PRINCESS SIRINDHORN
PROJECT

A Guide for Implementation

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Content

Guideline for School Agriculture

Guideline for School Agriculture 1

How do we produce our own foods?

Many questions are being asked when we want to run a school agriculture. Here are some questions that should be put into considerations. Because well-prepared and well-managed activities will bring us a successful garden.

1. Where is the school agriculture located and what does it look like?
2. Do we have enough water supply for agricultural use?
3. Is the soil fertile?
4. What agricultural tools and other materials do we need?
5. What foods do we want to produce?
6. How can we manage it?
7. Who can help us?

Here are step by step guide to building our school agriculture.

Step 1 staff meeting and assign at least one schoolteacher to take responsibility for the school agriculture.

Step 2 make a school agricultural map.

Step 3 check availability of water supply system.

Step 4 decide what we want to eat, then we can decide what activities we should put in our agricultural sites.

Step 5 form groups of children according to agricultural activities:

- a vegetable growing group
- a fruit tree growing group
- a mushroom cultivating group
- a fish raising group
- a poultry raising group

Each group consists of 10-15 children and one teacher as a group mentor.

Step 6 set a year plan for production of each food: how and when to start, how to maintain, who will do what and when to do and what tools and materials are needed.

Step 7 negotiate with the community members to participate in the school activities.

Step 8 provide learning experiences in every step mentioned.

School agriculture is a perfect learning laboratory where children can learn how to produce food while their environment is conserved, how to record bookkeeping. Other subjects can also be integrated.

Guideline for School Agriculture 2

Making a School Agriculture Map

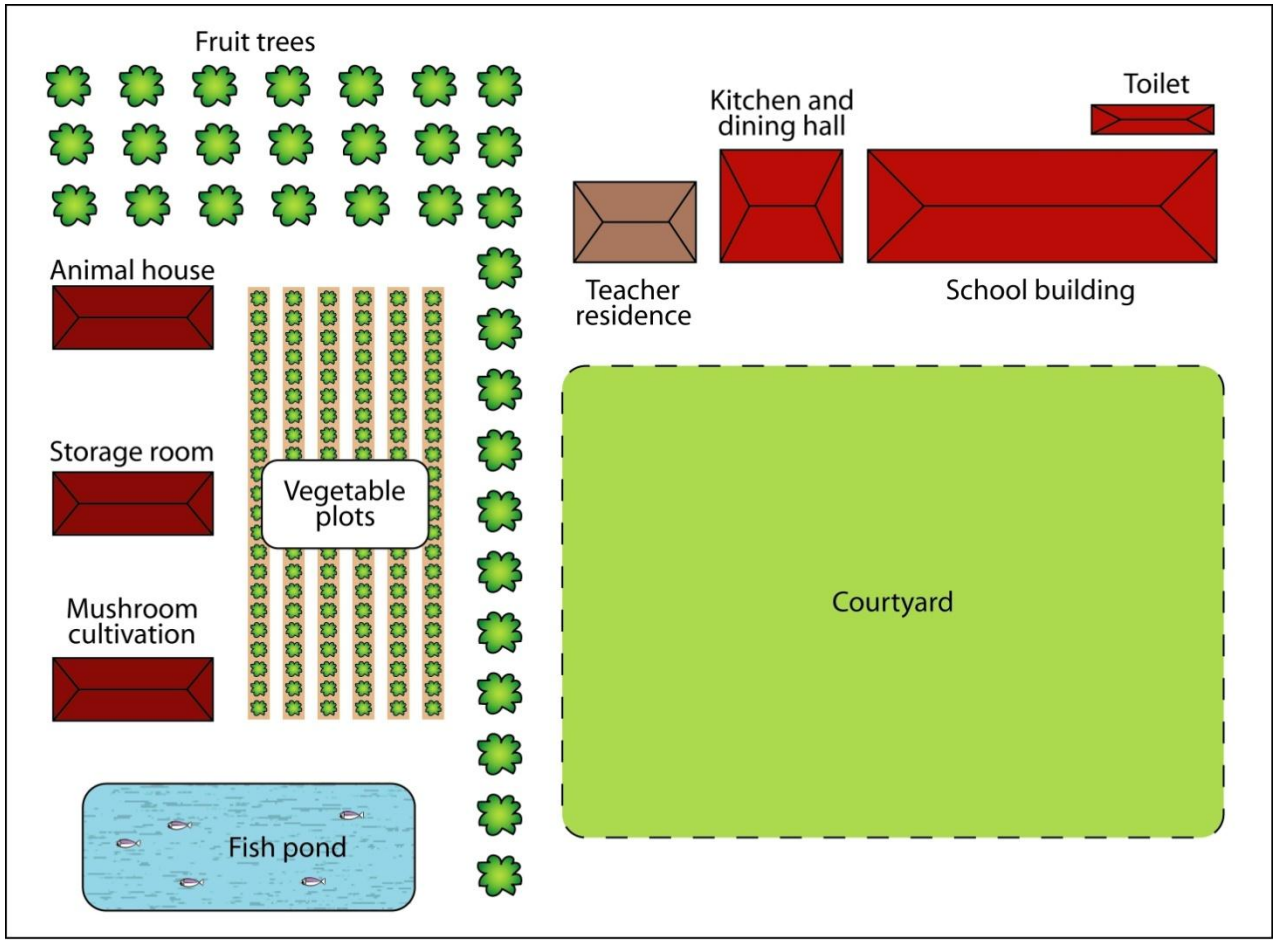
Before starting vegetable plantation or animal raising, we should firstly plan where we will run these activities by mapping the school land.

1. Conduct a survey and sketch the school area, then select the agricultural sites:
   - select an open area with enough sunlight and is near a water source.
   - if land is limited, then the sites can be in the back or front or side of the building.

2. For effective management, the area should be divided into small parts:
   - about 30% is designated for water sources
   - about 30% is designated for growing vegetables
   - about 30% is designated for growing fruit trees
   - about 3% is designated for mushroom cultivation
   - about 5% is designated for raising animals
   - about 2% is designated for compost pit, tool storage room,etc.

   Note: applying from the New Theory of the King

3. Design our school garden by putting the following into considerations:
   - wetland or swampy: is good for digging pond or growing wetland plants e.g. lotus, Chinese cabbage, water chestnuts.
   - upland: is good for growing fruit trees.
   - sloping land: growing plants horizontally across the slope and growing vetiver grass on the slope to prevent erosion.



School map – show school agriculture site and its design

Guideline for School Agriculture 3

Water Supply for Agricultural Use

1. Types of water sources
   - natural water sources e.g. rivers, lakes, ponds, swamps etc. Some points to consider when collecting water:
     - if steep slope: platform steps or ramps should be constructed at the water edge.
     - a hand pump or a motorized pump may be required to bring water up.
     - small cement tanks or plastic tanks at garden sites are needed to keep water for all year-round use and to save energy from pumping.
   - mountain-piped water system mostly used in the mountainous areas where there are surface water or ground water sources. The systems are usually fed by gravity from the water sources above the schools and villages. The systems include:
     - a piped system, being either poly vinyl chloride (PVC) pipes or bamboo pipes.
     - storage tanks for keeping water for all year round use.
     - taps, placed where most people can access.
   - built-up water sources
     - artesian wells or piped water system, which is quite expensive. Water are treated with a disinfectant so it needs reservoirs to keep water and let chemical evaporate before using.
     - dug ponds, which is very popular and suitable. It collects water from ground water and rainwater
2. Water management
   - water when the soil is dry, after sowing seeds, after seeding, after pricking etc.
   - manage soil moisture using mulch, suitable drainage system etc.
   - use a drip system when water is limited.

Guideline for School Agriculture 4

Soil and Fertility

Soil is a source of nutrients that plants need for growth. Major nutrients that plant need are nitrogen, phosphorus and potassium. These nutrients are mainly from the soil. Thus it is essential to keep soil fertile. Following are some techniques of managing soil fertility.

Green manure:
- green manure crops such as legume plants (such as pigeon pea, cowpea) collect nitrogen and can provide nitrogen for the soil.
- grow green manure crops and dig them into the soil after cutting.

Animal manure:
- manure from animals. Dry it before use or before adding it to compost.
- never use fresh animal manure because it can burn plant roots.

Compost:
- a mixture of organic waste such as straw, grass, leaves, ash, manure and kitchen waste. Leave them mix for three to six months before use.
- easy to make and does not cost anything.

Mulch:
- mulch materials such as straw or green manure cuttings.
- spread these mulch materials about 4 to 6 centimeters thick around plants.
- protect soil from erosion and reduce weeds

Rotation planting:
- plant a different crop from a different plant family in the same bed to prevent a build up of pests and disease in the soil.
- if the same plants are planted repeatedly in exactly the same place for more than two years, pests and diseases will build up in the soil.

Cover cropping
- cover the soil with cover crops to reduce weeds and to prevent the soil from washing away when it rains.
- cover crops e.g. sweet potato, pumpkin, cucumber, etc.

Vetiver grass:
- plant vetiver grass along the contour line for soil and water conservation.
- plant vetiver grass over the ditch to control the direction of the water flow.
- plant vetiver grass in parallel to the row of the fruit trees to keep moisture.
- plant vetiver grass along the pond edge as a strip to trap crop residue and soil sediments

Guideline for School Agriculture 5

Planting vegetables

Vegetables are good sources of vitamins and minerals that our bodies need. They also provide fiber to us which can reduce a risk of chronic diseases such as colon cancer, hyperlipidemia etc. We can have a variety of vegetables for our lunches all year round if we plant various kinds of vegetables.

1. Kinds of vegetables
    - short-term vegetable crops such as
      water convolvulus or swamp morning glory (pak-bong), kale (ka-na), Chinese cabbage (pak-kad, pak kwang tong), yard long bean, eggplant, cauliflower, carrot, etc.
    - long-term vegetable crops such as
      sesbania or cork wood (kae), neem (sa-dao), horse-tamarind (kra-thin), Acacia pennata (cha-om), Indian mulbury (yo), lime (ma-nao), leech lime (ma-kroud), etc.
    - kitchen herbs such as
      lemon grass, holy basil, sweet basil, mint, pepper, galanga (kha), ginger, wildbetal (cha-plu), etc.
    - climbing plants such as
      gourd, wax gourd, bottle gourd, pumpkin, etc.
2. Methods of planting
    - prepare land by raising beds or digging holes.
    - land preparation should be done before planting in order to:
        - create favorable condition for seed germination and seedling establishment.
        - eliminate weeds and soil-borne pathogenic microorganisms.
        - improve soil texture.
    - methods of planting should be appropriate to each plant:
        - seedling: by raising seedlings in seedbox or seedbed or seed container, after 3-5 weeks seedlings are ready for transplanting, e.g. cauliflower, cabbage, lettuce, chili, eggplant, etc.
        - direct seed: by putting seeds into the holes, usually one seed for one hole, e.g. swamp morning glory, kale, Chinese cabbage, carrot, etc.
        - using parts of plants
            - root, bulb or tuber e.g. galanga, ginger, onion, lemon grass, etc.
            - stem by layering, grafting or cutting e.g. Acacia pennata, pepper, ivy gourd, lime, leech lime, etc.

3. Watering
   - water regularly.
   - water after sowing seeds, after seeding, after pricking, after transplanting.
4. Pest control
   - weeds remove weeds by hand pulling, hoeing and cultivating beds, mulching on beds.
   - diseases use of resistant varieties (e.g. native plants), well-prepared beds, crop rotation.
   - insects use of resistant varieties, hand picking, bio-insecticides, intercropping that repels some insects (e.g. cabbage with mustard).
   - animals use of fence, keeping animals (e.g. pigs, cows) in cages.
5. Harvesting
   - when to harvest: maturity, desired size, no injuries.
   - how to harvest: hand pulling e.g. lettuce, carrot.
     cutting e.g. cauliflower, eggplant.
     digging e.g. potato, taro, radish.
     picking e.g. tomato, peas, cucumber
   - harvesting should be done in the early morning or at night. This is to slow down respiration and transpiration and can keep vegetables fresh for long period.

Guideline for School Agriculture 6

Planting Fruit Trees

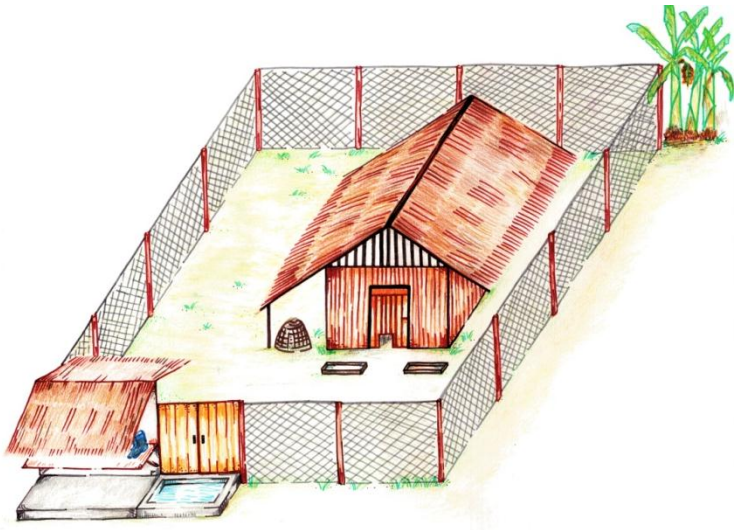
1. Kinds of fruit tress
   - short-term fruit trees : harvesting for only 1-2 years e.g. banana, papaya.
   - long-term fruit trees: harvesting after 3 years of age e.g. mango, jackfruit, orange etc.
2. Methods of planting
   - land preparation :
     - dig holes with size of 0.5 meters width, 0.5 meters length and 0.5 meter depth, leave the soil dry for at least 10 days, then put the compost.
     - spacing between holes depends on types of fruit tree such as 4x4 meters for mango tree, 3x3 meters for banana tree.
   - methods of planting should be appropriate to each tree:
     - use of tuber such as banana.
     - seeding such as papaya.
     - cutting such as mango tree, jackfruit tree.
3. Pest control
   - weeds remove weeds by hand pulling, hoeing and cultivating beds, mulching on beds.
   - diseases use of resistant varieties (e.g. native plants), well-prepared beds, crop rotation.
   - insects use of resistant varieties, hand picking, bio-insecticides.
   - animals use of fence, keeping animals (e.g. pigs, cows) in cages.
4. Harvesting
   - when to harvest: maturity, desired size, no injuries.
   - some fruits harvest when they are raw, then leave them ripen.
   - after harvesting, trim off damaged and diseased, trim parts that can cause injury, watering, and apply fertilizer to keep soil fertile.

Guideline for School Agriculture 7

Poultry Raising

Poultry such as chicken and ducks provide us with both meat and eggs which are good source of protein. Every child needs protein for growth.

1. Breeds that should be raised
    - native broiler chicken
        - high resistance
        - can feed themselves by searching for food scraps, no need for commercial feeds
        - breed by hatching
        - use for meat and eggs
    - Muscovy ducks
        - high resistance
        - can feed themselves by searching for food scraps, weeds
        - use for meat and eggs
2. House
    - build on upland or plateau rather than in wet or swamp areas.
    - use available local materials.
    - having space around the house for allowing chicken or ducks to roam free and search for food. In general, they need about one square meter of floor space per bird**.**
    - prepare incubation nest at a corner of the house.

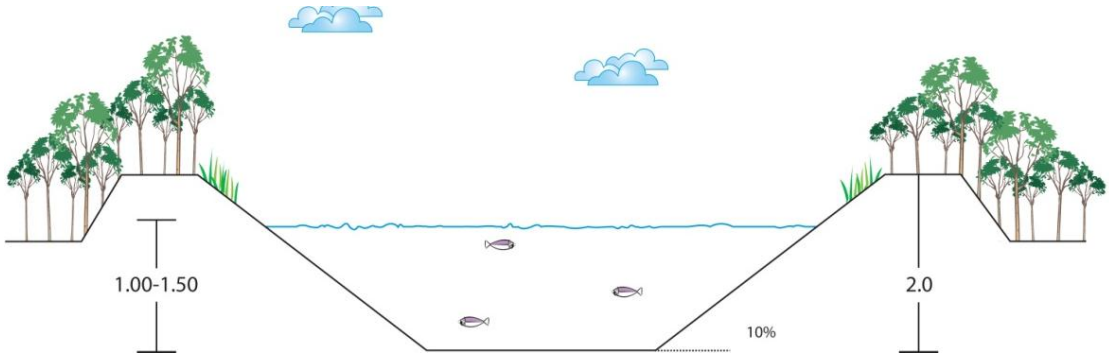


3. Animal feed
    - chicken and ducks can feed themselves by searching food surroundings them such as grass, insects, broken paddy rice.
    - feeding should be done once a day in the evening. Their feeds can be prepared by mixing the following:
        - starchy food such as paddy rice, corn, rice bran, food scraps.
        - protein food such as insects, termites, earthworms, worms, shell.
        - vegetables such as grass, food scraps.
4. Disease prevention
    - use native breeds.
    - never bring ill animals to the house areas.
    - periodically vaccinate such as new castle and bronchitis vaccines.
5. Harvest management
    - to keep eggs at their freshest, collect them several times a day and put them in a dry and cool place. Avoid washing eggs because it will remove the protective outer layer. This layer helps slow moisture loss and keeps bacteria from entering the egg.
    - keep some eggs as breeds.
    - by the end of each cycle, they can be used for meat.

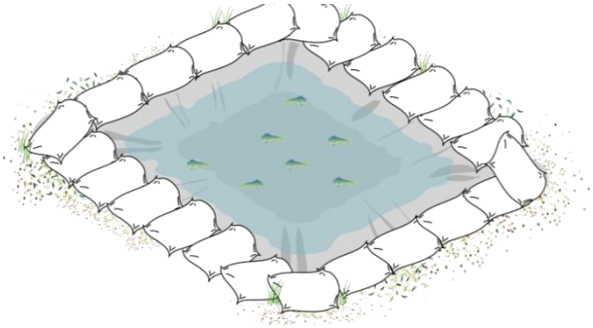
Guideline for School Agriculture 8

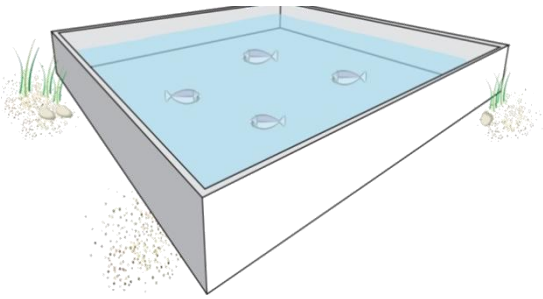
Fish Raising

1. Raising method and fish species
   - raise fish in earthen pond, which costs lower
     - the pond should be rectangular shape with the size of 20 meters width, 40 meters length and 1.5 meters depth.
     - fish species should be herbivorous or omnivorous such as tilapia, common carp, silver barb, Chinese carp, rohu and mrigal, etc.

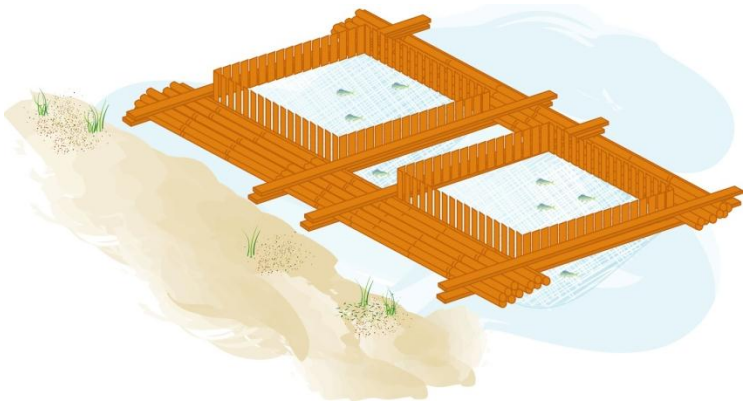


   - raise fish in cement pond and plastic sheet pond
     - the pond should be rectangular shape with size of 2 meters width, 4 meters length and 1 meter depth.
     - fish species should be hybrid catfish which is carnivorous.





   - raise fish in cage
     - the cage made of plastic net or wood which should be rectangular shape with size of 2 meters width, 4 meters length and 1.5 meters depth.
     - only single fish species to be reared in a cage should be either carnivorous or omnivorous such as hybrid catfish, tilapia, pangasius, mutate tilapia (TAB-TIM) etc.

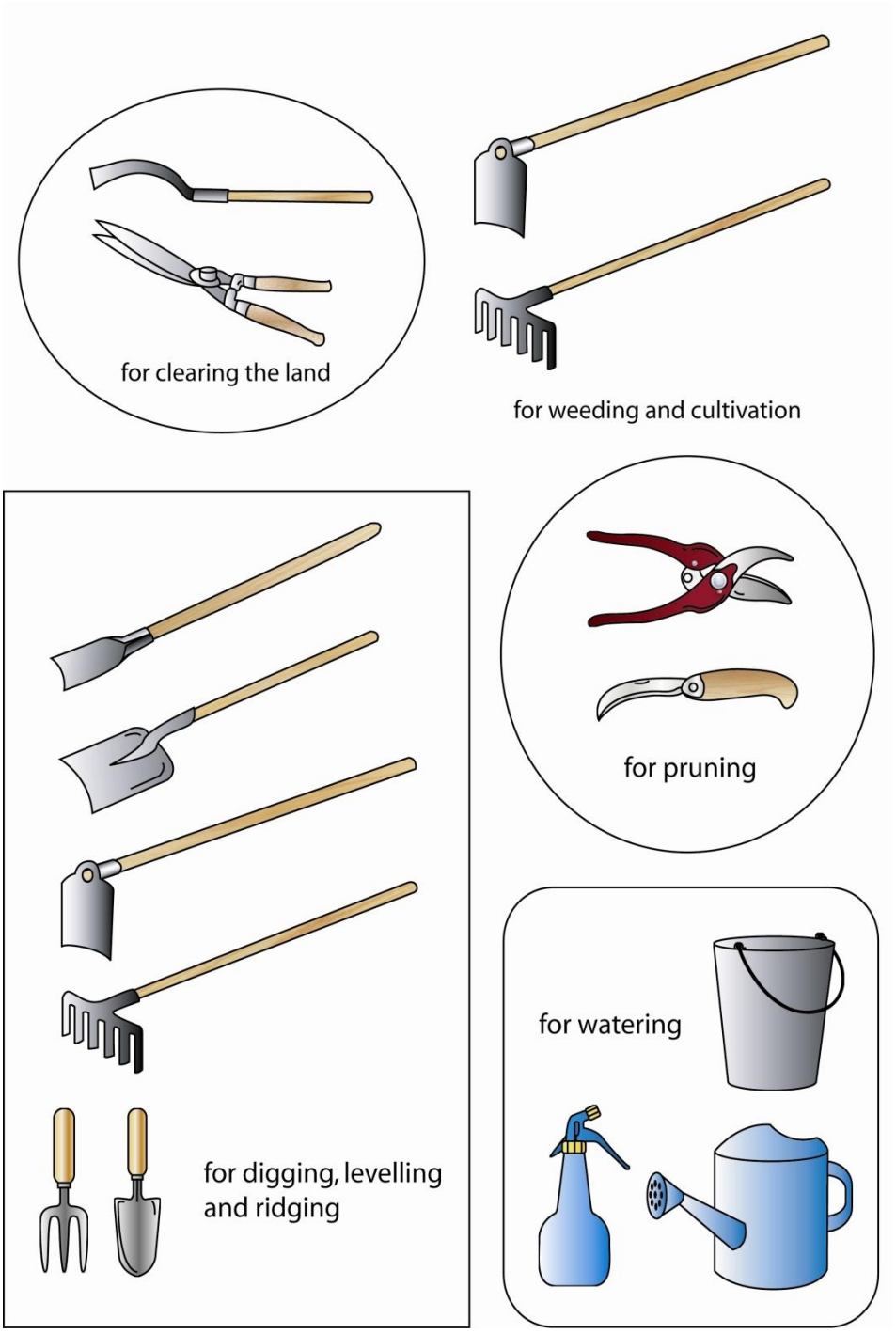


2. Fish feed
    - herbivorous fish
        - making compost at the edge of fish pond enhances the production of zooplankton and phytoplankton.
        - sowing manure, compost or chemical fertilizer into the pond enhances the growth of plankton and aquatic plants which will be the fish feed.
        - rice bran, food scraps.
        - pellet feed.
    - Carnivorous fish
        - making compost at the edge of fish pond enhances the production of zooplankton and phytoplankton.
        - insects, termites and ants
        - food scraps, trash fish and milled fish.
        - pellet feed.
3. Fish diseases and prevention
    - well pond preparation and choose healthy fish without disease infection.
    - inlet and outlet should be installed in the fish pond, be aware of excessive feeding.
    - stop feeding and oxygenating if water color is darkening or smells badly.
4. Harvest management
    - harvest by selecting the proper size for consumption using fishing gear such as seining net, gill net, trap etc.
    - surplus production should be preserved for use during food shortage.

Guideline for School Agriculture 9

Agricultural tools

The following are basic agricultural tools that should be provided. The amount of each tool depends on the number of children.



Guideline for School Cooperatives

School Cooperatives

How do we manage our work?

School cooperative shop is a laboratory for children to practice and then build up their cooperative abilities, business skills and the sense of responsibility and honesty.

At the cooperative shops, children are trained to be on the cooperative committee. They have to convene, to debate, to make decision and to write report. They learn to work together as a team, to manage money through keeping records of payment, receipt, volume of incoming and outgoing goods, sales volumes, stock register, etc., and to take joint responsibility for success.

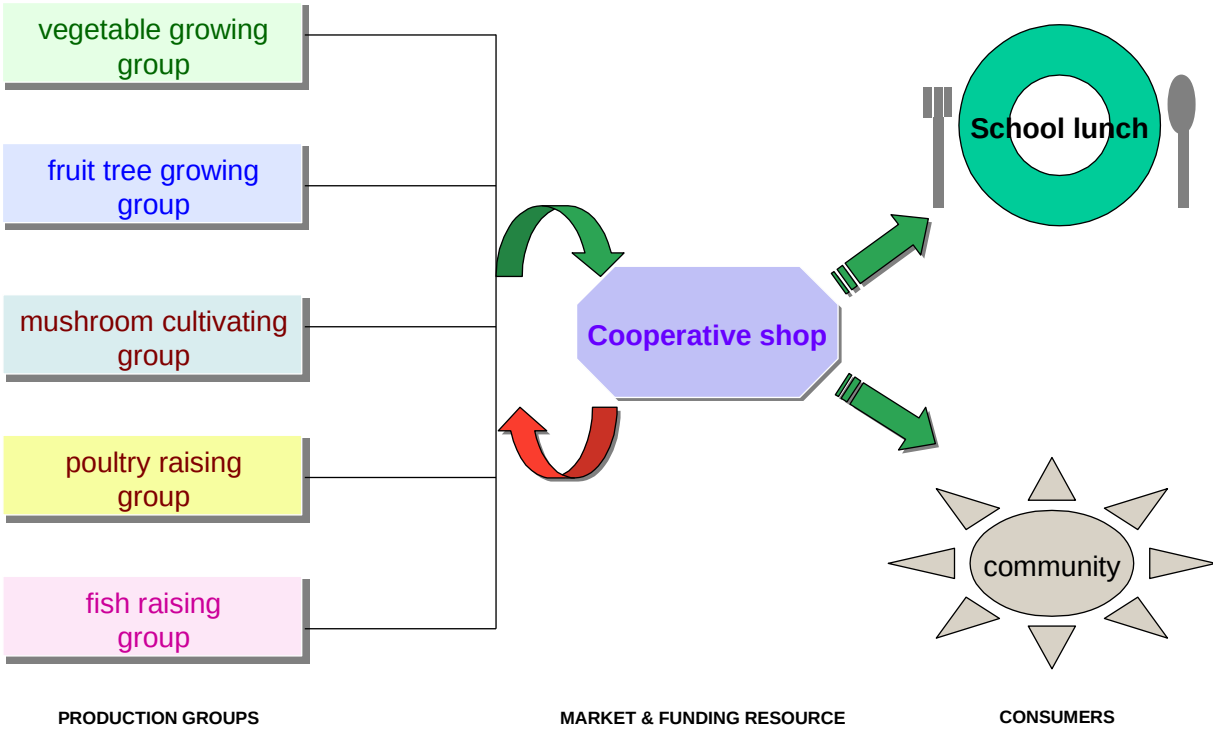
This cooperative shop can link to the school agriculture and school lunch and it can be used as a management tool. The cooperative shop will be a place for

- buying produce from the agricultural production groups
- selling the agricultural products to school lunch as well as to the community when the products are surplus
- lending investment fund for the agricultural production groups

How to establish and manage cooperative shop

- get members of the school cooperative shop
- 8-10 members are elected by the members to be a cooperative committee
- cooperative committee run the cooperative shop by:
  - regular meetings
  - writing report
  - buying and selling
  - recording bookkeeping
- annual meeting for every member, bonus payment
- mobilize capital from shares, donation, savings, income

Diagram 2 Link between school agriculture, school lunch and cooperative shop



Guideline for School Meal Service

Guideline for School Meal Service 1

School Meal Service

Food insecurity, ignorance and unhealthy practices are major factors contributing to more severe malnutrition found in children, particularly in rural areas.

Lunch is the main meal that schools can serve to every child. School lunch service can provide a healthy meal i.e. nutritionally balanced and safe and a chance for every child to practice healthy eating. Thus, it can contribute to a good nutrition and a good school performance.

To provide a food service, a school may require:

1. A variety of foods for preparing meals
    - fresh foods, which are the most preferable, come mostly from our school garden.
    - dried foods (e.g. noodle), condiments (e.g. fish sauce, salt, sugar) and other supplies (such as cooking gas) are also needed and they should be provided from extra budget.
2. Kitchen utensils
    - pots, pans, kettles, knives, plates, bowls, forks and spoons and glasses should be made from good quality materials such as stainless or glass. This is to prevent from toxic substance contamination.
    - the amount of these utensils should be adequate for uses. For example: one glass for one child.
3. Areas for cooking and eating
    - having separated areas if schools do not have a building.
    - being clean and far from the toilets and waste collected areas to reduce health risks from food contamination.
    - adequate ventilation and lighting.
    - adequate tables and chairs for preparing foods and eating. Surface of the tables should be covered with materials that are easy to clean.
    - prevent entering of vermin (e.g. rats and mice) and insects by putting net or mesh onto windows.
4. Personnel
    - at least one schoolteacher should be assigned to take responsibility for school lunch.
    - cooks who will prepare meal every day. Mostly in schools in remote areas, groups of housewife and community members are formed and take turn to prepare meals for their children under the supervision of the teacher.

Guideline for School Meal Service 2

Steps in Preparing Meal

Step 1 develop menu planning in correspondence with production plan (if a school has school gardening). The menu can be weekly cycle menus or monthly cycle menus or seasonal cycle menus.

Step 2 prepare food according to culture and taste preferences of local people by

- develop standard recipes so that nutritional goals can be achieved. Evaluation these recipes are needed from time to time.
- make a list of all raw food and ingredients needed.
- purchase fresh food from school agricultural sites day by day. Dried food and condiments can be purchased from time to time.
- wash raw food before use. Food that being eaten fresh such as vegetables and fruits should wash thoroughly with water to remove residue of soil.
- cut food into pieces according to preparation methods and cover them with a lid if they are not used for cooking right away.

Step 3 cook using methods that do not destroy nutrient components in foods. After finishing cooking, cover food with a lid or plastic wrap to prevent dust and fries if the foods are not served right away or have to transfer to another place. Insufficient cooking and improper storage can cause food poisoning.

Step 4 serve meal when it is still hot. Portion sizes served should not be too large for children since it will discourage children from eating and also may lead to overeating.

Step 5 eat meal when food is still hot. This is an appropriate time for practicing healthy eating habit and good personal hygiene as well as for socializing and for the enjoyment of food. Pleasant eating environment will be conducive to these processes.

Step 6 wash dishes, clean up the areas and remove garbage daily. The procedure for manual dishwashing is as follow:

Compartment 1: wash in soapy water.
Compartment 2: rinse.
Compartment 3: sanitize using chlorine solution.

Step 7 keep records of buying raw materials, cash in hand, funds, stock register daily.

Step 8 provide learning experiences in the above steps.

Guideline for School Meal Service 3

Guideline for Lunch Preparation

(An Example for Thai Schoolchildren)

A guideline has been established by nutritionist to improve the **nutritional quality of school lunch**. Lunch should provide energy and other essential nutrients at least one-third of the Dietary Reference Intake for Thais 2003 (DRI).

1. A lunch meal should provide the following:
    - Energy: 600 kilocalories
    - Protein: 10-15% of total energy (15-23 grams)
    - Fat: 25-30% of total energy (16-20 grams)
    - Carbohydrate: 55-65% of total energy

2. The kinds and amount of food from the five food groups[1] suggested for one child aged 6-12 years who needs 600 kilocalories for lunch can be put into food-based menu planning as shown below:

Food items	Amount required
Rice–starchy food	150 grams (cooked rice) or 65 grams (uncooked rice)
Meat	30 grams (cooked) or 30-40 grams (uncooked) (equal to 1 chicken drumstick, 1 egg, 1 mackerel, ½ tofu, 25 g legumes)
Vegetables	40 grams (cooked) or 100 grams (uncooked)
Fruit	1 portion (70-120 grams) examples: 1 banana, 1 orange, 4 rambutans, 6-8 pieces of papaya or pineapple or watermelon
Oil	5-10 grams
Milk (200 ml)	1-2 glass(es)

1 Thai foods are group into five food groups as follows: rice–starchy food, meat, legumes and products, vegetables, fruits and fat and oil.

In order to get a well-balanced lunch, the following details are recommended when preparing and cooking meals:

1. In one meal, choose a food from the five food groups. In each of the five food groups, use a variety of food.
2. Iodized salt is strongly recommended for cooking for preventing iodine deficiency.
3. Egg should be served at least two eggs a week and it must be well cooked. Never use an egg that has a broken or cracked shell.
4. Liver should be used for preparing meal once a week or at least every two weeks.
5. Vegetable oil should be used for cooking daily.

Guideline for School Meal Service 4

Healthy School Snacks

Serving healthy snacks to children is important to improve nutrition and support healthy eating habits.

Apart from school lunch, schools can provide children with snacks in the morning-break or afternoon-break as another way to increase the children daily intakes of about 100 kilocalories. The following are some examples of healthy snacks provided for (Thai) children.

A glass (or a box) of milk (200 ml) is served to every child every day. In remote areas, milk is provided in powder instead of ready to drink milk. Schools have to prepare milk by following the guideline below:

What we need are: powdered milk, clean water, a cup or a balance to weigh the powdered milk, a ladle, pot and stove

Amount use for 1 glass of milk (200 ml)

- for 1 student = powdered milk 30 grams + clean water 200 ml
- for *N* students = (powdered milk 30 g + clean water 200 ml) x *N* students

Procedure:

1. boil water and let it cool down to 30-40 ^{o}C
2. pour powdered milk into warm water, stir it thoroughly
3. serve a 200 ml. glass of milk to each student

In addition, healthy snacks can be prepared in various ways from fruits from school garden either fresh or preserved. The following are some examples of healthy snacks and their nutritive values:

Nutrients	Energy (kcal)	Prot. (g)	Fat (g)	Fiber (g)	Ca (mg)	Fe (mg)	Vit A (ug)	Vit B1 (mg)	Vit B2 (mg)	Vit C (mg)
200 ml whole milk	134	7	8	0	210	0.25	72	0.08	0.42	-
200 ml soybean milk	192	8.6	4.2	5.5	86	2.2	-	0.24	0.08	2
1 banana*	63	0.4	0.1	1.3	5	0.3	6.0	0.03	0.02	6
1 medium orange	31	0.7	0.1	1	20	0.3	4.1	0.03	0.02	10
½ guava	60	0.8	0.1	4	12	0.06	4.02	0.05	0.09	167
10 pieces of papaya	41	0.5	0.1	1.3	15	1.1	87	0.04	0.05	49
80 g of steamed banana in glutinous rice	158	2.3	0.8	1.4	5	0.99	1.7	0.06	0.02	2
Mungbean in syrup	194	6.5	0.5	7.8	1	2.8	0	0.24	2.5	0

*banana can be served as fresh (1 medium) or in other forms such as banana chips, banana in syrup, banana in coconut milk, steamed banana in glutinous rice and black beans cooked in banana leaves, etc.

Guideline for School Meal Service 5

Food Safety and Some Hygiene Rules

Apart from nutritional aspect, meal prepared should be also **safe and free of contamination** that can cause food-borne illnesses. This is an issue of FOOD SANITATION.

According to food sanitation principles, one important factor that should be put into the consideration is people. Proper personal hygiene habits should be developed since childhood. Thus, it is important for schoolteachers to help their children develop these habits through activities during meal preparation and having lunch at school.

Additionally, housewife who come to help school should also be trained during they work in the school kitchen and canteen.

The following are some examples of hygiene rules that can be practiced:

1. Wear clean cloth and apron.
2. Cover hair with hat or hair net.
3. Cut fingernails and no coloring on the fingernails
4. Wash your hands with soap and water before starting the food preparation and after using the toilets.
5. Do not touch food with hands.
6. Do not cough on to an open food container.
7. Never put either raw or cooked foods onto the floor but put them on the shelves or tables that are at least 60 centimeters off from the floor.
8. Never use the same cutting board and knife for preparing raw foods and cooked foods.
9. Use a clean spoon to scoop up the food you want to taste. Then, pour the food to the second spoon and taste it.
10. Never taste food over an open food container.
11. Foods that are ready to eat should be covered with lids.
12. Wash all dishes and utensils after using.
13. Sweep and clean all the kitchen surfaces and all floor surfaces daily.
14. Put food waste and other wastes in the container and take it out every day.

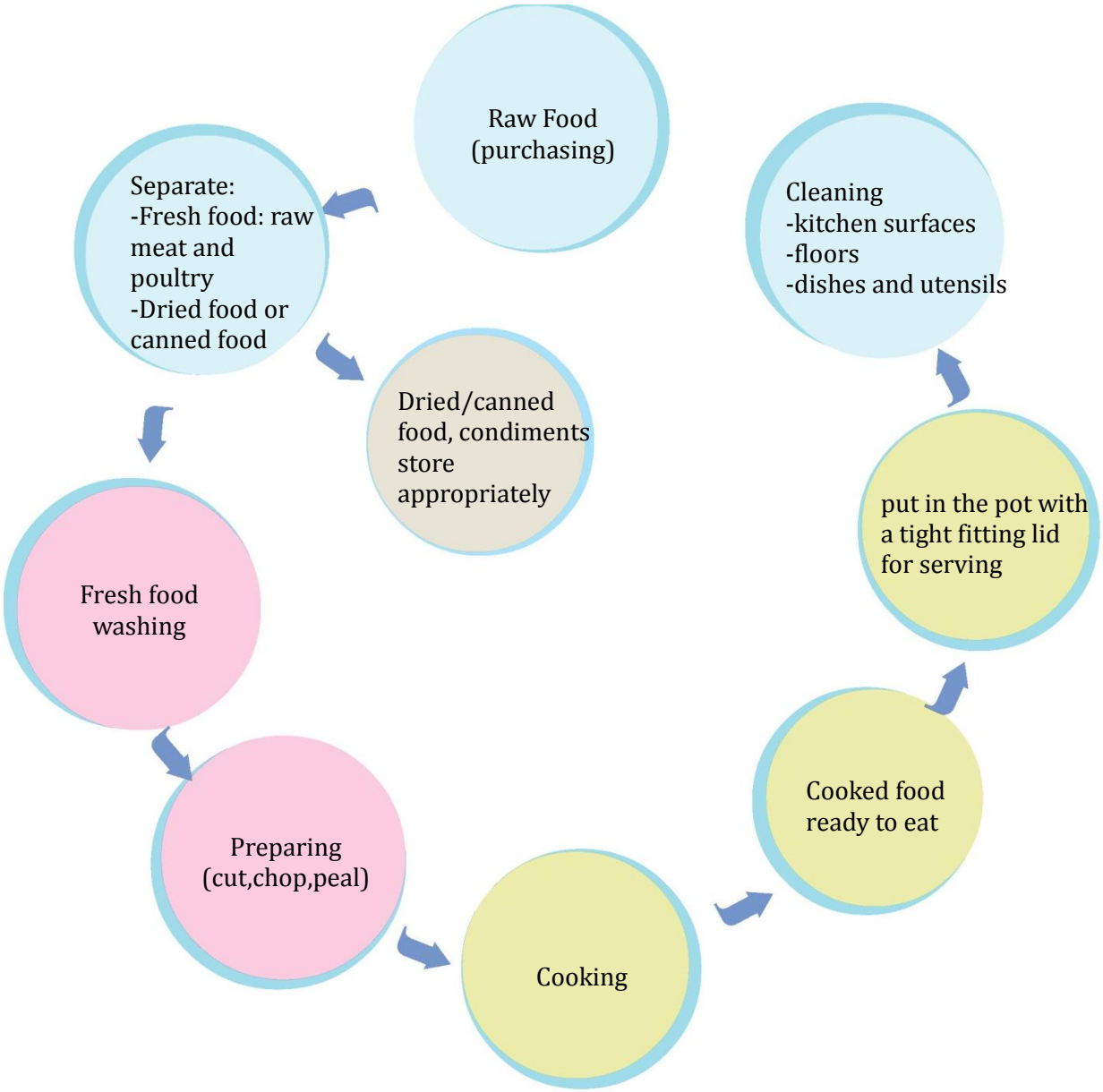
Guideline for School Meal Service 6

Food Sanitation

❖ School Kitchen

Kitchen is a place for preparing safe and clean cooked food from raw food free from pathogens that cause foodborne illnesses. Therefore, the kitchen should be well designed and organized conveniently for food operations.

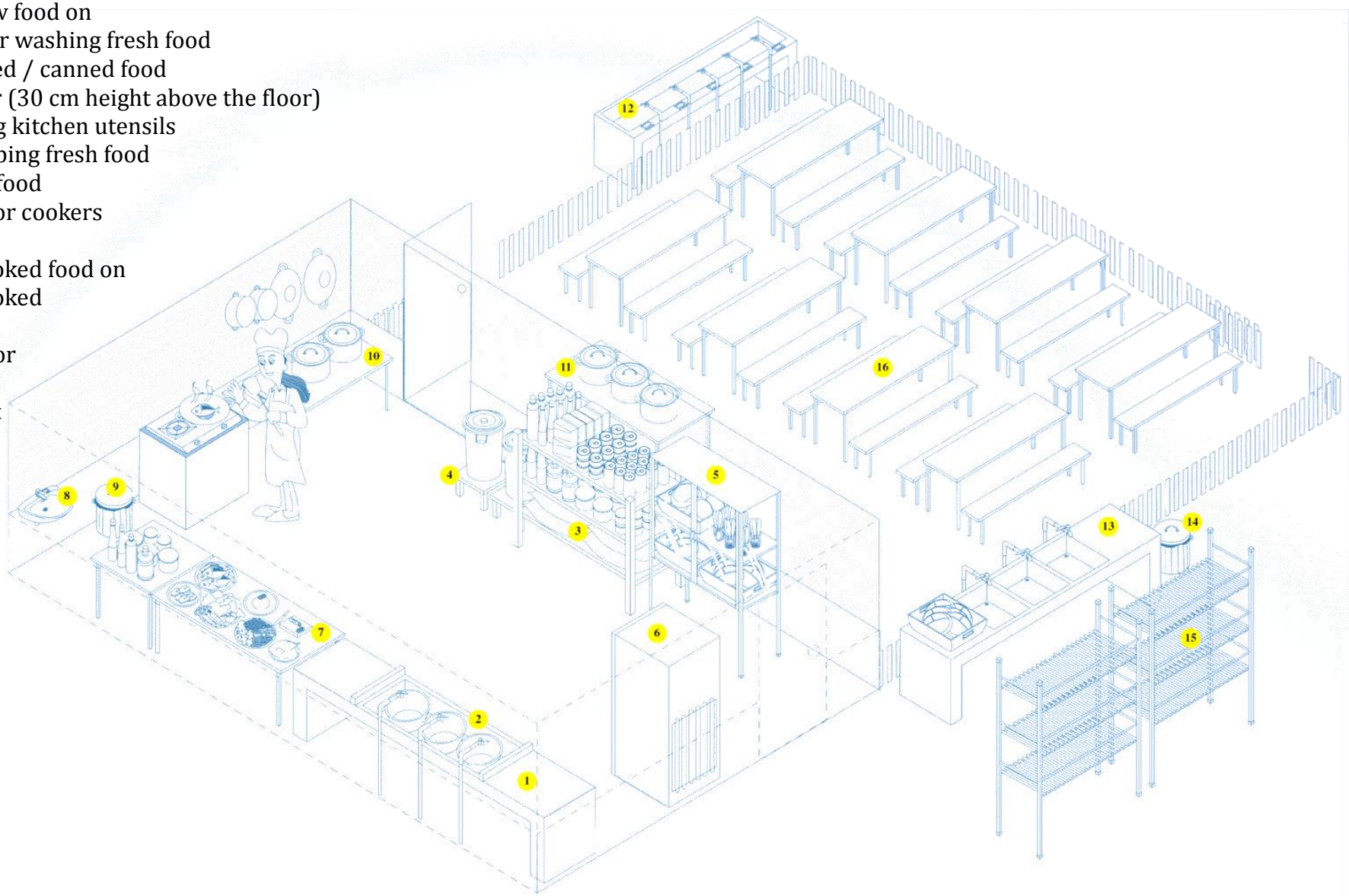
According to food sanitation principles: food operational flow should be one way direction, i.e. raw food come in one way and cooked food come out another way.



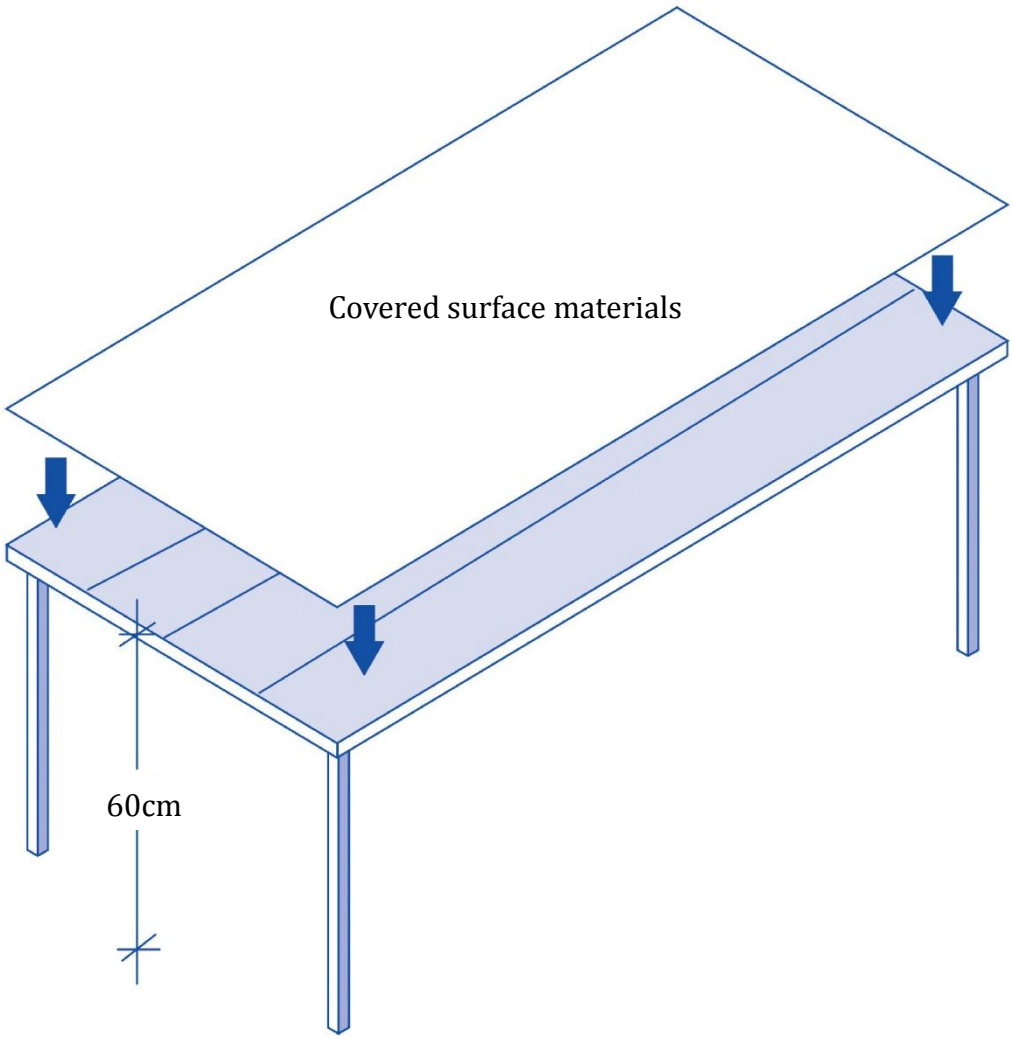
Food Operational Flow

School kitchen and dining room layout

1. Table for putting raw food on
2. Sink with 3 bowls for washing fresh food
3. Shelf for storing dried / canned food
4. Container supporter (30 cm height above the floor)
5. Cupboard for storing kitchen utensils
6. Refrigerator for keeping fresh food
7. Table for preparing food
8. Handwashing sink for cookers
9. Trash bin
10. Table for putting cooked food on
11. Table for putting cooked food on for serving
12. Handwashing sink for students
13. Three-compartment dishwashing sink
14. Trash bin
15. Dryer shelf
16. Tables and chairs for dining



❖ Kitchen Facilities: Table



There are at least 3 tables using in the kitchen with different purposes as follows:

1. Table for raw food
2. Table for preparing food
3. Table for cooked food: cooked food kept in container with a fitting lid should be put on the table to prevent contamination

Each table should be:

1) Strong, in good shape
2) Covered surface materials that easy to clean
3) 60cm above the ground
4) Table for raw food, place raw meat separately from vegetables and fruit

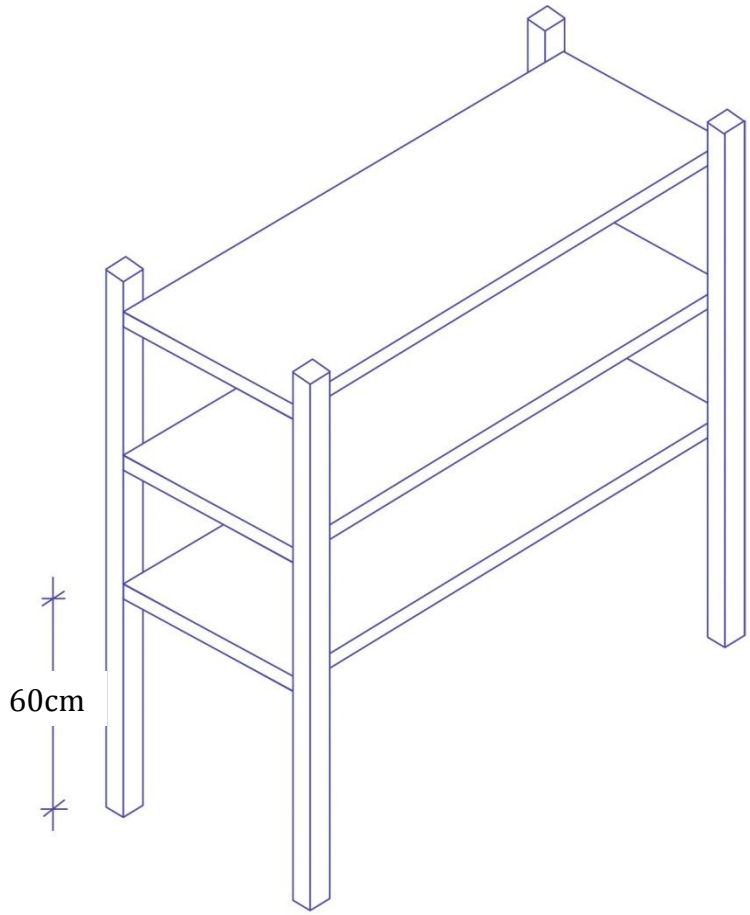
Food preparation should be done on the table

Preparing food on the ground is prone to contamination

Wooden bench with cracks should not be used for preparing food, as these provide a place for bacteria to grow

Cooked foods ready to serve should be put on the table 60 cm above the ground
However, the table on the right which is less than 60 cm can be easily contaminated
Keep dogs off the table and away from dining area

❖ Kitchen Facilities: Shelf and Cupboard

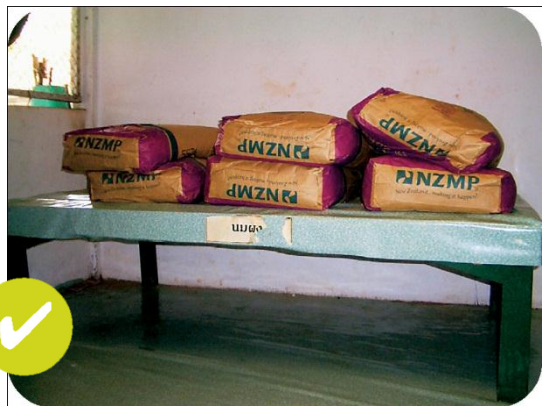


All items including food condiment, cooking utensils should be kept separately and orderly. Do not put item onto the floor because they are easily contaminated with dust, insects, rodents and other animals. Storing these items on shelf or cupboard or closed containers is the best protection.

Shelf for dried food (Rice, vegetable oil, fish sauce, dried noodle, canned foods)

- The lowest of the shelf should be 60 cm above the floor so that it is easy to clean and can prevent animals from living under it.
- Place away from sunlight, allow air to flow by placing it apart from the wall.
- Put items in groups and always label.
- Place cooked food on the top shelf and raw food on the lowest shelf.
- Place light materials on the top shelf and heavy materials on the lowest shelf.
- Put recent food items in back of older items.

Note: A shelf can be 30 cm above the ground only if it is used to put container upon it.



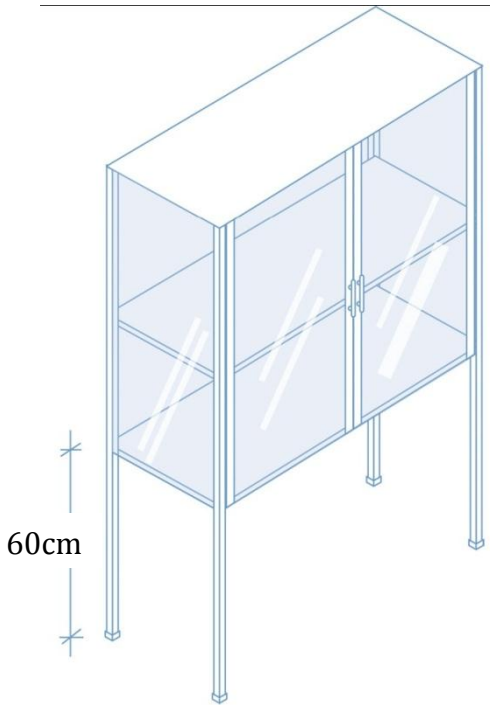
Milk powder bags should be placed on the bench 30 cm height above the ground.

The lowest of the shelf directly touches the ground, exposing itself to dust, insect and rodents easily and it is also difficult to clean the floor under the shelf.

Food container should be placed on the table 30 cm above the ground.

Heavy materials should be placed on the lowest shelf and kept them separately and orderly in order to prevent from contamination.

Dishes should not be placed on the ground.



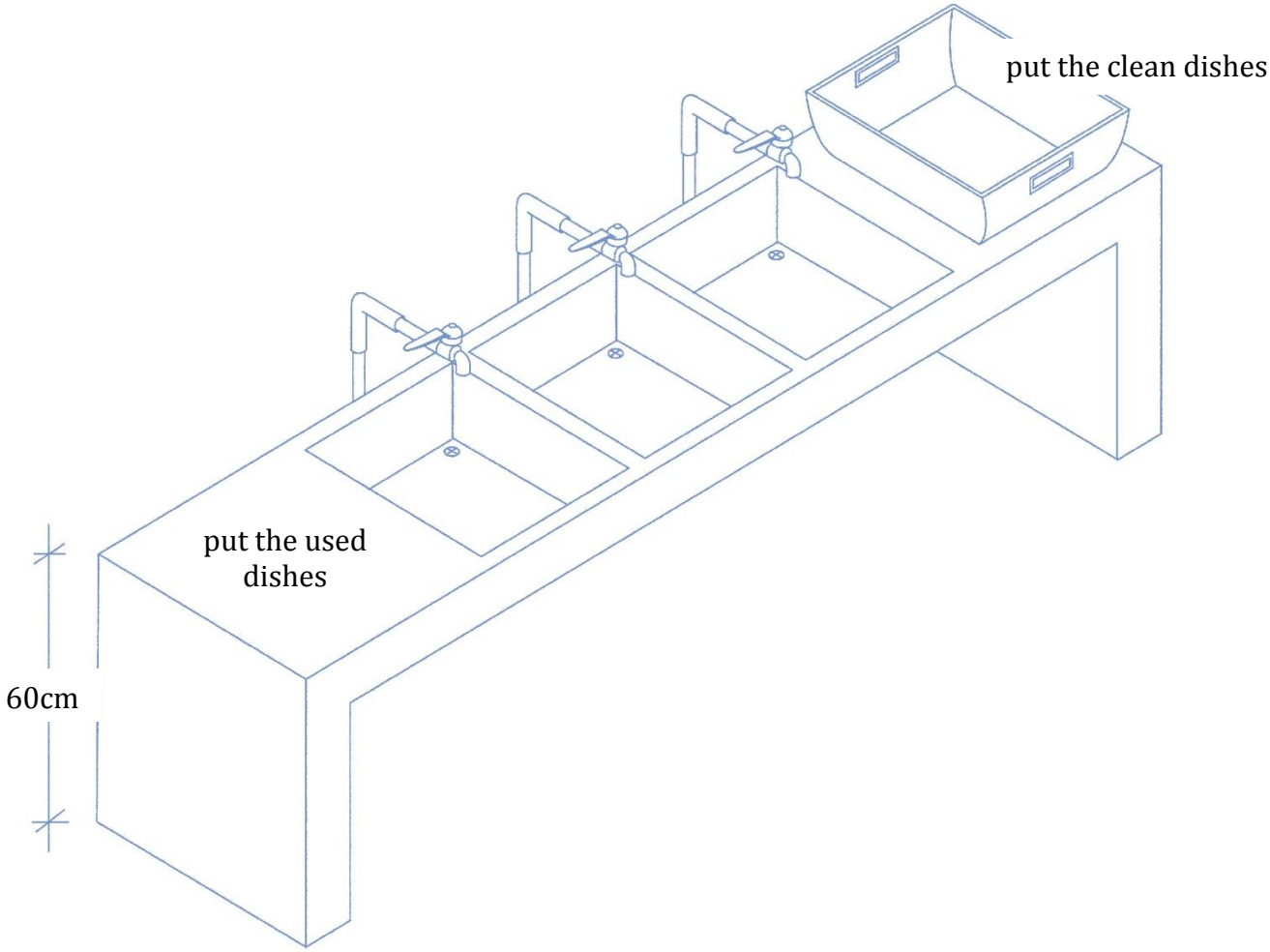
- Place the cupboard with cover in the dry area.
- The lowest shelf is 60 cm above the ground

- Pots and pans should be hung on the wall.
- Clean spoons and forks should be put inside a proper basket
- Clean dishes should be placed upside down in a proper basket.

Cleaned dishes should not be placed directly on a table.

This shelf needs a cover to protect the dishes from contamination.

❖ Kitchen Facilities: Dishwashing sink



Three steps are required for a hygienic dishwashing process. Dishwashing process should be conducted in sequence through a three-compartment sink as follows:

1. Compartment 1: Water with dish soap.
2. Compartment 2: Rinse with clean water
3. Compartment 3: Rinse with clean water

Note: During an epidemic of diseases, rinse should be done with chlorine solution.

A sink should be:

- At least 60 cm above the ground.
- Divided by three compartments.

A three compartment sink
The sink shown in the picture is divided by three compartments. The height of the sink is 60 cm above the ground.
Do not put things on the space under the sink.

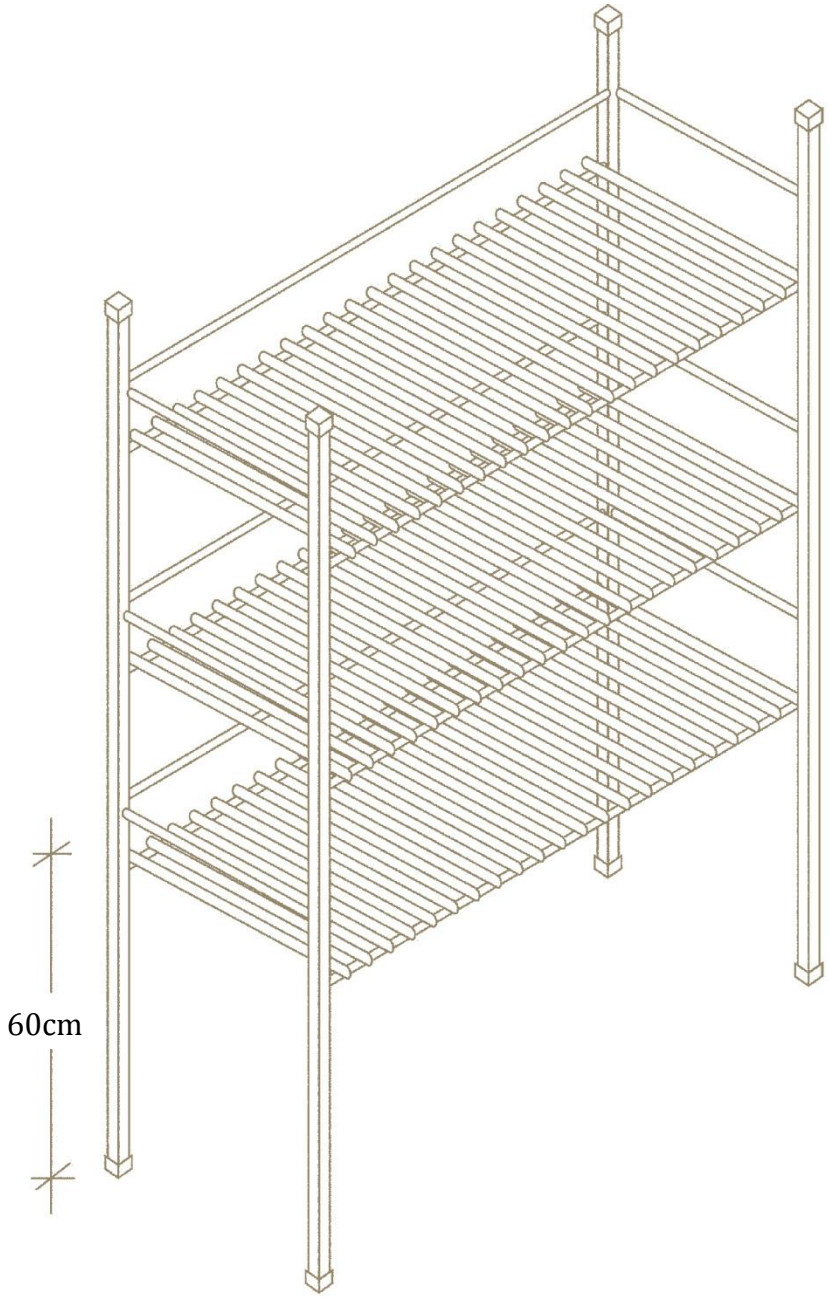
The sinks shown in the picture are less than 60 cm above the ground. The sinks are far from each other, which makes the washing difficult to do in sequence.

The sink shown in the picture has its height 60 cm above the ground.

- Use three bowls instead of three–compartment. sink
- Place the bowls on the stand 60 cm height above the floor.
- Do not place the dishwashing bowls, dishes, utensils on the floor.

The sink and the plates shown in the picture are placed on the ground, creating insanitary environment.

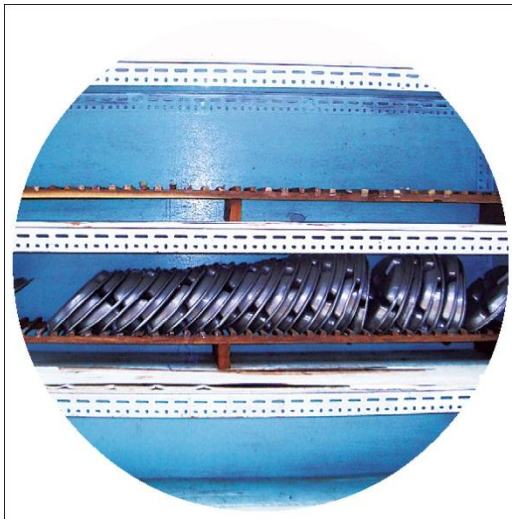
❖ Kitchen Facilities: A Dryer Shelf



A dryer shelf has to be:

- at least 60 cm above the ground, air-flow shelf.
- made of aluminum. A wooden shelf can cause mold. Iron shelf can be rusty
- place outside directly to the sunlight.
- place next to a sink.

A wooden dryer shelf in a humid environment allows mold to grow.



The dryer shelf shown in the picture is too close to the wall leading to poor ventilation.

An iron dryer shelf is easy to get rusty.

The dryer shelf shown in the picture has too many layers and space between layers is too narrow, which can make it difficult to dry.

Guideline for
Nutrition monitoring system

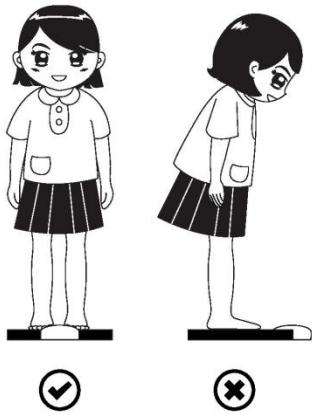
Guideline for Nutrition monitoring system 1

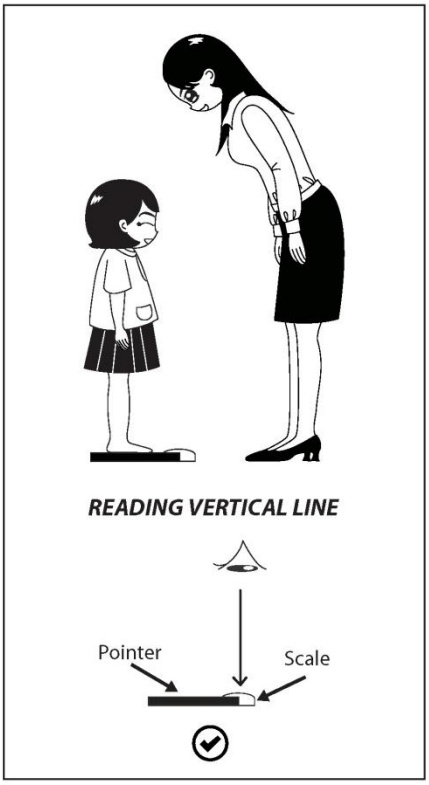
Procedure for Weighing

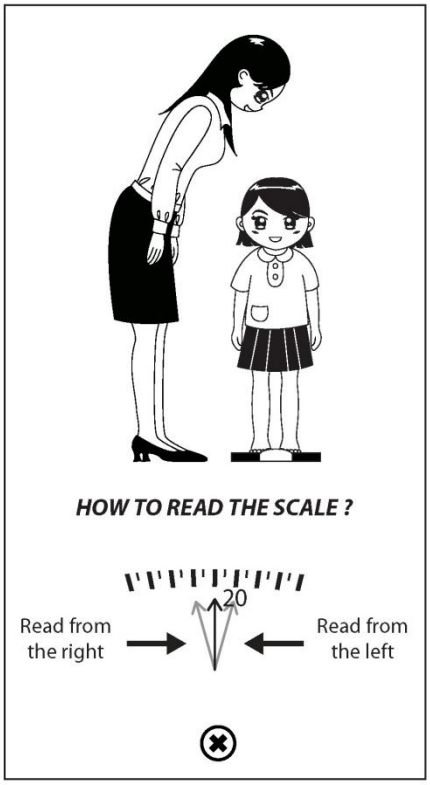
- Set the balance on smooth floor
- Check ZERO before using the balance
- Test the scale with Standard Weight
- Ask the child to take off thick clothing and heavy things from his/her pocket (or on the body)
- Tell the child to stand at the center of the balance, do not touch anything & look straight until finish the recording
- Read (the scale) & record carefully

Standing position on the balance

Stand at the center of the balance, look straight



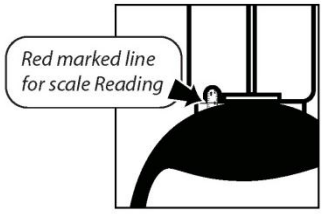


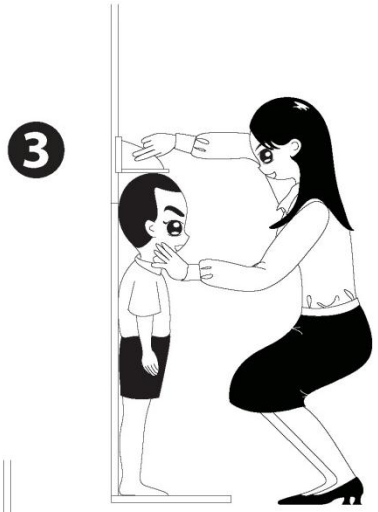


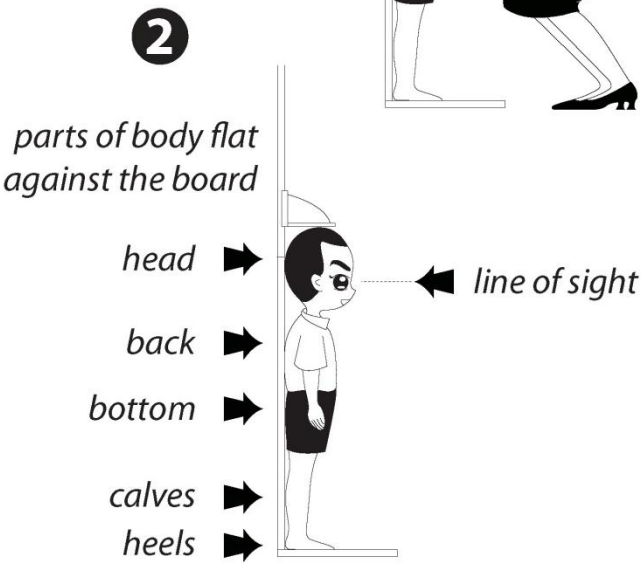
Guideline for Nutrition monitoring system 2

Procedure for Measuring Height

- Place the measuring board on a hard, flat surface against a wall, pore etc. and a smooth floor
- Make sure the measuring board is in the correct position and stable
- Remove child's shoes and unbraid hair
- Place the child's feet flat & together, keep legs straight & heels, calves & body flat against the board
- Tell the child to look straight (Frankfort Plane)
- Lower the headpiece on top of the child's head
- Immediately read (horizontal line) & record







Guideline for Nutrition monitoring system 3

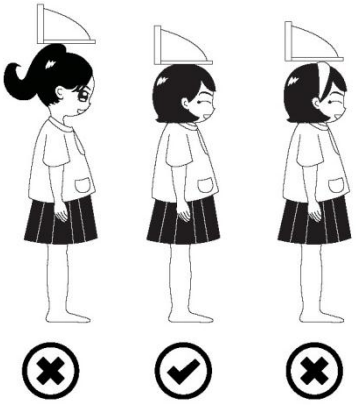
Considerations for Weighing and Measuring Height

For Weighing:

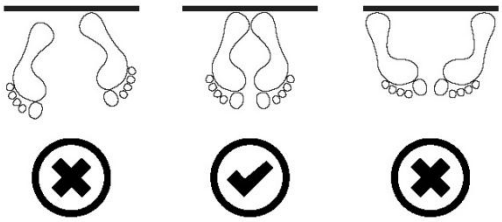
- Make sure that the scale has accurate measurements.
- Take off shoes and all heavy clothing.
- Make sure the students are not carrying other items like toys or books.
- Make sure the students are standing straight and not moving around.

For Measuring Height:

- Take off shoes, hats and hairclips. Make sure hairstyles are not too high or in the way.

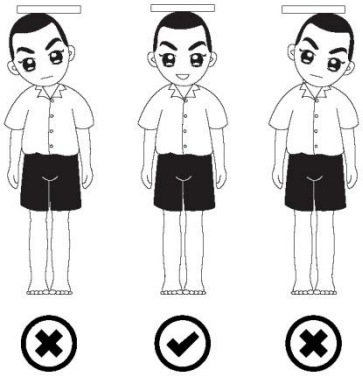


- Make sure the student is standing straight and flat.



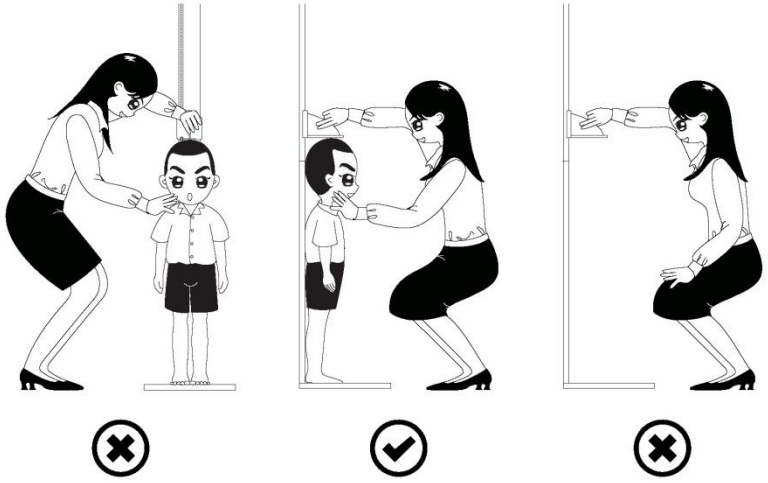
- Make sure the students are standing straight and not leaning, squatting or standing on their toes.

- Keep head and neck straight.



- Keep the measuring device flat against the measuring stick or wall.

- Read the student's height from straight ahead. Do not read from another angle. Always read with the student standing against the measuring stick or wall.



- Make sure to record the student's weight and height accurately. Record the weights and heights up to one decimal point (For example, 1.3 meters). Use the recommended numbers when marking the heights.

Number Writing

Guideline for
Personal Hygiene Practices

Guideline for Personal Hygiene Practices 1

Hand washing techniques

Seven steps in hand washing: Wet both hands and put soap onto them. Then follow the steps below:

1. Rub palms together.

2. Rub right palm over back of left hand and left palm over back of right hand.

3. Interlace fingers and continue rubbing.

4. Backs of fingers to opposing palms.

5. Rub thumb in a rotating manner.

6. Rub fingertips of one hand on the other palm.

7. Rub wrist in a rotating manner.

Then rinse and dry hands thoroughly. Your hands will be clean.

Guideline for Personal Hygiene Practices 2

Ten Thailand National Health Recommendations

Being healthy is basic human rights. Everyone should take responsibility for his/ her own health. Therefore, the 'Ten Thailand National Health Recommendations' was developed in 1992 in order to promote healthy behavior among Thai people. The ten recommendations covered the areas of 1) personal hygiene, 2) food and nutrition, 3) physical activity, 4) mental health, 5) safety and 6) environmental health. The 'Ten Thailand National Health Recommendations' are as follows:

1. Clean up your body and your belongings every day.
2. Clean up your teeth and oral cavity every day.
3. Wash your hands before meal and after defecate.
4. Eat the best quality of food.
5. Quit smoking, drink, drug and sexual overuse.
6. Build up warm family.
7. Prevent any accident with safety first.
8. Keep exercises and annual health check up.
9. Keep smiling and no negative thinking.
10. Have public consciousness and join hands to create a better society.

Guideline for School Health Services

Guideline for School Health Services 1

Basic Health Examinations for School-aged Children

Basic Health Examinations for School-aged children is aimed to evaluate whether their health status is good or there is any abnormal condition as well as any presence of disease or illness.

I. Cleanliness of body and clothing

Teachers should check the cleanliness of the students and their clothing everyday or once or twice a week to continuously monitor and give recommendation to upgrade the cleanliness that leads to students' good sanitary.

Examination procedure:-

After the students have paid homage to the national flag in the morning, they will be asked to form lines in front of the classroom. Classroom teachers will examine the students and their clothing and record the result one by one. (For the older students, the teachers may assign the students to take turn to do this under the attention and supervision of the teachers.)

- Head and hair (clean: no lice, no nit, no dandruff or sticky hair)
- Ear and ear lobe (clean: no skin excretions on ear wax)
- Tooth (clean: no food scrap, plague, brush teeth every day.)
- Face and body (clean: no skin excretion)
- Finger and nail (clean: short nail, no nail dirt and skin excrement)
- Foot and toe (clean: short toe nail, no nail dirt or skin excrement)
- Clothing (clean: wear new clothing every day, no nasty smell)
- Shoes and socks (clean: wear shoes, clean socks, no nasty smell)

II. Disease and abnormality

For all students, disease and abnormality examination should be performed every semester to give continuous care and recommendations for prevention and treatment. If any abnormality has been found, the students must be sent to see the physicians immediately.

Procedure:-

Classroom teachers and health teacher should set the date for health examinations by coordinating with public health personnel or hospital to help examining and recording the result of each student. (Teachers may appoint some students to take turn to bring the students for the check up under the teachers' supervision)

- Hair and head: lice, lesion on scalp
- Eyes: conjunctivitis, stye, uveitis
- Ears: ringing ears, oozy ear, ear inflammation with pus
- Nose: runny nose, stuffed nose
- Mouth and tongue: angular stomatitis, sores in the mouth or tongue
- Teeth: spots on the teeth, dental caries, tooth decay, toothache
- Gum: inflammation of gum, gum bleeding with pus, presence of dental tartar plaque
- Throat: cough, sore throat, tonsillitis, swollen tonsil
- Thyroid: enlarged thyroid
- Skin: vitiligo, eczema, blister, rash, scabies

III. Teacher in charge

1. Classroom teacher: Responsibilities

1. Prepare table and record form for student check-up
2. Inspect cleanliness of students and their clothing
3. Make an individual record
4. Summarize and report
5. Give recommendations to students and their parents if problems have been found
6. Set schedule for students to participate in the check-up and bring students for disease or abnormality check-up as it is scheduled.
7. Coordinate with health teacher for schedule for check-up

2. Health care teacher: Responsibilities

1. Coordinate with classroom teacher to set schedule for disease and abnormality check-up
2. Coordinate with health care providers or hospital personnel to support the check-up
3. Prepare the check-up record
4. Summarize and report to the classroom teacher
5. Provide recommendations to students and their parents if problems have been found
6. Coordinate with health care providers or hospital to bring students who have acute disease to see the physicians for treatments

Record Form
Cleanliness of Body and Clothing

Date:……

Name	Hair/ Head	Ears/ Ear Lobe	Tooth	Face/ Body	Finger/ Nail	Foot/ Toe	Clothing	Shoes/ Socks

Record Form
Disease and Abnormality Examination

Semester:……..

Name	Hair/ Head	Eyes	Ears	Nose	Mouth/ Tongue	Teeth	Gum	Throat

Guideline for School Sanitation

Guideline for School Sanitation 1

Water Supply

A school should provide enough water for

- drinking
- pour-flush toilets and anal cleansing
- hand washing
- gardening

Water provided should be safe. Unsafe water supply is risky and causes illness or even death. Examples of water and sanitation-related diseases are diarrhea, intestinal worm infestation, malaria etc.

Safe water is water which does not contain pathogens harmful to the human body (such as coliform bacteria etc.) and chemicals (such as arsenic, iron, metal etc.).

Sufficient water is available at all times:

1. Basic quantities of water required
   - Day schools → 5 liters per person per day for all schoolchildren and staff
   - Boarding schools → 20 liters per person per day for all residential schoolchildren and staff
   - Nonresidential schoolchildren and staff → 5 liters per person per day

2. Additional quantities of water required.
   - Flushing toilets → 10-20 liters per person per day for conventional flushing toilets
   - Pour-flush toilets → 1.5-3.0 liters per person per day
   - Anal washing → 1-2 liters per person per day

Guideline for School Sanitation 2

Drinking-water

A school should provide drinking-water for every child and every staff at all times, approximately 2 liters per person per day.

Water supply for drinking should be of drinking-water quality (WHO Guidelines for drinking-water quality 2004). In addition, water can be treated for improving water quality by

- Boiling
- Filtering
- Chlorinating
- Settling

In many schools in rural areas where there is no piped water system, drinking water may be provided via a lid-covered container with a faucet preventing from contamination.

If there is no faucet, simply provide a ladle.

- NEVER dip your hands into a water container to scoop up water in a cup, or
- NEVER use your own cup to scoop up water in a water container,
- ALWAYS use a ladle

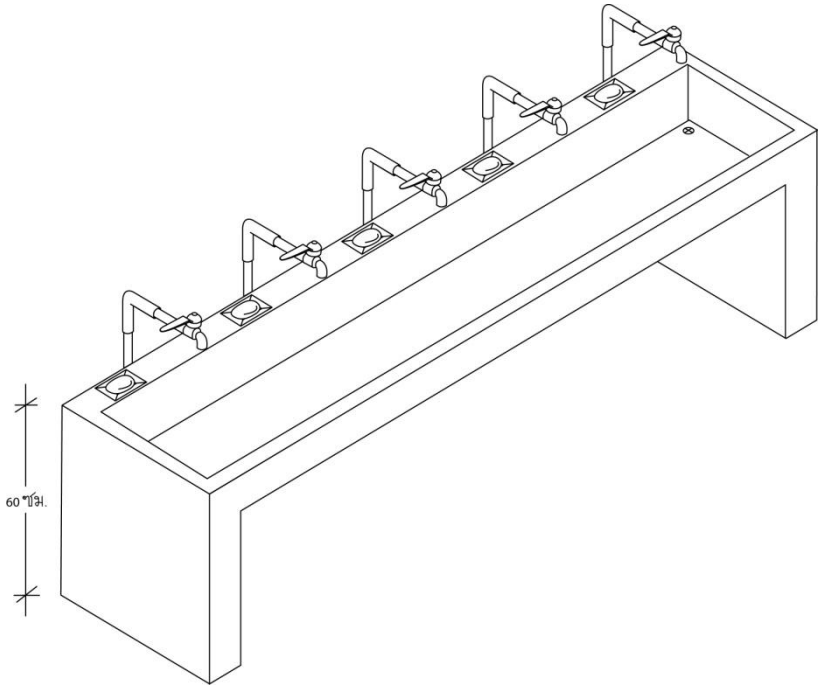
Procedure for cleaning and maintaining drinking-water supply system:

1. The pipes should be in good condition, no rust or leak.
2. The water container should be clean. Wash with detergent every month.
3. The faucets should be in good condition. Wash with a towel or scrub every day.
4. Everyone has his/her own cup. Clean a cup every day.

Note: iodized clean drinking water should be available for children at school. This is to prevent iodine deficiency disorders, as well.

Guideline for School Sanitation 3

Hand-washing facilities



A school should provide hand-washing facilities in toilets, in a kitchen and at other points which are easily to access.

Hand-washing facilities included basins, water and soap or other cleaning agents should be in good condition. Water, soap must be available at all times.

Procedure for cleaning and maintaining hand-washing facilities:

1. The hand-washing basins should be clean, safe and easy to use. Wash with a towel or scrub every day.
2. The faucets should be in good condition. Wash with a towel or scrub every day.
3. Clean soap dispenser every week.
4. The area around the hand-washing facilities should be cleaned and dry.

Guideline for School Sanitation 4

Toilets 1: Usefulness and Importance of Toilets in School

It is important to have clean toilets in school because:

1. Clean toilets and good sanitary habits help reduce the causes of intestinal diseases.

2. Clean toilets reduce the areas for bacteria and insects carrying bacteria to breed.

3. Clean toilets help create a better appearance for the school which creates a better school atmosphere.

4. Clean toilets create comfort and a healthy culture for the school.

Guideline for School Sanitation 5

Toilets 2: Standards for School Toilets

Standards	*Importance/Reasons for Standards*
Cleanliness	
1. Floor, walls, ceilings, toilets and urinals should be kept in good condition.	It is easy for bacteria to spread in these areas.
2. There should be sufficient water. The toilet's water tank and other toilet buckets should be kept in good condition. It is important to prevent mosquitoes and areas for mosquitoes to breed.	These items help keep the toilet clean and free from disease.
3. The sink should be clean, safe and easy to use. The faucet should be in good condition.	It is important to wash hands after using the toilet to avoid spreading bacteria.
4. The sink should always have hand-washing soap.	Soap kills bacteria and is important for avoiding sickness.
5. The toilet should have good air circulation to avoid bad smells.	Humid air and bad smells are unwanted in the toilet.
6. The area around the toilet should be clean. The drainage pipes or ditches should be in good condition. The water tank should not be damaged or leaking.	A clean toilet helps make a clean school.
Sufficiency	
7. There should be enough toilets for both men and women with appropriate signs for each.	Sufficient facilities make using the toilet more comfortable and convenient for men and women.
Safety and Security	
8. There should be trash bins with lids in the toilet and around the toilet. The trash bins should be emptied regularly and kept in good condition.	Trash bins help protect against disease and keep the toilet clean.
9. There should be sufficient lights in the toilet.	Sufficient lights will make it easier for people to see what they are doing and avoid accidents while in the toilet.
10. The door and handle should be clean and in good condition with a working lock.	Safety and security are important while using the toilet.

Guideline for School Sanitation 6

Toilets 3: Procedure for Cleaning and Maintaining Toilets

It is very important to keep the toilet and surrounding area clean. Toilets must be cleaned often and always with clean water. To keep the toilet and surrounding areas clean, it is important to:

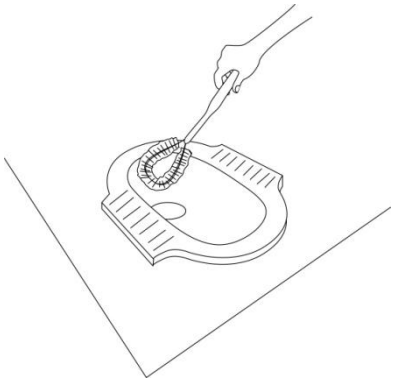
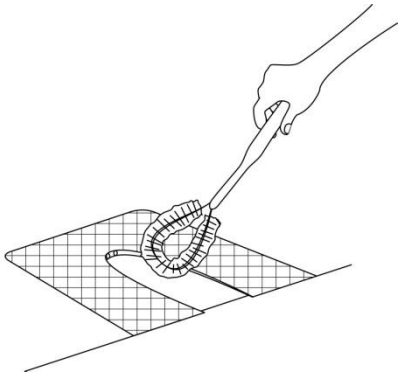
1. Clean the floor of the toilet at least every week because the floor gets very dirty from the people who use the toilet. Therefore, the toilet should be cleaned with soap and disinfectants which can be bought in many stores and markets.

2. Make sure to clean areas in the toilet that are more likely to be dirty. These are the areas that many people use and touch when they go to the toilet. For example, the door handle, faucet handle and toilet bowl are more likely to be dirty. These areas need to be cleaned at least once a week.

3. The area around the sink including the faucet, handles and counters should be cleaned. These should be cleaned regularly with a towel.

4. The door should be kept clean including the handle and the lock.

Table of Places to Clean and Frequency

Items	Activities	Frequency
1. Garbage	Clean inside and outside	Every week
2. Floor	• Sweep and mop • Scrub with a brush or floor washing machine	• Everyday • Every week
3. Toilets, Urinals, Cement Water Basins	• Scrub with a brush inside and outside 	• Everyday 
4. Walls, Door, Handles, Locks	• Wash with a towel and cleaning chemicals	• Every week
5. Mirror	Clean with a towel	Everyday
6. Sink, Faucet	Wash with a towel or scrub	Everyday
7. Soap Dispenser	Keep clean and refill soap	Every week
8. Fan	Clean the blades of the fan and all other parts.	Every week

Guideline for School Sanitation 7

Toilet 4: Hygienic Behavior for Using Toilets

1. Always sit on the toilet: It is safe and clean to properly sit on the toilet. All human waste should go into the toilet. This way everything in the toilet will stay clean and will be able to be used for a long time. This is proper practice for using the toilet.

2. Do not put anything besides toilet paper in the toilet: Other things put in the toilet will cause the toilet to fill up too quickly and overflow.

3. Flush the toilet or pour water in the toilet after use: To keep the toilet clean, all human waste must be flushed after every use. This will help avoid the spread of bacteria. The toilet is a likely place for disease to spread from because insects fly from the toilet to food.

4. Always wash hands after using the toilet: Washing hands is a very good way to stop the spread of disease. It is especially important to wash hands after defecating.