health problem.
- Giving an overview of all school problems related to environmental health as identified by the participants.
- The workshop leader delivers a presentation on drafting goals and solutions.
- Going back to the groups where every participant takes part in drafting the goals and solutions to the problems he/she identified.
- Giving an overview of the goals and solutions to all already identified problems.
- Working in small groups to develop a plan of action by each participant/teacher.
- Giving an overview of all plans of action and adopting them as outputs of the training workshop, to be implemented in schools later on.

The evaluation: All practical plans proposed by all participants/teachers are to be considered as the workshop output to be followed up on in the future.
The resources needed:
- Data Show device
- Flip chart
- White board and duster
- Flow masters and transparency markers
- Entertainment
- Paper files, pens and pencils
- Transparencies
- A camera for photographing and documentation
- Venue
- A Xerox machine

Oral and Dental Hygiene Project
For the students in the fourth, fifth and sixth grades

The rationale:
Oral and teeth hygiene problems like caries and gumboils are common among school students who are also ignorant about the safe/proper ways to brush their teeth.

Failing to maintain oral and dental health exposes teeth to damage and loss at an early stage. Some habits might also be damaging to oral and dental health – these habits include drinking ice-cold water and using one's teeth to cut lines/threads and smash solid items.

There is a link between dental health and the food items students eat/drink. Too many sweets without brushing one's teeth can cause caries/cavities on the long run. Likewise, failure to drink milk and to eat dairy products and have calcium-rich food will negatively influence the teeth's health and sturdiness.

In contrast, regular brushing and examination of teeth help sustain them in a healthy state. Training students in and increasing their awareness about tooth brushing skills play significantly in the prevention process.

The problem:
Students in the fourth, fifth and sixth grades in Iraq do not brush their teeth.
**The goals:**
Upon implementing the oral and dental health project, students are expected to be capable of:
- Properly brushing their teeth twice a day – after breakfast and before sleep.
- Drinking and eating more milk, dairy products and fruits and vegetables.
- Brushing their teeth after eating sweets.

**The method:**
- As part of the project, a dentist examines/screens student's to check how healthy their teeth are.
- Designing a questionnaire to gather information on students' knowledge of, and attitudes towards oral and dental health and eating and related habits.
- Collecting, analyzing and focusing on certain aspects of information.
- Launching an educational health programme about oral and dental health, food, habits, caries, etc.
- A parallel therapeutic programme can be launched to attend to cases that need medical intervention based on the screening/examination results.
- Carrying out a training programme on the proper way of brushing teeth/dental hygiene.

**Screening and therapy programme:**
- A dentist implements this programme with assistance from a team of science or health education teachers; a file is set/maintained for every student. Outpatient or Ministry of Health clinics can be used to implement the programme.
- Registering the cases that need dentist intervention.
- Offering medication/therapy for students in need according to a specific timetable.

**Health Education Programme:**
- Developing a programme about teeth and replacement times of deciduous dentition, ways of maintaining their hygiene and the food items that make them stronger against diseases. The programme should also tackle caries, dental care and unsafe practices. It should further build upon the outcome of the questionnaire distributed to students.

**The training programme:**
Health education teachers/instructors implement/train students in this programme on the correct way to brush teeth through using the tooth brush and paste, school water facilities and teeth figurines/models.
The preparation programme:
- Health education teachers/instructors implement/encourage students of this programme to make murals on the theme of oral and dental health.
- An exhibition for drawings/paintings about oral and dental health can also be organized; students with distinguished paintings receive prizes.
- They can also come up with slogans about oral and dental health to be posted on school corridor walls.

The evaluation:
- Students fill in the post-activity questionnaire.
- Cases that still have dental problems will be identified.
- Cases that still brush their teeth properly twice a day will be identified.
- Information gathered following the implementation of the project will be compared with the pre-implementation information; the change that took place will be measured.
- A decision will be made to see whether or not the changes meet the desired targeted change and whether the project will be applied to another category of students.

The required resources:
1. Teeth models and a brush
2. Mouthwash medicine
3. Toothpastes and brushes
4. Entertainment
5. Stationary: paper, cardboards, colour pencils/crayons, pins/clips, scissors and pens/pencils
6. Folders for students
7. Video shows and CDs
8. Prizes for students
9. Camera films for documentation

The Timetable

<table>
<thead>
<tr>
<th>Phase</th>
<th>Time Period</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I: identifying and curing the cases</td>
<td>November + December</td>
<td>2006</td>
</tr>
<tr>
<td>Phase II: designing and filling in the questionnaire</td>
<td>January + February</td>
<td>2007</td>
</tr>
<tr>
<td>Phase III: implementation of the health education programme</td>
<td>March + April</td>
<td>2007</td>
</tr>
<tr>
<td>Phase IV: implementing the training and mobilizing programme</td>
<td>May + June</td>
<td>2007</td>
</tr>
<tr>
<td>Phase V: evaluation</td>
<td>September</td>
<td>2007</td>
</tr>
</tbody>
</table>
References: