

## Health across the Curriculum

### Description of the tool:

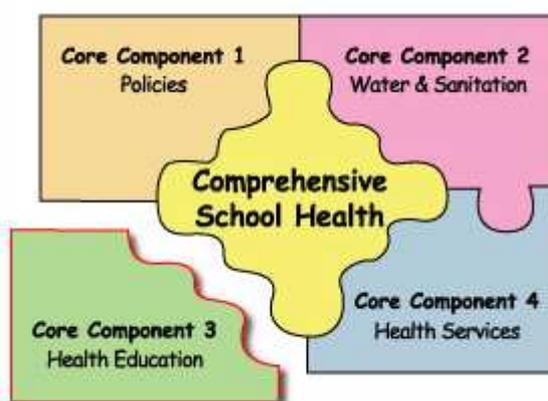
Integrating health learning in subjects across the curriculum should not be a substitute for a comprehensive, sequential course of health education, but doing so can significantly support the learning that takes place in a health class. This tool offers pointers to the different ways in which health priorities can be reinforced in different subjects, for instance, in science, mathematics, social studies and language, either in all classes or as a term or half year theme.

The information in this tool was adapted by UNESCO from the following publication:

Child-to-Child Trust and UNICEF 1997. *Health Promotion in Our Schools*. London: Child-to-Child Trust.

### Description of the document:

A resource book prepared in consultation with UNICEF and WHO and designed for all those who encourage schools to introduce health education and health promotion programmes, especially those that stress the involvement of children. Contains chapters on choosing content, methodology, health beyond the classroom, health services in school, planning, training and evaluation together with a checklist for a health promoting school.



This information supports Core Component #3 of the FRESH framework for effective school health: **skills-based health education**. It will have a greater impact if it is reinforced by activities in the other three components of the framework.

## Health across the Curriculum<sup>1</sup>

Integrating health learning in subjects across the curriculum should not be a substitute for a comprehensive, sequential course of health education, but doing so can significantly support the learning that takes place in a health class. Once a school has established the health priorities it wishes to emphasize and all teachers are aware of them, it is easier for them to think of ways in which to reinforce these priorities in different subjects. They can do this in different ways:

- Priority topics can be linked into teaching in all classes whenever it is convenient. Messages about personal hygiene, clean water, protecting the environment or keeping little children safe need to be stressed at every level, and so should be introduced into teaching whenever it is useful and helpful.
- A health theme or topic can be selected as a term or year theme. If Health is not a separate class, it can be introduced in another relevant subject (for example, Science, Home Science or Life-skills) and then reinforced through other subjects in the curriculum.

### HEALTH AND SCIENCE

Many science lessons (such as learning about air and water or learning about how our bodies work) are related to our health. In addition, the ways of learning and thinking which science helps to develop are important for us if we are to learn to become healthier.

Let us look at some of these ways.

Students of science **OBSERVE** and **RECORD**.

They see what really is, not what they want to see.

*E.g. We observed the plants growing in two plots. We recorded their growth.*

They **MEASURE** and **MAKE COMPARISONS**.

*E.g. The plants have different amounts of space between them. They are of different heights. Those in one plot are taller and healthier than in the other. Those which are planted closer together are shorter and weaker than those which are planted further apart.*

They **ASK QUESTIONS, HYPOTHESIZE** and **PREDICT**.

*E.g. Why are these differences happening? I think it may have something to do with the distance between the plants. I predict that if we plant them further apart they will grow better.*

They **MAKE EXPERIMENTS** and **INTERPRET THE RESULTS**.

*E.g. I tried planting seeds in the two plots at the same distance apart. When the plants came up I observed that they were much closer in size but one plot still had better growth than another. I decided that the distance apart certainly had something to do with it, but that there was something else that affected their growth.*

Then they **ASK MORE QUESTIONS:**

E.g. *So I asked myself 'What is this something else?' and decided to...*

Whenever health content is approached in science lessons we need to try to *think like scientists* – asking questions and seeking answers rather than just believing everything we have been told.

The following activities link Health and Science based on five health themes. All can be taught using methods that teach children to 'think like scientists'.

## TWENTY ACTIVITIES LINKING SCIENCE WITH HEALTH

### Hygiene

1. Investigating hand washing. How to we get our hands really clean? (L)
2. Investigating different ways of cleaning teeth. How can we make materials for cleaning teeth? (L)
3. How can we improve water quality? (M/U)
4. How can we make pure drinking water by evaporation and condensation? (U)
5. How can we measure air pollution? (U)
6. Experiments to show how sweet drinks rot teeth. (M)
7. Investigating the best ways of washing and drying clothes. (M/U)

### Safety at home and on the roads

8. Looking at ways of putting out fires (burning needs air). (M/U)
9. Investigating what makes loads on lorries or bikes tip over (centres of gravity). (M/U)
10. Looking at how braking works, and what conditions make braking on cars and bikes more difficult (friction). (U)

### Foods, vitamins and other important elements

11. Finding out what values different foods have and how different kinds of food can help us grow well and stay healthy. (L/M/U)
12. Looking at micronutrients such as iron and iodine and how these need to be present in our foods to help us stay healthy. (U)

### Diseases and living things that spread them

13. Finding out how dangerous insects breed and how to prevent them breeding. (L/M)
14. Investigating how microbes make food go bad. (U)
15. Why boiling water kills bacteria. (U)
16. How germs can be passed through hands and water.
17. How epidemics such as Cholera can be spread. (M/U)

### Looking at our bodies

18. Experiments about breathing.
  - How children breathe at different rates at different ages. (M)
  - Recognizing danger signs in breathing (when little children have infections such as pneumonia). (M)
19. Investigation (model) of how smoking makes our lungs dirty. (U)
20. Models to show how babies are born and why trained help is sometimes very important. (U)

(L): suitable for lower primary classes; (M): suitable for middle primary classes, (U): suitable for upper primary or lower secondary classes

### **Example of a SCIENCE activity for middle primary level.**

*(Note how this activity develops the skills of 'thinking like a scientist'.)*

#### **How to keep cool using evaporation (an experiment on the best way to cool bottled water)**

1. Setting up the experiment. You will need:

- six identical bottles full of water
- four rags
- string
- fibre or elastic bands to hold them in place
- a bowl of water
- a thermometer it is useful but not necessary

2. Carrying out the Experiment

Stand three bottles of water in a half-filled the bowl of water in a sunny place outside the classroom. Wet one rag thoroughly and wrap it around one of the bottles letting the rag dip into the water. Wrap the second bottle with a dry rag. Stand it in the water without letting the rag get wet. Stand the third bottle in the water without a rag round it.

Put the other three bottles on the ground alongside the bowl. Cover one with a damp cloth and one with a dry cloth. Leave the other without any covering. Leave all six bottles in the sun for half an hour or longer.

While they are waiting the children can:

- Draw the experiment.
- Predict what they think will happen and why.
- Put some water on their own arms and legs and tell each other how it felt when they were drying in the sun.

3. Recording and discussing what happened

Record the temperature of water in the six bottles and list them in order. Which was the coolest, which was second coolest, which was the warmest.

Discuss what caused the bottles covered by the damp cloth to be coolest.

4. Applying the knowledge to health

*Discuss:*

- How can we use the knowledge that evaporation causes cooling:
  - to lower the temperature of someone with fever? (By sponging with a damp cloth.)
  - to cool food or drink (By putting a wet cloth around the sealed food or bottle and standing it in a container in water.)
- How else can we use the cooling power of evaporation? (E.g. by sprinkling water on the ground in a court-yard or outside a house or classroom.)

*Apply to our lives:*

- Use cool (but not cold) cloths to help people with fever feel more comfortable.
- Make a simple food cooler which works by evaporation.

## HEALTH AND MATHEMATICS

In mathematics, schools try to do two main things. First, children have to learn how to use the processes of mathematics such as working with numbers, measurement and shapes, as well as skills of estimating and recording results (often in tables and graphs). Second, they have to use and apply maths to solve the problems of every day life. Using health content is effective in both. Here are a few examples:

### **Maths Skills**

1. Numbers:
  - Counting numbers of vehicles on a main road; calculating the average number that pass in an hour (road safety campaign).
2. Weighing and measuring:
  - Weighing babies (lessons on child growth).
  - Measuring number of breaths per minute taken by a sick baby (lesson on pneumonia).
3. Estimating and recording:
  - Estimating distance to water sources and time spent collecting water (compare with measurements later).
  - Recording number of cases of malaria among children's families; making a graph of these and relating it to the amount of rainfall.
4. Maths applied to healthy living:
  - Measuring out rehydration solution for diarrhoea.
  - Weighing measuring and recording babies' weight regularly.
  - Budgeting for healthy meals through calculating 'best buy' produce in the market.

### **TWENTY ACTIVITIES LINKING HEALTH AND MATHEMATICS**

#### **Body and Growth Monitoring**

1. measuring height of younger children (M)
2. measuring around parts of the body (M)
3. measuring arm circumference (M)
4. making an age/height graph (L/M)
5. interpreting age-weight charts (U)

#### **Water and sanitation**

6. capacity and weight of water containers (M)
7. measuring distances from water supply (U)
8. statistics on how we use water (M)
9. costing a water supply (U)

#### **Nutrition and Breastfeeding**

10. understanding ratios in mixing food (M)
11. understanding a chart showing comparison of deaths between bottle-fed and breast-fed babies (U)

## TWENTY ACTIVITIES LINKING HEALTH AND MATHEMATICS (cont.)

### Infectious diseases and immunisation

12. class survey and survey of younger children (M/U)
13. comparing our data with national data; reading and interpreting statistics on immunisation (U)
14. an illness survey (L/M)
15. the mathematics of the spread of AIDS (U)

### Population (including timing births)

16. counting family members; comparing ages (L)
17. demonstrating population doubling and land use by using dots and folding paper (M)
18. understanding national data on population (U)
19. making predictions based on doubling times (U)
20. using percentage growth rate (U)

(L): suitable for lower primary classes; (M): suitable for middle primary classes, (U): suitable for upper primary or lower secondary classes

### Example of a MATHEMATICS activity for upper primary level.

*(Notice how this activity develops skills of accurate measurement and links this skill with real life problems.)*

### Measuring upper arm circumference

The distance around the upper arm is used to check if younger children are suffering from undernourishment. From the first to the fifth year of life the distance around the upper arm, the arm circumference, does not change greatly. If in this time the upper arm circumference is less than 13 cm., then the child is thin. If it is less than 12 cm., the child is undernourished.

- Let the children first estimate their own upper arm circumference and those of their classmates. They can use their grip to help them make a good guess. Then they should measure using a paper strip. The arm being measured should hang loosely at the child's side. When measuring, the strip should be halfway between the elbow and the shoulder of the left arm. The children should measure the distance to the nearest centimetre.
- The children can measure the upper arm circumference of the youngest children in the school or those in a pre-school that is close by. Have them keep a record of their results.
- After they have learned to measure in this way they can discuss how health workers use this measurement and whether they, as children, could use it without making other families unhappy if they found that some children were not well nourished.

## HEALTH AND SOCIAL STUDIES

Social studies or environmental studies (in some cases still taught as history, geography and civics) looks at the way that people live together and live in their environment. It is thus a key subject when we look at environmental health. Like science, there may be some topics which are directly health-related. But there will be other ideas and skills where health content may well be the best way of developing children's thinking and understanding.

### Ideas

(Only a few health examples have been given for each of the main ideas included in the Social Studies programmes)

- **Living together / depending on each other**  
E.g. related to the food we eat; child growth and development; community hygiene and prevention of conditions such as worms; immunisation and the prevention of epidemics.
- **Living in and preserving our environment**  
E.g. effects of pollution on community health; soil conservation and food production; water management and its relation with healthy lives.
- **Rights and duties of citizens**  
E.g. rights and duties in regard to health; a citizen's obligation is to pass on effective health knowledge to others by example as well as words; children are citizens too.
- **Responsibility towards those who are 'different'**  
E.g. recognition of the relation between poverty and ill health; attitudes towards disability; attitudes towards society members (especially children) in difficult circumstances such as victims of wars and disasters, AIDS orphans, etc.

### Skills

Many learning and life skills are particularly relevant to social and environmental studies; many of these are directly relevant to health. They include:

- **Making and using maps**
  - making a plan to lay out a vegetable garden;
  - making a 'health map' of our neighbourhood;
  - locating district health services on a local map.
- **Finding out information through community surveys**
  - surveying practice of local people on treating people with fever;
  - surveying attitudes of local people to patients with AIDS.
- **Listening to people and understanding their views and lifestyles.**
  - sharing information and customs regarding food and food practices;
  - role playing so as to understand what it feels like to be disabled;
  - health action activities (home safety campaign) undertaken together with children from other walks of life (for example, children who have not been to school).

Here are some activities possible in social studies based on five health topic headings. All of them are designed to make us think about people and places as well as learning about health. (As above, (L) signifies the activity is suitable for lower primary classes, (M) for middle primary classes and (U) for upper primary or lower secondary classes.)

## TWENTY ACTIVITIES LINKING SOCIAL STUDIES AND HEALTH

### Food

1. Eating surveys; eating diaries: What do I eat and when? What do our little brothers and sisters eat and when? Do we eat wisely? Do little children eat often enough? How do our customs affect our eating habits? (L/M)
2. Food other people eat in our communities: Getting to know food customs of other members of the community. In what way are they different from ours? How do they maintain a healthy diet (even though they are eating different food from us)? (L/M)
3. Look at reasons why children in our neighbourhood, or other parts of our country, do not have enough food. How can we recognise malnutrition? What can we do about it? (M/U)
4. Surveying and mapping the use of land and the conservation of the soil: What can be done? (M/U)
5. Mapping and discussing distribution of food around the world: Who exports and imports what? Why do some countries destroy food and others have famine? (M/U)

### Safety and safe life-styles

6. Who is responsible for safety in our home and neighbourhood? Discussions to show that everyone has rights and responsibilities to keep others safe. (L/M)
7. Safety past and present: how dangers and causes of accidents have changed. Children talk to grandparents and compare their lives with their own. (M)
8. Children do a road traffic survey and map danger places for road accidents. (M)
9. Children learn about disasters in world safety (e.g. Bhopal, India and Chernobyl, Ukraine) and discuss causes, consequences and who was responsible. (U)
10. Children discuss whom they admire, and how the life-styles of these people affect older children's health and the way they act toward others. (U)

### Hygiene

11. Make a health map (or model) of our neighbourhood. (M)
12. Discuss pollution in the neighbourhood, focusing on things we cannot see, e.g.
  - The water looks very clean but... (polluted by sewage);
  - The street looks tidy but... (mosquito larvae not killed);
  - The crops are growing well but... (poisonous chemicals used to kill insects).(M/U)
13. Map and discuss how some countries can pollute others. Involves looking at winds and ocean currents and making conclusions. (U)

### Disease

14. Our responsibilities towards preventing disease. How illness of one person affects the whole family. (L/M)
15. How epidemics spread and what we can do to stop them. (U)

### Child Growth and Development

16. Growing up: What I did; what I needed; who helped me; how I helped others at different ages. (L/M)
17. Children growing up, then and now. How families have changed but still need the same things (love, play, security). (L/M/U)
18. Children in especially difficult circumstances such as street children, refugees, victims of war. What can other children do? (M/U)
19. Education of girls. How this affects the health of young children. (U)
20. The Declaration of Children's' Rights. Who made it; what it contains; how it affects us. (U)

### **Example of a SOCIAL STUDIES activity for lower secondary level**

*(Notice how the activity invites children to think about the consequence of their actions while at the same time getting them to use their atlases and remember the position of different countries.)*

#### **How people cause food shortages**

This activity helps children to understand how countries are dependent on each other and how one policy or action can have very wide effects. At the same time, children can draw and act “chains of events” to show how our actions can cause food shortages in their own countries and others. Here are three actions.

1. Jayant Thapa owned a big sawmill in the Himalayas in Nepal;
2. He cut down all the trees on the mountain side;
3. The rains came;
4. The water poured off the mountains;
5. There were floods in the plains in Bangladesh;
6. Nasrool Haq’s three fields were flooded. He is hungry.

Now do the same thing for the next three:

1. “Sheik Ali in Sudan had enormous herds of goats.”
2. “The Tasty Tea Company in Sri Lanka (owned by a foreign company) decided to double the size of its plantation in an area which was very heavily populated.”
3. “The Splendid Fish Company (also foreign-owned) uses nets for sea fishing which are very large and very fine and very tough. They are carried by very large fishing vessels that catch fish off the shores of Indonesia.”

Discuss how actions within our own country may benefit some people but cause food shortages for others.

### **Example of a SOCIAL STUDIES activity for middle or upper primary level, based on the theme of safety.**

This activity looks at the way that health and safety problems are usually the result of a number of causes (just like events in history). It also helps children think carefully about the consequences of actions, an important life skill.

#### **The 'if only' game**

Here are four common accidents:

1. Baby drinks paraffin from a bottle.
2. My young bother is riding my bicycle and is knocked off it by a car near the market.
3. My little sister grabs a pot in the kitchen and burns herself.
4. I climbed a tree near the school. The branch was rotten. I fell off and broke my arm.

Think of as many "if only" sentences as possible for each one. Here is the first example:

- " If only we had put the bottle out of baby's reach. "
- "If only we had screwed the top on tightly."
- " If only we did not use that kind of bottle to keep paraffin in."
- " If only someone had been watching the baby."
- " If only..." (Can you think of more?)

Now do the same for the next three examples. Finally think of more possible accidents, including ones that have happened in your own families and play the "if only " game with these. Then discuss how it would be possible for you and your families to think more about preventing accidents.

## HEALTH AND LANGUAGE:

Most of us would think of language as being the most important of school subjects. We need to use language to communicate about things that matter. Health matters to us all. When we teach language we need to develop three different kinds of skills:

- Using the language correctly, through grammar and correct usage.
- Listening, speaking, reading and writing effectively.
- Using language as a tool for thinking and doing: finding, interpreting and working with information and ideas.

### Grammar and Correct Usage

Children need to learn to speak and write language correctly and this involves practising grammar and sentence patterns, using past and future tenses, and learning to make simple and complicated sentences. Very often health examples can be used in this kind of practice. For example:

Using past tenses: We immunized the baby yesterday  
We have immunized all our children.  
After we had immunized the baby, we felt happy.

Using conditionals: If we immunize the children they will not die of measles.  
If we had immunized that baby he would not have died.

### Skills for effective speaking and listening, reading and writing

At first, **reading** can be done from simple passages, just a few lines illustrating a health picture. For example, the text for a picture of an older and younger child might be:

*I play with my brother. I talk to him.  
He says the words I say. That is how babies learn to talk.*

**Writing** can consist of a few sentences describing a picture or to finish a short paragraph. For example:

*I am very careful when my little sister is crawling about in the kitchen. I \_\_\_\_\_ and \_\_\_\_\_.*

Later, reading and writing skills can be linked to health related stories. Children can either start from stories they themselves can read or from stories that are read to them. From these they can practice many things. Take for instance this simple story:

*Father and mother are out of the house; a ten-year-old boy is at home and sees that the baby is breathing very fast and with difficulty and is very hot. The boy has been taught that these are the danger signs of pneumonia, which can kill young children very fast. He tries to tell the adults in his compound, but they will not take action. They tell him to wait until his*

*parents come back. He refuses to listen and calls the health worker himself. The baby is saved.*<sup>i</sup>

Based on this one story children can:

- Answer questions to make sure they have understood it. They can even be given the questions before they start reading the story to help point them to the parts that are most important.
- Discuss, e.g. "Was the boy right to disobey his elders?"
- Expand it or rewrite it from other points of view (e.g. from the point of view of the health worker.)
- Write other stories like it.

Alternatively, children can start from a health message and make up their own stories. For example, the teacher could present the following message:

*Children who are angry and who behave badly often do so because they are very unhappy. We must try to find out why they act in the way they do. Then we can begin to help.*

Children could then write stories to describe this situation and what happens to resolve it. Usually, this needs to be prepared for either by a **discussion**, or with a set of **pictures**. When pictures are used, they can either be shown to the children in the right order or mixed up so that children can first discuss the action in each picture and put them in the correct sequence before writing about them. This is an exercise that children can do alone but very valuable discussion can take place if they work in groups of two or three.

Another way to get children writing is to start a story and let them finish it. In every case the story is a good means of developing children's language because it describes situations that relate to something real in their own lives.

### **Skills in finding and interpreting information**

Finally, and especially in upper classes, health topics are a very good means of developing **study skills** in language. Here are some essential skills every child needs to know in order to learn independently and effectively as an adult. Next to each skill we have listed just one health-based example.

1. **Finding information from books:** Children use a First Aid Manual to find out how to treat burns.
2. **Condensing information** without losing the main points: Children condense a health education pamphlet of Malaria to a quarter of its original size.
3. **Taking effective notes:** Children take notes from a talk on water hygiene given by the health worker.
4. **Reporting action taken:** Children make a report of action they took to identify and help disabled children in the community.
5. **Group discussion and reporting:** Children plan and conduct an effective discussion on how to help AIDS victims in the community.
6. **Making clear plans for action:** Children plan a road safety campaign.

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<sup>i</sup> From the Child-to-Child reader "*Not Just a Cold*".

## HEALTH ACROSS THE CURRICULUM... LINKING SUBJECTS TOGETHER AROUND A HEALTH THEME

When health ideas are presented and reinforced many subjects combine together. This usually happens in two ways. Either a school or a class agrees to emphasise a health theme over a term or a year, using all opportunities to get the ideas across, or a health topic is taught over a shorter period (perhaps over two weeks). It is usually presented in one subject, often science, and reinforced through teaching in other subjects, using whatever syllabus topics are being covered at the time. In each case, it is useful to find out what children have learned at the end of the period.

Here is an example of a larger theme (on clean, safe water) developed for one term for students in class 4 (ten-year-olds).

### Cleaner, safer water

#### In **Science:**

- Five lessons from the syllabus looking at the difference between safe and unsafe water, what diseases are spread through dirty water and how water can be made.

#### In **Language:**

- Lessons from the syllabus on how to describe things (adjectives) use examples about water. E.g. "This clear water is not clean; This boiled water is safe for babies to drink", etc.
- When children practise comprehension, one of the passages they are given is a passage about clean and dirty water.
- When children are asked to write stories, one exercise is based on stories about dirty water.
- Children write their own story and make it into a play (in groups).

#### In **Mathematics** (where the syllabus covers weighing and measuring):

- Children learn about the measuring capacity of water.
- They relate this to making oral rehydration drinks.
- They learn how to use common items such as soft drink tins to measure capacity.
- They measure distances to water sources and make a simple bar graph.

#### In **Social Studies** (where the syllabus covers 'my district'):

- Children map sources of water.
- They look at water supply and conservation.

#### In **Art and Craft:**

- Children design posters to protect water sources and make ladles for water pots.

#### In **Music:**

- Older children make a 'clean water' song and dance and perform it for the younger ones.

Here is example of a shorter topic – ‘Cholera’ – planned to cover two weeks for students in class 7, the top class in the school, following a report of cholera in the district.

(Note how the activities are more advanced and challenging than those in the last example.)

### **Special topic: Preventing Cholera**

#### **First**

Two special health lessons are given jointly by the class teacher and the health worker. The lessons look at the causes, symptoms and treatment of cholera and emphasize that although patients suspected of cholera need to be taken immediately to the hospital, oral rehydration must be give straight away. The importance of food and water hygiene and handwashing with soap to avoid contamination are stressed continually.

#### **Then**

##### **In Language:**

Reading, listening and comprehension work based on a story of how children can help in a cholera epidemic.<sup>1</sup> Children write their own stories starting with the sentence: "They told us in school that there had been cases of cholera in our town but the people living round our house did not believe it..."

##### **In Science:**

Children do an experiment to show how an infected latrine can pollute a well. They also examine how washing fruit and vegetables with infected water can spread diseases such as cholera.

##### **In Maths:**

Children do a survey of how water at home is made safe , what water is used for washing dishes and vegetables and how utensils are dried. They then show the result on graphs and work out ratios e.g. How many households dried dishes in the sun compared with those which did not.

##### **In Social Studies:**

Children do map a map of water sources and a flow chart of water collection and use. They discuss at which points the water could become contaminated.

##### **In Art and Music:**

Children make posters and songs to perform on the 'Keep Away Cholera' march that the school is organizing for the community.

<sup>i</sup> For example, from the Child-to-Child story book "The Cholera Crisis".

<sup>1</sup> Adapted from: Child-to-Child Trust and UNICEF 1997. *Health Promotion in Our Schools*. London: