QUANTIFIED CITIES MOVEMENT

FOR DISASTER RISK REDUCTION

CHILDREN SUPPORTING URBAN RESILIENCE PLANNING

CDSA®

unicef

ACKNOWLEDGEMENTS

Aneeta Gokhale Benninger
Executive Director, CDSA

Siddhartha Benninger
Project Planner, CDSA

Aditya Sathe
Project Planner, CDSA

Sameer Bhosale
Project Planner, CDSA

Pallavi Kukdolkar
Project planner, CDSA

Chinmayi Naik
Project planner, CDSA

Sayali Kale
Project planner, CDSA

Vivan Kamath
Intern, CDSA

Manasi Ranade
Intern, CDSA

Kavina Patel
Intern, CDSA

Kahini Shah
Intern, CDSA

Devshri Shah
Intern, CDSA

Sejal Desarda
Intern, CDSA

Teamwork and organization

Second Edition, 2017
Published in India by
Center for Development Studies and Activities
Survey Nos. 58 & 49/4,
Paud Road, Bavdhan Khurd,
Pune, Maharashtra 411021

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Quantified Cities Movement- Disaster Risk Reduction (QCM-DRR)

QCM-DRR ,funded by UNICEF, aims to improve participatory urban planning, particularly at the local level and create resilient cities. QCM - DRR will be building evidence and enabling transparency and accountability through facilitating adolescents and youth to participate in the process of decision making at the local level. This process will target achieving the goal of risk-informed sustainable urban development by promoting resilience activities in plans and increasing local level understanding of disaster risk with a focus on participation by children and adolescents. QCM - DRR is a tool for adolescents and youth in data collection for various risk/hazard indicators for school and neighbourhood level stress and risk identification in order to facilitate best practices in urban policy and planning. This process empowers adolescent and youth to collect data, analyze data, map stresses that are identified through comparison with quality standards and suggest solutions.

These adolescents and youth will be trained on understanding the concepts of disaster risk, collection and analysis of data, and creating Ward level Risk Reports. CDSA will provide training in data collection and urban planning solutions. The Training of 5000 adolescents and youth from various schools will create a cadre of empowered young citizens who are trained in data collection, analysis and the creation of Ward Risk Reports. Apart from making of safer neighborhoods, children will benefit directly by acquiring the special QCM-DRR skills. Additionally (not part of our projected results) they acquire the right attitude involving scientific temper and evidence building, which may enhance their academic excellence. The data collected by them will enhance their sensitivity, knowledge and skills about how to make their city resilient and how the inferences from the data collected by them can be used in the decision making process.

PURPOSE OF THIS MANUAL

This manual is for the use of students for collecting data for various quality of life (QoL) as well as Disaster Risk Reduction indicators at the electoral ward level.

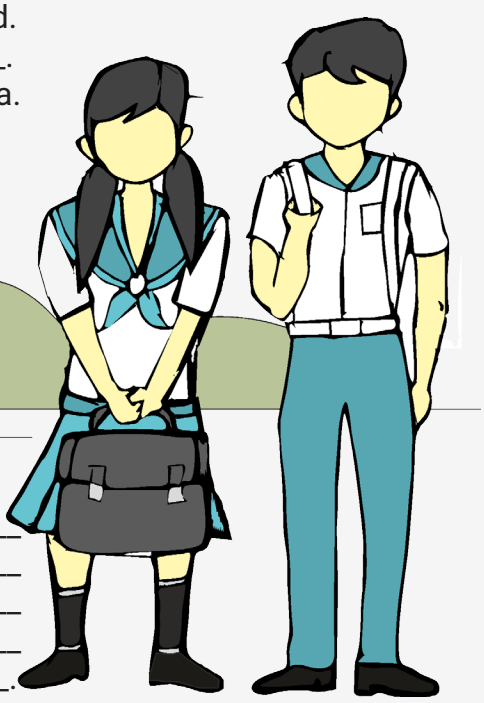
The manual is for training students to become QCM-DRR volunteers. This manual at first stresses on the concept of situational awareness and informs the reader on how to use their sensory perception in order to identify hazards of various types. Through situational awareness the QCM-DRR volunteer is alert and can observe the urban environment more effectively in the sense of identifying local hazards and stresses.

The second part of the manual deals with acquainting the QCM-DRR volunteer with various quality of life indicators, defining each indicator, its relevance and the reason for the same, The volunteers will also be taught about the instrumentation that is required for collecting data for the indicator and step by step methodology for data collection.

My Information

Please fill the information below:

I am _____.
I study in _____school in _____std.
I aspire to become _____.
I stay in _____area.



The things I like about my area are,

_____
_____
_____
_____
_____.

The things I don't like about my area are,

_____
_____
_____
_____
_____

Hi!, Thank you for introducing yourself.

I welcome you to the Quantified Cities Movement for Disaster Risk Reduction (QCM-DRR).

You are now a volunteer in training to become a Guardian of the city as part of the QCM-DRR project. We have been observing numerous problems arising in our city over a period of time due to which our living conditions are deteriorating. Therefore we are on a mission to improve these conditions.

I will be your trainer in this epic journey of becoming a guardian of the city.
Before you can become a guardian you need to acquire certain skills, knowledge and sensitivity. You will become part of a unique group of people, who will observe, document and record the problems and create solutions all over the city. Remember you have been chosen specially for this job.

Let us begin!

Who is a 'Citizen'?

A citizen is a person who belongs to a city or a country. A citizen also has many roles and responsibilities towards his city.

In order to be called a citizen, one must,

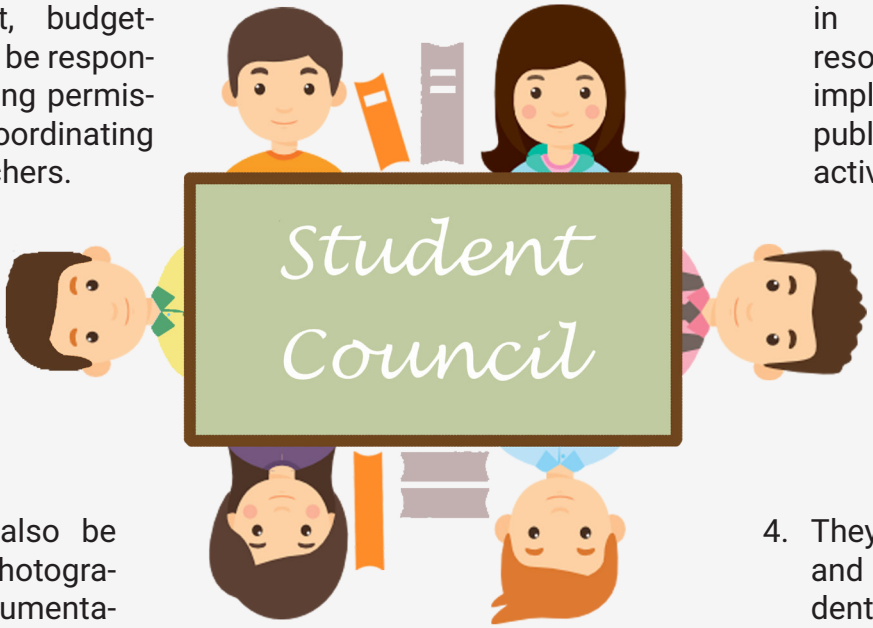
1. Adhere to the laws and regulations of the city.
2. Contribute to the well being of the nation or the city. Every decision we make and every action we take has an impact on how our city evolves and develops.
3. Think about and suggest ways and means to improve our city

QCM-DRR enables you to be a more active and participatory citizen! It also helps you to understand the impacts of your actions on the city

Formation of Student Council

We will now form a student council. This student council will coordinate and manage all the activities in the school. This student council is also the voice of the student body as they will represent and share the ideas,interests and concerns with master trainers as well as teachers. Students will share various responsibilities which include management, administrative work and documentation of the whole process. Each school shall have 1 student council consisting of 10 students.

1. They shall be doing management, budgeting and shall be responsible for taking permissions and coordinating with the teachers.



3. They shall be trained in organizing human resources, imagining implementation and publicizing QCM-DRR activities

2. They Shall also be trained in photography and documentation

4. They shall encourage and support fellow students in all activities.

BASELINE TEST

We will begin our journey with a test to determine your baseline knowledge about the about what we will be teaching you.

Situational Awareness:

Study the picture below for 60 seconds:

Now turn the page and see if you can answer the following questions

1. How many people were involved in this accident?

_____

2. How many trees are there in the picture?

_____

3. What were the colours of cars?

_____

4. What objects were lying on the ground?

_____

5. What injury did the man on the ground seem to be suffering from?

_____

6. What was the license plate number of one of the cars?

_____

How did you do on this little test? Not as well as you would have liked? Perhaps it's time you strengthen your powers of observation and heighten your situational awareness. Let us learn more about situational awareness in the next session.

OBSERVATION & KNOWLEDGE CREATION

What is situational awareness?

Situational awareness involves being aware of what is happening around us to understand how information, events impact of one's own actions .

Thus, situational awareness is especially important in day to day activities such as riding bike, crossing road, playing sports etc. In this situation, information flow can be quite high and poor decisions may lead to serious consequences.

What is perception?

We observe our surroundings with the help of our sensory organs. These observations are interpreted in our brains through the nervous system. We call this observation, identification and interpretation process as "Perception". That is how we understand our environment.

SIGHT (Visual) | **TOUCH** (Somatosensory) | **HEARING** (Auditory) | **TASTE** (Gustatory) | **SMELL** (Olfactory)

Strengthening your situational awareness involves making sure all of your senses are alert and fully tuned into your environment. It seems like your mind and body do this automatically but aren't you seeing, smelling, and hearing everything around you, all the time?
It is important to know that we are using our senses.

Now lets think about what we are perceiving. Describe two things that you can see, hear, smell, touch and taste.

SIGHT	TOUCH	HEARING	TASTE	SMELL

Most of the times we use multiple senses of perception to describe an object.
For example to describe an orange, we mainly use our two senses of perception, i.e sight and smell. To confirm that it is an orange , we can also taste it.
Now, list one object that you can describe by using your multiple senses of perception.

OBJECT	DESCRIPTION

Now describe the following object (e.g. Colour, shape, size , material etc.)

Conditionality

You just described a pencil by identifying a number of conditions. If an object meets with those conditions, then it can be called a pencil.
Conditionality can be defined as the use of conditions to define the identity of an object, an idea or a behavior.

Creating identity

An identifier is a word or phrase that uniquely describes a person or thing. For e.g Pencil is a name which we use for a particular object instead of describing that object everytime.

Indicators

Simply put an indicator indicates a thing or an idea. Essentially an indicator is a condition that needs to be met for something to be called that thing. Some times two different objects have a few common indicators. e.g a Ball and a Lemon both are spherical, but other indicators make them different objects. Therefore, being spherical is their common indicator.

Exercise:

Think of all the conditions you identify as indicators. Check if the two new objects that the trainer presents have indicators that are in common.

List items with common indicators.
Object 1 and Object 2:

Concepts

A concept is generally defined as an abstract idea. In our definition we will treat concepts as well defined ideas. As mentioned above we will identify conditions that need to be fulfilled to ensure the meaning of a concept. For example The concept of cleanliness. There are certain conditions that need to be met for something to be termed as clean.

Exercise:

Let us think of all the conditions required for us to call the room we are sitting in to have the identity of “clean”.

Condition 1: _____

Condition 2: _____

Condition 3: _____

Condition 4: _____

Condition 5: _____

Condition 6: _____

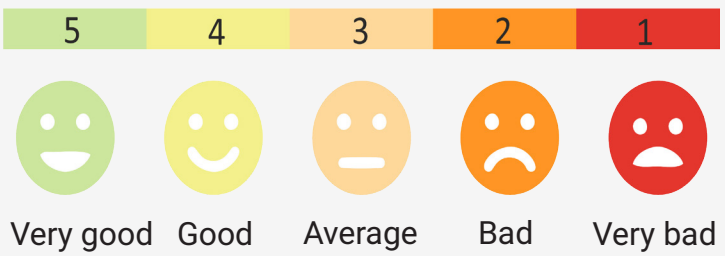
Condition 7: _____

Creating Standards

A standard can be defined as a required or agreed level of quality, quantity or attainment. So if we continue with the idea of cleanliness, we can use the conditions we identified above to agree on a standard of cleanliness.

Exercise:

Using the concept and conditions you focused on above, identify and agree on minimum quality standards for cleanliness. Check the room you are sitting in to see if cleanliness standards are met. You can also give a score for each indicator at the scale of 1 to 5 to describe its level of cleanliness.



INDICATOR	SCORE

What are standards and norms?

A standard is a level of quality that is agreed upon through common sense and scientific study. Standards are decided based on acceptable level of quality for various indicators. In many cases institutions such as the United Nations or our government set standards of quality related to indicators such as availability of drinking water, cleanliness etc. We can compare our data with standards to check whether the services or facilities provided are adequate and of good quality.

A norm is an accepted standard or a way of behaving or doing things that most people agree with e.g. through our student council we have agreed on norms of behavior.

Checking against standards

Checking against standards is the process of observing a space or situation in order to find out whether it meets the standards for some identity. Just like we did in the previous exercise we rated the room for cleanliness. Now we can say that if an indicator has a score above 4, then it can be termed as clean. Therefore this becomes the standard for that indicator. If it is clean it lives up to the standard of being clean and thus possesses the identity of being a “clean room”. Once we identify conditions that are not met we have identified a stress.

Exercise:

Did you find stresses in the previous exercise? Were all the standards for cleanliness met? If not, list the stresses.

Stress 1 _____ Stress 2 _____

Stress 3 _____ Stress 4 _____

Problem statement and identifying solutions

For the above stresses, the question of how to solve these stresses becomes the problem statement. We can suggest a solution to these problems to get rid of the stress.

Exercise:

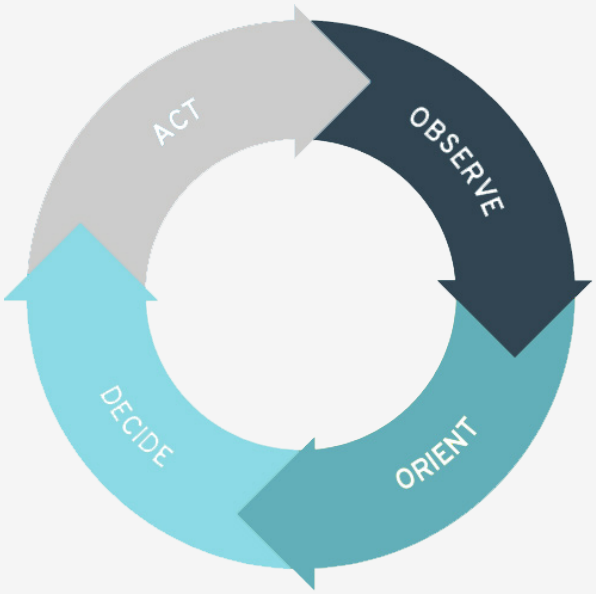
Identify solutions as a reaction to the problems that you stated in the previous exercise. Your solutions will ensure that the stress is removed.

Problem 1 _____ Solution 1 _____

Problem 2 _____ Solution 2 _____

OODA Loop

OODA Loop is designed to help you quickly assess every situation so you are ready for any possible outcome.
The four steps of the OODA Loop are Observe, Orient, Decide and Act.



When it comes to being aware of the current situation, however, the Observe and Orient steps are the most important. Orient tells you what you should look for and how to turn it into usable information.

Then we have to make a decision as to what we are going to do , and then implement the decision. For example,

1. When you enter your classroom, observe and note how many people are inside.
2. Locate exit points and orient yourself.
3. That way you can decide on an emergency escape route which is the safest.
4. Act by escaping in case of an emergency.

We will be implementing the OODA loop in dealing with situations in five contexts, which we have previously discussed.

MAPPING

How to read maps?

In this session, we will learn how to prepare and read maps.

How to orient yourself?

The orientation of a map is the relationship between the directions on the map and the corresponding compass directions in reality. The word “orient” is derived from Latin oriens, meaning East.

How do we orient ourselves where we stand?

1. Sunlight
2. Compass

Landmarks and reference points

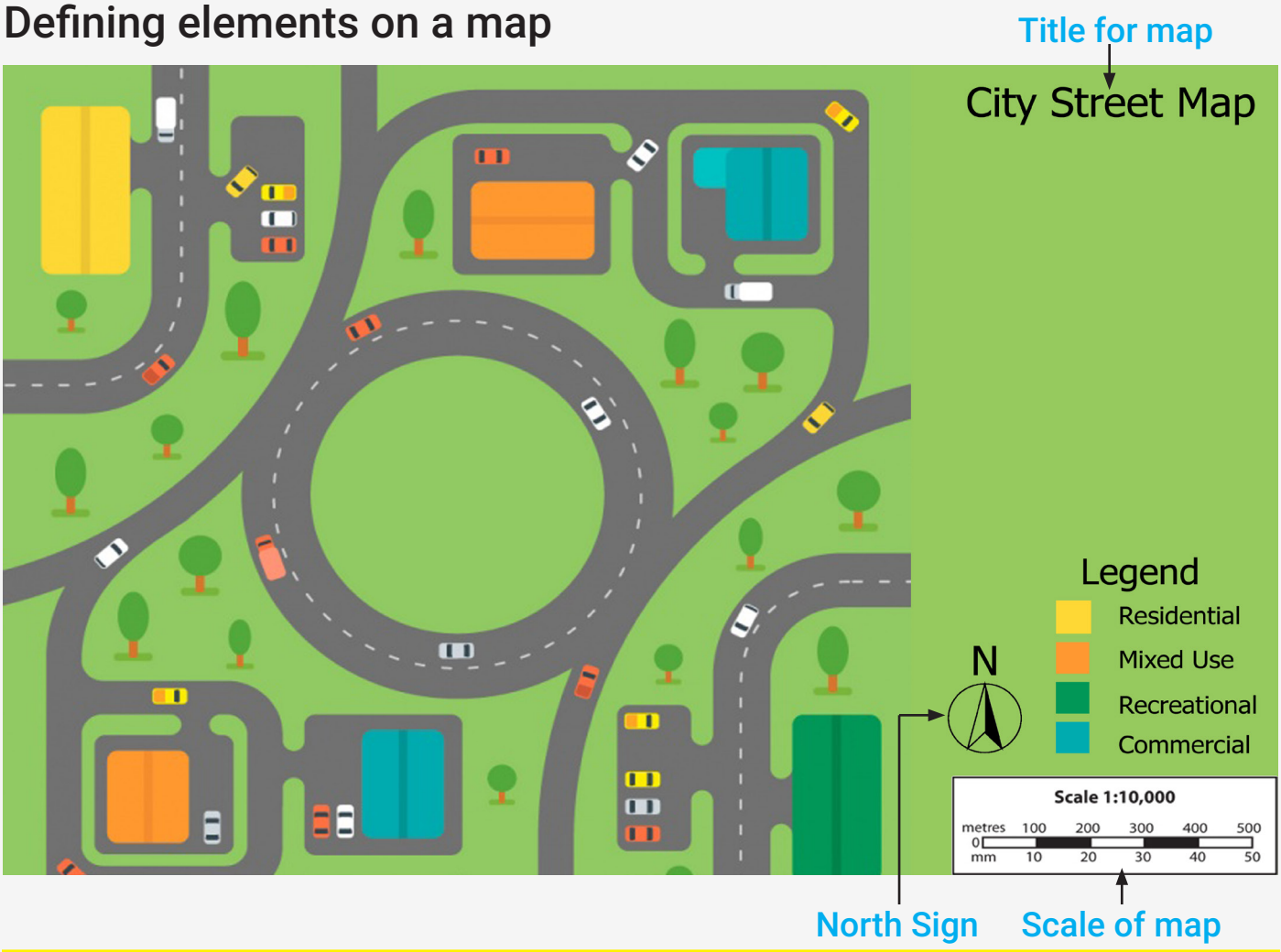
Landmarks are usually referred to as distinctive buildings, or any other prominent feature used as the symbol of a certain area, city, or nation, such as Shaniwarwada in Pune, or marz-o-rin in Camp area.

A landmark is often used as a reference point while locating oneself. Hence a reference point is a point used to define the location of another point.

Distance and scale

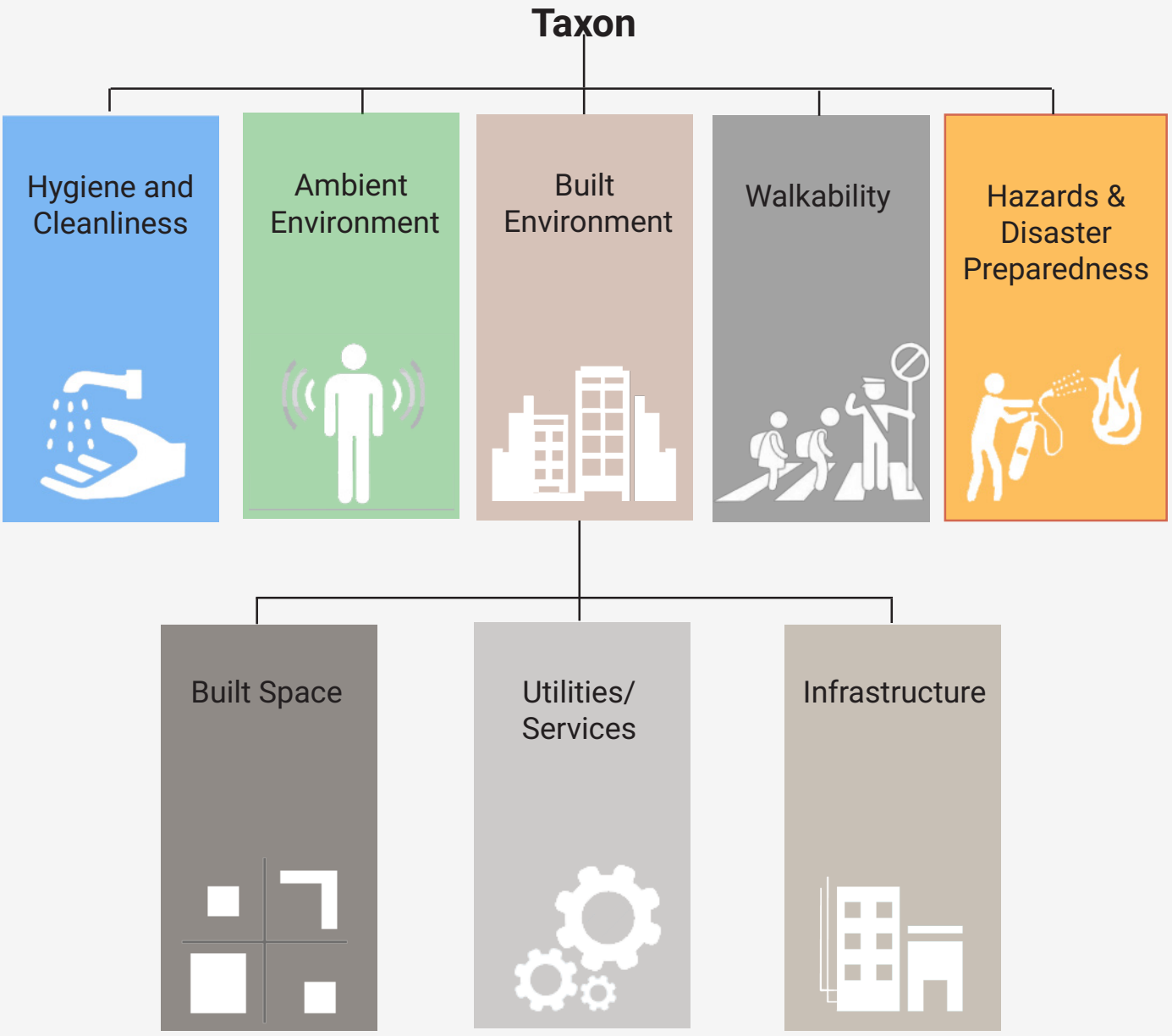
Map scale refers to the relationship (or ratio) between distance on a map and the corresponding distance on the ground. For example, on a 1 : 100000 scale map, 1cm on the map equals 100000 cm or 1 km on the ground.

Defining elements on a map



WHAT WE WILL BE WORKING ON?

You will be observing, collecting data , identifying stresses in your classroom, school and neighbourhood related to following five contexts. This handbook can be used to learn about each of the context to observe if there are any stresses related to them. And finally to remove the stresses we have observed. Once we list our solutions we can create a plan of action to improve our school and our neighborhood. We will also be creating reports to share with our teachers, parents, the community and even our corporator.



CHECKING FOR CLEANLINESS, SAFETY , AMBIENT ENVIRONMENT, STRESSES, HAZARDS , RISKS AND CAPACITIES AT CLASSROOM LEVEL

Hygiene and cleanliness

Awareness about cleanliness and personal hygiene is the need of the hour in our country where contagious diseases are spreading fast. It is essential for everyone to learn about cleanliness, hygiene and sanitation. The good habits which are learnt or followed at a young age get embedded into ones personality and are essential in keeping our surroundings clean and healthy.
We are going to discuss hygiene and cleanliness in this section.

Why Hygiene and cleanliness are important?

According to the World Health Organization (WHO), “Hygiene refers to conditions and practices that help maintain health and prevent the spread of diseases.”
With the kind of health risks that are posed to the human race today, it has become vital to maintain good hygiene. In fact, most of the new-world diseases like bird flu and swine flu have been attributed to lack of hygiene. And if we fight lack of hygiene today, it will have good effects on the generation after us as well.

Hygiene and cleanliness at classroom level

Cleanliness is the state or quality of being clean or being kept clean. Keeping our classroom clean is a great starting point as it is simple and limited only to the classroom space. The teachers along with the students are expected to inspect the cleanliness of the classroom and identify solutions for situations where conditions are not being met. This same process will follow for every session at different spatial levels viz. The classroom, the school and the neighbourhood. The conditions required for cleanliness can change at every spatial level.

We have already listed the conditions of cleanliness in the classroom

Hygiene habits

Hygiene is a habit that needs to be focused on and inculcated at an early age. And it need not be restricted to our bodies alone; it needs to be maintained in our surroundings as well. Let's see how we can go about this.
Personal hygiene habits: These include habits related to our personal health. E.g. Washing hands before and after having food , Washing hands after using toilets, Bathing every day, maintaining dental hygiene etc.

Exercise:

1. Make a poster of all the conditions of hygiene, cleanliness and hazards for your classroom in groups of 5 -8 students. You need to submit it to your trainer in the next class.

2. Make one poster of conditions of good behaviour for your classroom which will be your code of conduct. You can put in on your classroom notice board. Trainers shall collect it at the end of the training,

Waste segregation at classroom level

Solid waste management is the process of collection, transportation, disposal or recycling and monitoring of waste. Different types of wastes need different type of treatment. Wet waste can be converted to compost or recycled at source. Hence segregation of waste needs to be done at source. To segregate the waste, it is broadly divided into dry waste and wet waste. Classrooms are where children spend most time and thus waste management at this level is of utmost importance.

Wet waste
Wet waste includes cooked and uncooked food, waste from fruits and flowers, fallen leaves, dust from sweeping .

Dry waste
Dry waste includes paper, plastic, rubber, metals, leather, cloth rags, wire, glass and things

Exercise:

Are there two dust bins for waste segregation in your classroom? Yes No

Are the you aware of waste segregation? Yes No

Who carries the waste out of the classroom? _____

How many times a week is the waste removed?_____

What do we mean by walkability or safety of movement in the classroom?

Walkability is a measure of how friendly an area is to walking. When we think of walkability in a classroom, we are thinking about safe movement. Identifying spaces through which we move and looking for obstacles in the way as well as the adequacy of the space through which to move. At different spatial levels viz. The classroom, the school and the neighbourhood, the conditions required for walkability will change.

Exercise:

Identify the conditions required to be met to confirm that the classroom is walkable.

Condition 1:_____

Condition 2:_____

Condition 3:_____

Condition 4:_____

What is safety at the classroom level?

We just listed the hinderances in our movement in the classroom. Because of these hinderances, a classroom is not safe for walking or movement. Similarly, there can be other elements in the classroom which might be harmful for the children.
Safety is the condition of being protected from or unlikely to cause danger, risk, or injury. One can feel unsafe because of a situation or even a person. The presence of hazards cause one to feel unsafe and removing or mitigating hazards enables safety. Below we deal with hazards.

What are hazards at the classroom level?

A hazard can be considered as a potential source of danger or risk. In the context of a classroom hazards can be anything from obstacles in the path of children to glass lying on the floor to unhygienic conditions. At different spatial levels viz. The classroom, the school and the neighbourhood, the hazards that we come across will change.

Exercise:

Identify the conditions required to be met to confirm that there are no hazards in the classroom.

Condition 1:_____

Condition 2:_____

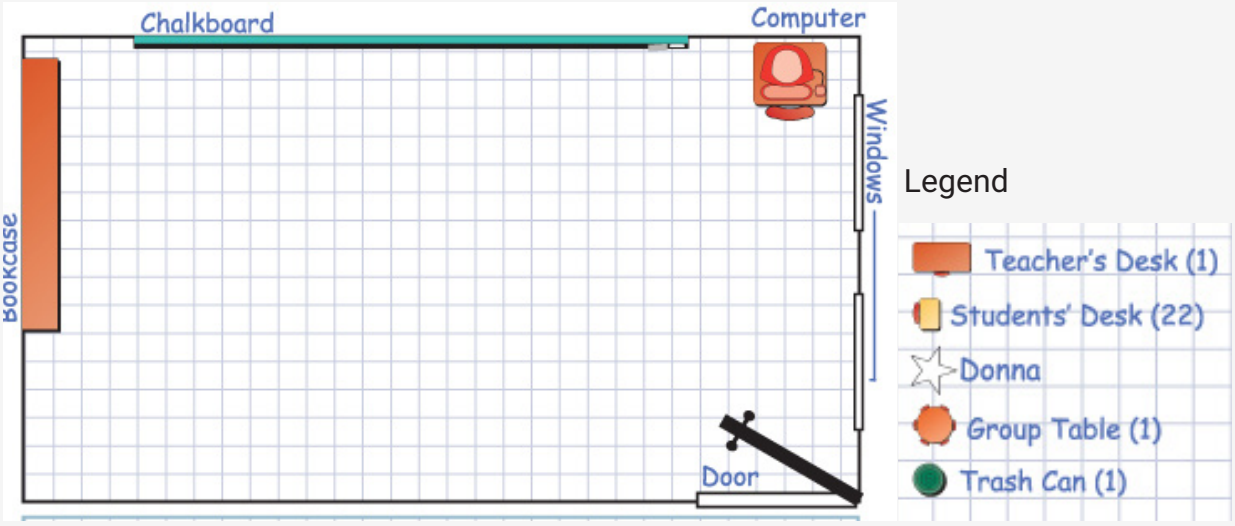
Condition 3:_____

Condition 4:_____

Classroom Mapping

You have already learnt mapping. Now using your skills, draw a plan of your classroom as best as you can on an A3 size paper in groups of 5-8 students.
Include doors, windows and show as many elements as you can.
On this plan, mark your location to show your position.
Show all the hazards on this map.
Use proper symbology and discuss the solutions for each hazard.
Submit your drawing to the trainer at the end of the session.
You can use the following space to draw asimilar drawing for your house.

Example:



What is Ambient Environment?

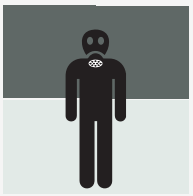
The environment that surrounds us is called our Ambient Environment. Our ambient environment includes various factors like ambient light, sound, smell etc. For collection of data on ambient environment, we will look at two elements- ambient sound and ambient smell that our ambient environment is made up of.


Ambient Light


Temperature


Ambient smell


Ambient Sound


Ambient air

In order to ensure an ideal ambient environment all the elements we study must be within the ideal range that defines a good habitat to live in. In case there are indicators that do not meet the ideal range or standard range, we shall identify them as stresses. These stresses lead to undesirable situations.

What is the ambient smell in the classroom?

The various smells that we perceive all around us can be termed as ambient smells. Some smells are pleasant and some are unpleasant. The quality of smell has a profound impact on our mood, memory, health and emotion. Some smells can also warn us of the presence of toxins etc.
Though foul odour may not cause direct damage to health, toxic stimulants of odour may cause ill health or respiratory symptoms. Secondary effects, in some, may be nausea, insomnia and discomfort. Very strong odour can result in nasal irritation; trigger symptoms in individuals with breathing problems or asthma. On the economic front, loss of property value near odour causing operations/ industries and odorous environment is partly a consequence of offensive smell.
Unpleasant odours can arise from specific industrial processes, adversely affecting workers and even residents. The most common sources of bad odour arise from sewage treatment plants, animal rendering factories, chemicals etc in the neighbourhood. Unpleasant smell can affect one's mood, can lead to frustration, and non-productivity.

Widely used scale for this is the following:

1-Barely perceptible 2-Slight 3-Moderate 4-Strong 5-Very strong

We can also classify the smell quality as good,bad and neutral.

Exercise:

Identify the smell in the classroom.

Intensity (Using above scale) _____

Source of smell:_____

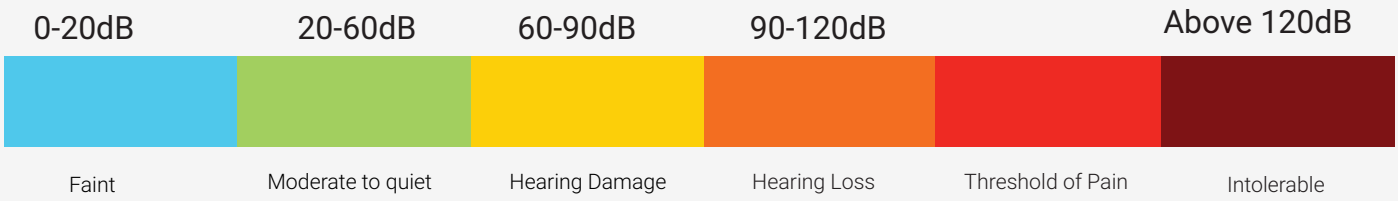
Quality:_____

What is ambient sound at the classroom level?

Ambient sounds are the various sounds we perceive around us. An ambient sound that surrounds the listener, though it does so unintentionally. The main difference between music and ambient sound lies in the individual's choice of what kind of music to listen to, as opposed to the lack of choice one has in being exposed to noises around oneself.

Norms/ standards
A decibel is a standard for the measurement of noise. The zero on a decibel scale is at the threshold of hearing, the lowest sound pressure that can be heard. 20 dB is whisper, 40 dB is quiet office, 60 dB is normal conversation and above this level it causes hearing damage. If a person is exposed to the sound for a prolonged period.

Sound Levels



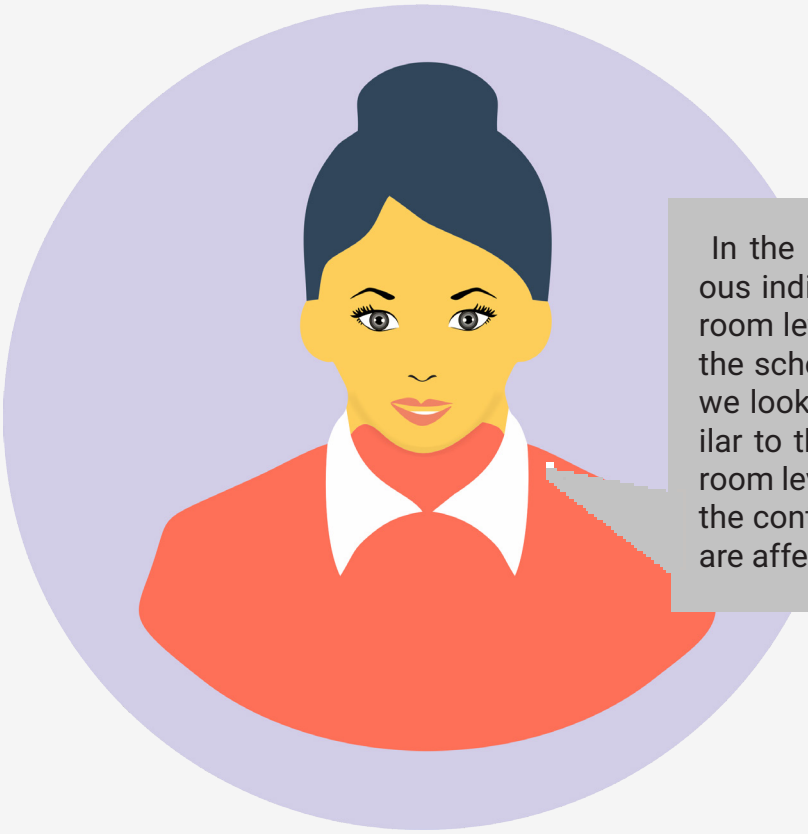
Exercise:

Identify the sound levels in the classroom by measuring the decibel level.

Type of sound_____

Time_____ Maximum Level_____Minimum Level_____Average_____

CHECKING FOR CLEANLINESS, SAFETY , AMBIENT ENVIRONMENT, STRESSES, HAZARDS , RISKS AND CAPACITIES AT SCHOOL LEVEL



In the previous session we examined various indicators of quality of life at the classroom level. In this session we shall examine the school for similar indicators. The things we look at at the school level might be similar to the things we looked at at the classroom level but will differ in many respects as the context we are looking at is broader and are affected by many different stakeholders.

What is cleanliness at the school level?

Cleanliness is the state or quality of being clean or being kept clean. Keeping our school clean depends on every classroom space being clean but there are many more spaces outside the classroom where we must ensure cleanliness.

Exercise:

List the various places within the school campus that you feel cleanliness must be maintained.

Place 1:_____Place 2:_____

Place 3:_____Place 4:_____

The teachers along with the students are expected to inspect the cleanliness of the various places mentioned in the school campus and identify solutions for situations where conditions are not being met. As mentioned above, the conditions required for cleanliness can change at every spatial level.

Exercise:

Identify the conditions required to be met to confirm that the above places in the school are clean. Simply tick on the condition if it is met or make a cross if it is not.

	Place 1 Corridor	Place 2 Toilet	Place 3	Place 4
Condition 1: e.g. Clean floors	✔	✘		
Condition 2:_____				
Condition 3:_____				
Condition 4:_____				
Condition 5:_____				
Condition 6:_____				
Condition 7:_____				
Condition 8:_____				

NOTE : If a condition is only for a particular place in the school, then write NA (Not applicable) for other places .

Water , sanitation and hygiene at school level

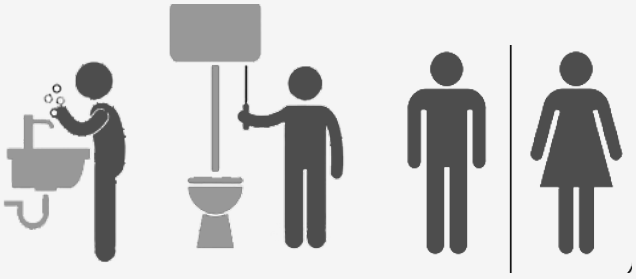
Credit: WHO (World Health Organization)

Universal access to safe drinking water and adequate sanitation is a fundamental need and human right. Securing its access would go a long way in reducing illness and death, especially amongst children.

Sanitation generally refers to the provision of facilities and services for the safe disposal of human urine and feces. The word 'sanitation' also refers to the maintenance of hygienic conditions, through services such as garbage collection and wastewater disposal.

We can say that sanitation is good in the school if conditions of cleanliness and hygiene that we identify are good all around the school.

Providing adequate and clean water is essential for maintaining health and hygiene. Safety of these water sources also needs to be ensured. Along with access to water, there should be access to an improved form of sanitation such as flush toilets or latrine with a slab, Clean toilets, provision of urinals for boys, toilets for the disabled etc.



Norms

WHO (World Health Organization) has provided some standards for maintaining the health and hygiene of the children in schools

Water requirement	25lit/day/person for day schools 40 lit/day/person for boarding schools
Showers required	1 shower per 20 students
Water point with soap	At toilets, kitchen and at other critical points
Toilets	1/25 girls and 1 for female staff 1 toilet+1 urinal for 50 boys 1 for male staff Cleaning toilets- once per day
Hygiene	Correct use & maintenance of facilities, Hand-washing with water and soap after food and toilet, Cleaning toilets

What is the water quality?

Water quality can be thought of as a measure of the suitability of water for a particular use based on selected physical, chemical, and biological characteristics.
Water quality is assessed with the help of a few parameters. Each parameter has a range which decides whether the water is usable. Many a times water which we use for drinking is polluted and not fit for drinking. It can be polluted at the source, or at supply level or in the water storage tanks .If not treated properly, it can lead to serious health problems. Even if one of the parameters is excessive, then the water is not good for drinking.

Parameters identified for assessing water quality are:
pH
Nitrate content
Chlorine
Dissolved oxygen content
Presence of coliforms and other pathogens

What is the significance?

If water is not of acceptable quality then we are exposed to various health risks.
Common Water Borne diseases
1. Cholera
2. Typhoid

Indirect Water Borne diseases (Having insectvectors)
1. Malaria (mosquito vector)
2. Dengue (mosquito vector)
3. Chikungunya (mosquito vector)
5. Pathogenic Ligionella , pathogenic round worms and guinea worms.

Hence in order to prevent an outbreak, regular testing of water is necessary.

Hygiene habits to reduce health risks

Decrease your risk of infecting yourself or others:

1. **Wash your hands often:** This is especially important before and after preparing food, before eating and after using the toilet.
2. **Be smart about food preparation:** Keep counters and other kitchen surfaces clean when preparing meals.
3. **Disinfect the kitchen and bathroom in your residence**
4. **Don't share personal items:** Use your own toothbrush, comb or razor blade. Avoid sharing drinking glasses or dining utensils.
5. **Keep your environment clean.**

6. **Get vaccinated:** Immunization can drastically reduce your chances of contracting many diseases.
7. **Use antibiotics sensibly:** Take antibiotics only when prescribed.
8. **Stay at home** if you have signs and symptoms of an infection. Don't go to work or class if you're vomiting, have diarrhea or are running a fever.
9. **Travel wisely:** Don't travel when you're ill. With so many people confined to such a small area, you may infect other passengers in the bus or train. Talk to your doctor about any special immunizations you may need.

Norms/ Standards

1. Drinking Water Source without conventional treatment but after disinfection:
- Total Coliforms Organism MPN/100ml shall be 50 or less
- pH between 6.5 and 8.5
- Dissolved Oxygen 6mg/l or more
- Biochemical Oxygen Demand 5 days 20°C 2mg/l or less

2. Drinking water source after conventional treatment and disinfection
- Total Coliforms Organism MPN/100ml shall be 5000 or less pH between 6 to 9 Dissolved Oxygen 4mg/l or more
- Biochemical Oxygen Demand at 5 days and 20°C 3mg/l or less

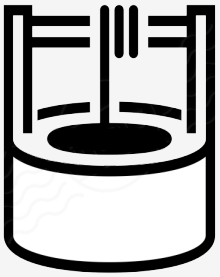
Water Supply and source

Water is essential for our day to day activities like drinking, household activities, and also for industrial and commercial uses. Water is supplied to households from its sources via a system of pipes and pumps. The sources of water mainly include surface water and ground water.
Surface water sources are lakes impounding reservoirs, streams, seas, irrigation canals
Ground water sources are springs, wells, infiltration wells

Process of water supply

Water from the source is taken to the water treatment plants and treated in order to remove n impurities. This treated water is then transfered to the elevated storage reservoirs (ESR). From these ESR's, the water is supplied to the households via a system of pipes. This process is managed by the municipalities. This water is then stored in underground and overhead tanks of the buildings and is used by the residents as required.

Hence in this study, sources of water considered are:



a. Bore well water

b. Tankers

c. Water supplied by the corporation

Exercise:

- Collect a sample from tap connected to the school tank and label it.
- In order to collect the sample,
- Take a 500ml water bottle.
- Fill the bottle with water from your school tap and pour it out twice (two times).
- Fill the water for a third time and close the bottle with a cap and dry the bottle.
- Take a label from your QCM master trainer and write: The name of the school, your name and the time and date. Stick the label on the bottle and submit it to the school lab.

How to collect data?

Go to the respective building and take down the address

Ask the residents of the building about the water source and frequency of supply

Identify the water tap which is connected to Over head tank of the society.

Take 500ml of water sample in a bottle from the tap for water testing.

Write address of the respective building on the bottle sticker and carry it to the lab for testing

Exercise

Let us assess our school for water, sanitation and hygiene.

Q1. Name of the School?

_____

Q2. Total number of students?

Male _____
Female _____

Q3. Are there separate toilets for male and female?

- ◯ Yes
- ◯ No

Q4. Number of toilets

Male:

- WC _____
- ◯ Urinals _____
- ◯ Wash basin _____

Female: _____

- ◯ WC _____
- ◯ Wash basin _____

Q5. Soap availability near toilets and washbasins?

- ◯ Yes
- ◯ No

Q6. Are toilets maintained?

- ◯ Yes
- ◯ No

Q7. Are toilets accessible for disabled children?

- ◯ Yes
- ◯ No

Q8. Is hygiene and sanitation education a part of school curriculum?

- ◯ Yes
- ◯ No

Q9. Are there any open drains in and around your school?

- ◯ Yes
- ◯ No

Q10. Are there any puddles in and around your school?

- ◯ Yes
- ◯ No

What do we mean by solid waste management and waste segregation at the school level?

In the last session we have already learnt about solid waste management and waste segregation. At the school level we must ensure that certain conditions are being met for waste to be segregated at places other than classrooms, that the waste is collected properly from the places we list and the classrooms and finally that the waste is properly disposed of.

Exercise:

List the various places within the school campus where you feel solid waste management must be carried out.

Place 1:_____Place 2:_____

Place 3:_____Place 4:_____

Now that we have listed the places other than the classrooms from where the waste needs to be picked up and segregated, we must also find out where it is taken to when carried out of the various places. It is also important to know how many times the waste is removed from the various places.

Exercise:

	Place 1 Corridor	Place 2 Toilet	Place 3	Place 4
Are there two dust bins for waste segregation?				

How is the waste carried out of each place?

_____

_____

Where does the waste go when taken out of a Place ?

_____

How many times a week is the waste removed ?

_____

What do we mean by walkability or safety of movement in the school?

Walkability is a measure of how friendly an area is for walking. When we think of walkability in the school, we are thinking about safe movement. We will have to identify spaces through which we move and look for obstacles in the way. The adequacy of the space through which to move is also important.
Keeping our school walkable depends on every classroom space being made walkable but there are many more spaces outside the classroom where we must ensure walkability.

Exercise:

List the various places within the school campus that you feel walkability must be maintained.

Place 1:_____Place 2:_____

Place 3:_____Place 4:_____

The teachers along with the students are expected to check the walkability for various places in the school campus and identify solutions for situations where conditions are not being met.

Exercise:

Identify the conditions required to be met to confirm that the above places in the school are walkable. Simply tick on the condition if it is met or make a cross if it is not.

	Place 1 Corridor	Place 2 Staircase	Place 3	Place 4
Condition 1: e.g. Minimum 2m wide corridor		N/A		
Condition 2: e.g no slippery floor				
Condition 3:_____				
Condition 4:_____				
Condition 5:_____				
Condition 6:_____				
Condition 7:_____				
Condition 8:_____				

NOTE : If a condition for walkability is only for a particular place in the school, then write NA (Not applicable) for other places .

What is safety at the school level?

Safety is the condition of being protected from or unlikely to cause danger, risk, or injury. One can feel unsafe because of a situation or even a person. The presence of hazards cause one to feel unsafe and removing or mitigating hazards enables safety. Below we deal with hazards.

A hazard can be considered as a potential source of danger or risk. In the context of a school hazards can be anything from obstacles in the path of children to glass lying on the ground to unhygienic conditions.
We will have to identify spaces where we look for hazards.

Hazards

1. What are Hazards?

A hazard is a situation that poses a level of threat to life, health, property, or environment. Most hazards are dormant or potential, with only a theoretical risk of harm; however, once a hazard becomes “active”, it can create an emergency. A hazardous situation that has come to pass is called an incident. A possibility of hazard creates risk.

What are the modes of hazards?

Hazards are sometimes classified into three modes:
Dormant—The situation presents a possibility of hazard, but no people, property, or environment is currently affected. For instance, a hillside may be unstable, with the potential for a landslide, but there is nothing below or on the hillside that could be affected.
Armed—People, property, or environment are in potential harm’s way.
Active—A harmful incident involving the hazard has actually occurred. Often this is referred to as an accident, emergency, incident, or disaster.

Types of Hazards

Physical Hazards	Chemical Hazards	Biological Hazards	Psychological Hazards	Ergonomic Hazards
Physical conditions or situations causing physical harm	Chemical substances which cause harm	Biological agents causing harm to the human body	Something that creates psychological Stress	Factors that harm the musculoskeletal system

What are hazards at the school level?

Keeping our school hazard free depends on every classroom space being made safe but there are many more spaces outside the classroom where we must ensure safety.

The teachers along with the students are expected to check for hazards at the various places in the school campus and identify solutions for situations where conditions are not being met. We can mainly focus on the physical things which may be hazardous.

Hazards at the school level

Exercise:

Identify the conditions required to be met to confirm that the school is hazard free. Simply tick on the condition if it is met or make a cross if it is not.

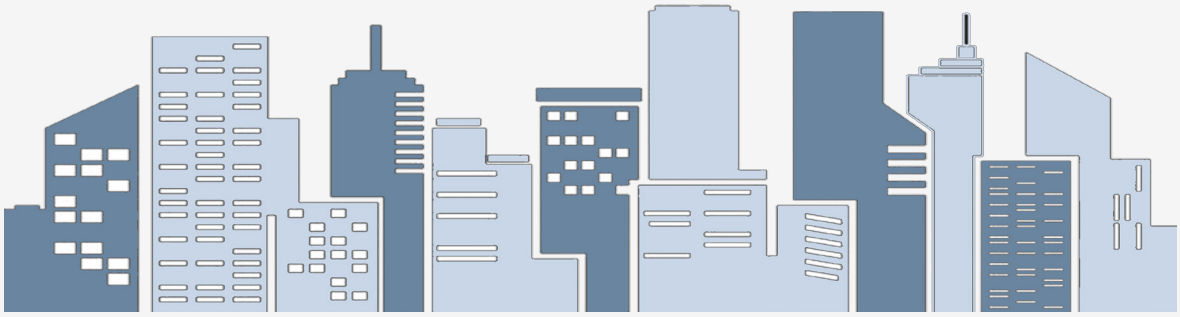
	Yes	No
Condition 1: e.g. Building should not be dilapidated		
Condition 2: _____		
Condition 3:_____		
Condition 4:_____		
Condition 5:_____		
Condition 6:_____		
Condition 7:_____		
Condition 8:_____		

What are dilapidation at the school level?

Dilapidation is the state or process of falling into decay or being in disrepair. In the process of decay, buildings transfer from good to livable to dilapidated state. Dilapidated houses are unfit for occupation as they may collapse any time. Dilapidated houses need to be redeveloped to ensure safety of the residents.
Housing conditions are categorized as good, livable, and dilapidated in the census India. As per the definition, those houses which are showing signs of decay or those breaking down and require major repairs or those houses decayed or ruined and are far from being in conditions that can be restored or repaired may be considered as 'Dilapidated'. (censusindia.gov.in, 2011).

How should we examine our built spaces?

In social science, the term built environment refers to the man-made surroundings that provide the setting for human activity, ranging in scale from buildings to parks.
Buildings and other constructions can be considered as built spaces that we have to examine for purposes other than cleanliness. Observing how tall a building is informs us of how we can deal with aspects of cleanliness, safety, comfort and sanitation in relation to how we use the building. Construction type and the type of materials used as well as building age and the level of dilapidation can give us an idea of whether the building will withstand an earthquake or how long the building can be used safely. Our school building is no exception to the dangers of natural disasters or emergencies like fires.
Let's dedicate some time in observing and noting down key aspects of our building.



Building Use

The term building use can be understood as the purpose/s for which a building can be used. For example our school building is used for education, our homes are considered residential, a shop or an office where business takes place is considered commercial etc. Other uses include industrial, public and semi-public and a mixture of these uses. In the event there is a mixture of uses, we call the building use as mixed use.
Main building uses are
1. Residential
2. Commercial- Shops, offices, restaurants
3. Industrial
4. Institutional- Schools, colleges, hospitals
5. Public semipublic - Government offices
6. Mixed - Two types of uses (e.g shops on the ground floor and flats on the upper floors)

Why should we identify building age?

Buildings deteriorate with age. Old buildings start dilapidating with age and create poor living conditions for the people staying in them. Dilapidated buildings are more vulnerable in case of disasters as they can collapse at any time. Hence buildings should be repaired and upgraded from time to time.
As per Bombay Provincial Municipal Corporations Act, 2011, a structural audit is required for buildings of more than 30 years to ensure safety for the people using the building.

Components of a building

A building typically has walls, floor, doors, windows and a roof made up of various materials like brick, stone, Reinforced Cement Concrete (RCC) etc. These are supported by a foundation. Buildings can be single storeyed or multi storeyed. In case of multi storeyed buildings, staircase and lifts are provided in order to access the upper floors.

1. Building floors (height)

A minimum 2.4m floor height should be provided in a building. Building heights and number of floors are decided by road widths and permissible area to build so as to maintain the built form. Also in case of high rise buildings, certain additional installations are required. E.g. a refuge floor is required for fire resistance.

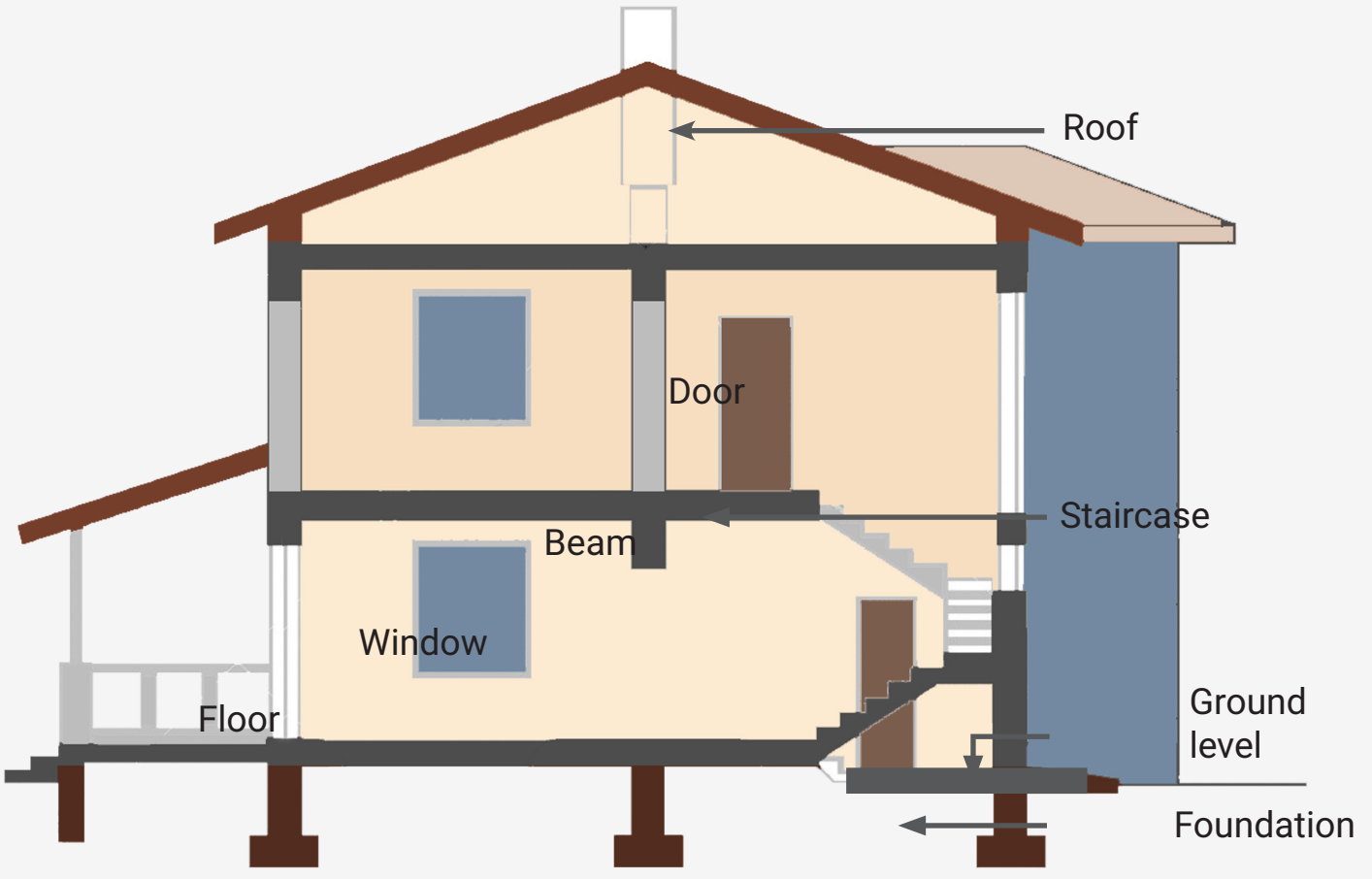
2. Building Staircase and Lifts

A staircase is defined as a series of steps suitably arranged for the purpose of connecting different floors of a building to provide an easy, safe and quick access.
A lift is defined as (generally powered by an electric motor) equipment for connecting different floors of a building to provide an easy, safe and quick access.

3. Building Materials

It is any material which is used for construction purposes. Many naturally occurring materials, such as clay, rocks, sand, and wood, have been used to construct buildings. Apart from naturally occurring materials, many man-made products are in use, some more and some less synthetic.

The following diagram explains some other important components of a building:

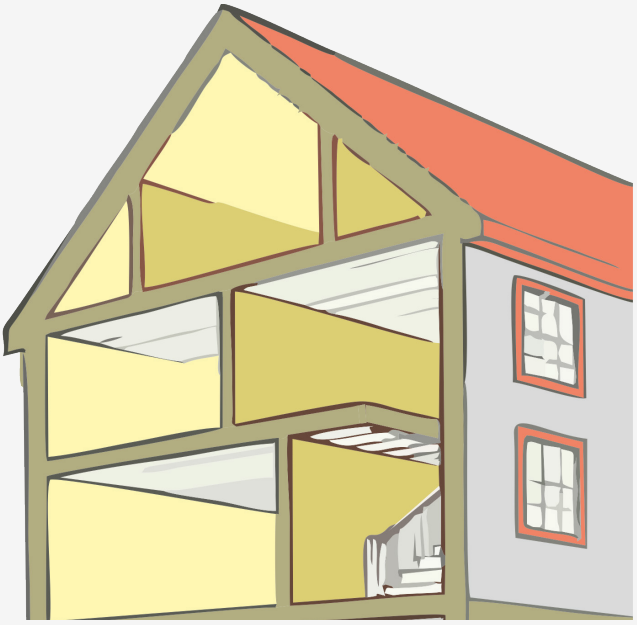


4. Building construction type

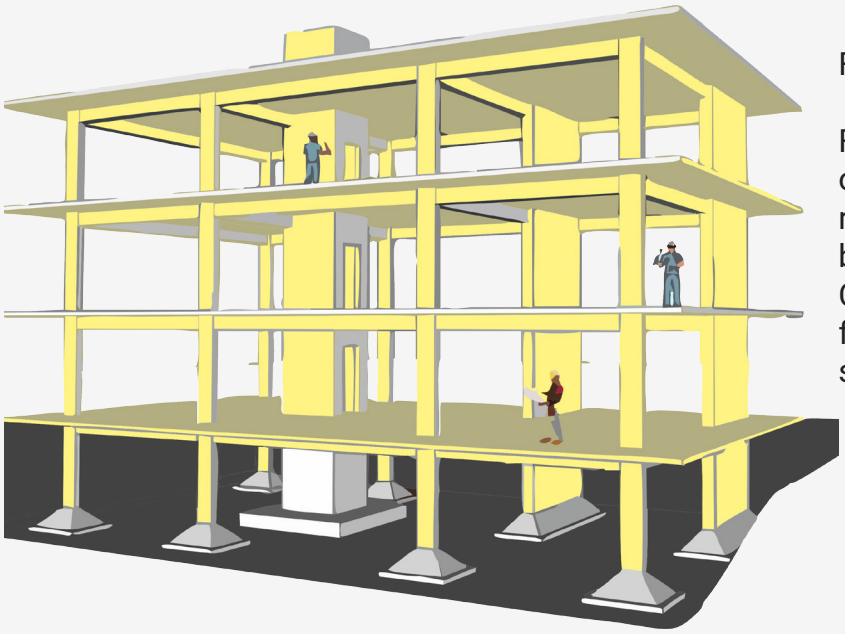
Buildings are constructed in various materials using different technologies. Broadly, these can be classified into Framed, Load bearing and composite.

Load bearing structures:

In load bearing structures, the entire load of the house is taken by the walls. There are no beams and columns in these types of structures. Hence the width of the walls is more than that of the framed structures. Load bearing structures are usually low rise structures.



Load bearing structure



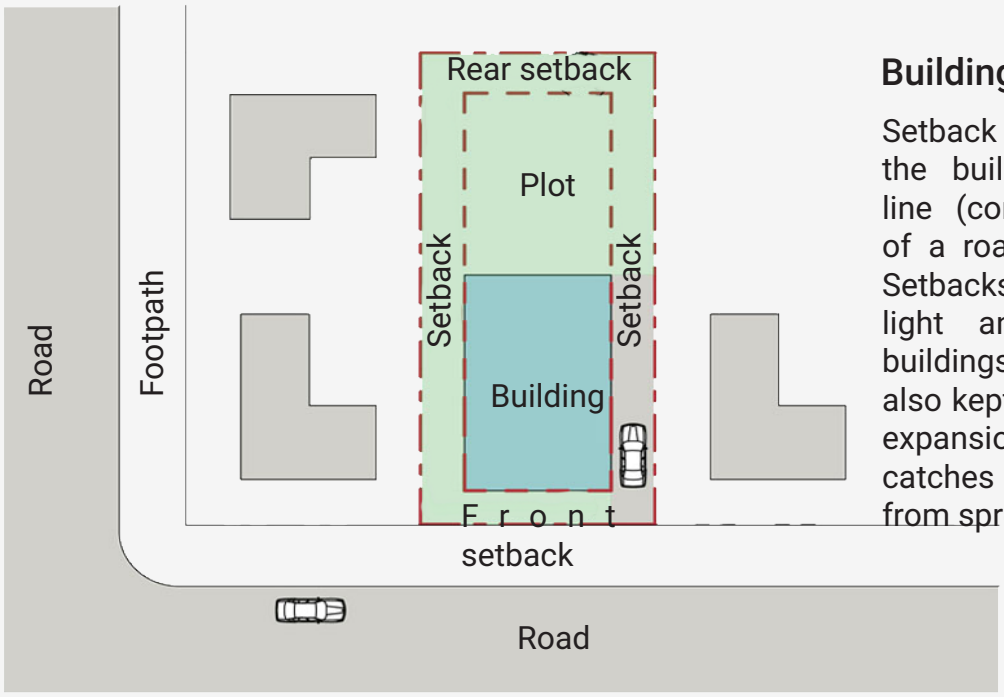
Typical Reinforced Cement Concrete (RCC) building

Frame Structures

Frame structures form a frame of beams, columns and slabs to resist various loads. These could be timber framed, Reinforced Cement Concrete framed or steel framed structures. Usually high rise structures are framed structures.

Composite structures:
Composite construction exists when two different materials are bound together so strongly that they act together as a single unit from a structural point of view.

A building is built inside a plot. A plot is demarcated usually by compound walls. Buildings are built for various purposes. Few are residential buildings, few are commercial like hotels, shops etc, while few are industrial buildings. We term the way a building is used as building use.



Building setbacks

Setback is the distance between the building and the property line (compound wall) or edge of a road whichever is closest. Setbacks ensure adequate light and ventilation to the buildings. Front setbacks are also kept considering future road expansions. When a building catches fire, setbacks prevent it from spreading.

Exercise:

You can consider any building or your school building and try to answer the following questions.

Building Name :_____.

What is this building predominantly used for?_____.

Find out the age of this building by noting the year it was constructed.

Year of construction:_____.

Building floors_____.

Multiply this number with 3 meters to get the building height_____m.

Building Material _____

Building construction type_____

Building dilapidation_____

How do we find out if our school is equipped with a rainwater harvesting system?

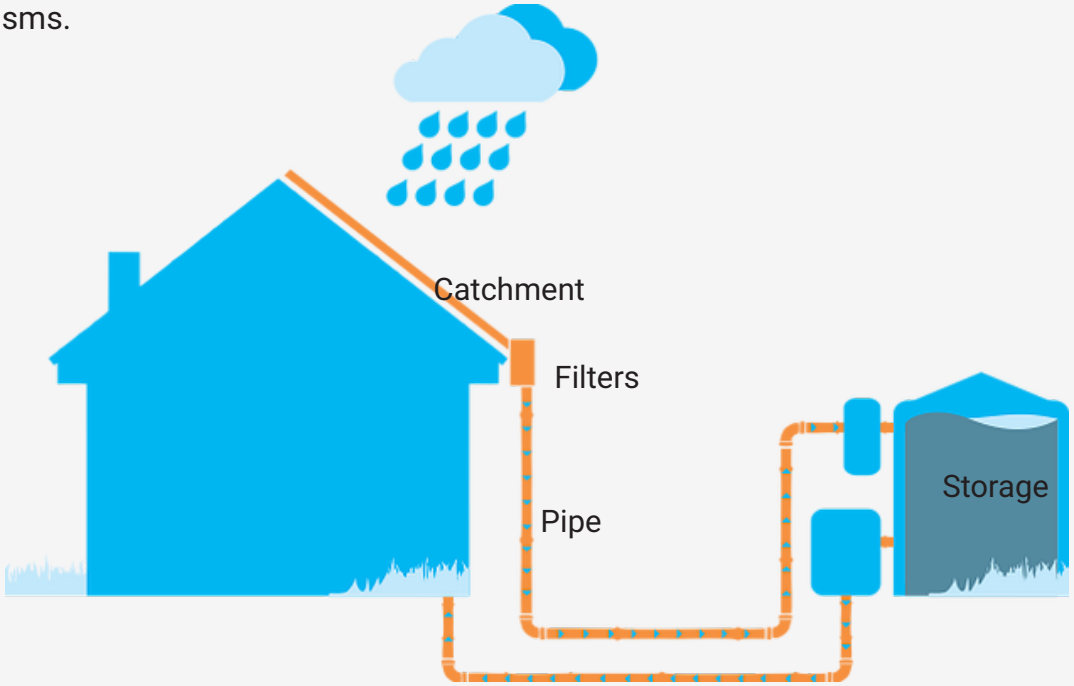
Rainwater harvesting provides an independent water supply during regional water restrictions and in developed countries is often used to supplement the main supply.
It provides water in the event of fire or when there is a drought, can help mitigate flooding of low-lying areas, and reduces demand on wells which may enable groundwater levels to be sustained. It also helps in the availability of potable water as rainwater is substantially free of salinity and other salts.
Application of rainwater harvesting in urban water systems provides a substantial benefit for both water supply and wastewater subsystems. Through harvesting cities achieve reductions in storm water bodies not to mention supplementing their clean water supply and reducing the load on the distribution system.

Types of rain water harvesting

Broadly there are two ways of harvesting rainwater:
1. Surface runoff harvesting:
In urban areas rainwater flows away as surface runoff. This runoff could be caught and used for recharging aquifers by adopting appropriate methods.

2. Roof top rainwater harvesting (RTRWH):
It is a system of catching rainwater where it falls. It can either be stored in a tank or diverted to an artificial recharge system.
This method is less expensive and very effective and if implemented properly helps in augmenting the ground water level of the area.
RTRWH system mainly constitutes of the following sub components:

- Catchments: The surface that receives rainfall directly is the catchment eg. Roof, Terrace, Courtyard etc.
- Transportation: Rainwater is carried by down take water pipes or drains to storage/harvesting system.
- First flush: First flush is a device used to flush off the water received in the rain so as to avoid contamination of the water
- Filter: Filters are used for treatment of water to effectively remove turbidity, colour and microorganisms.



How do we find out if our school is equipped for fire safety?

Fire safety is the set of practices intended to reduce the destruction caused by fire. Fire safety measures include those that are intended to prevent ignition of an uncontrolled fire, and those that are used to limit the development and effects of afire after it starts.
A fire protection system includes: devices, wiring, piping, equipment, and controls to detect fire or smoke, to activate a signal, and to suppress the fire or smoke.

Objectives of fire protection:
1. Primary objectives: to save lives and protect property.
2. Secondary objective: to minimize interruptions of service due to a fire.

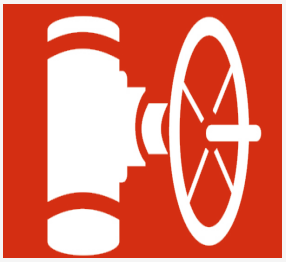
Fire fighting systems:

Fire Extinguishers

Fire Hose

Fire Sprinklers

Fire Alarms



Fire Hydrant

Are we prepared for a fire emergency?

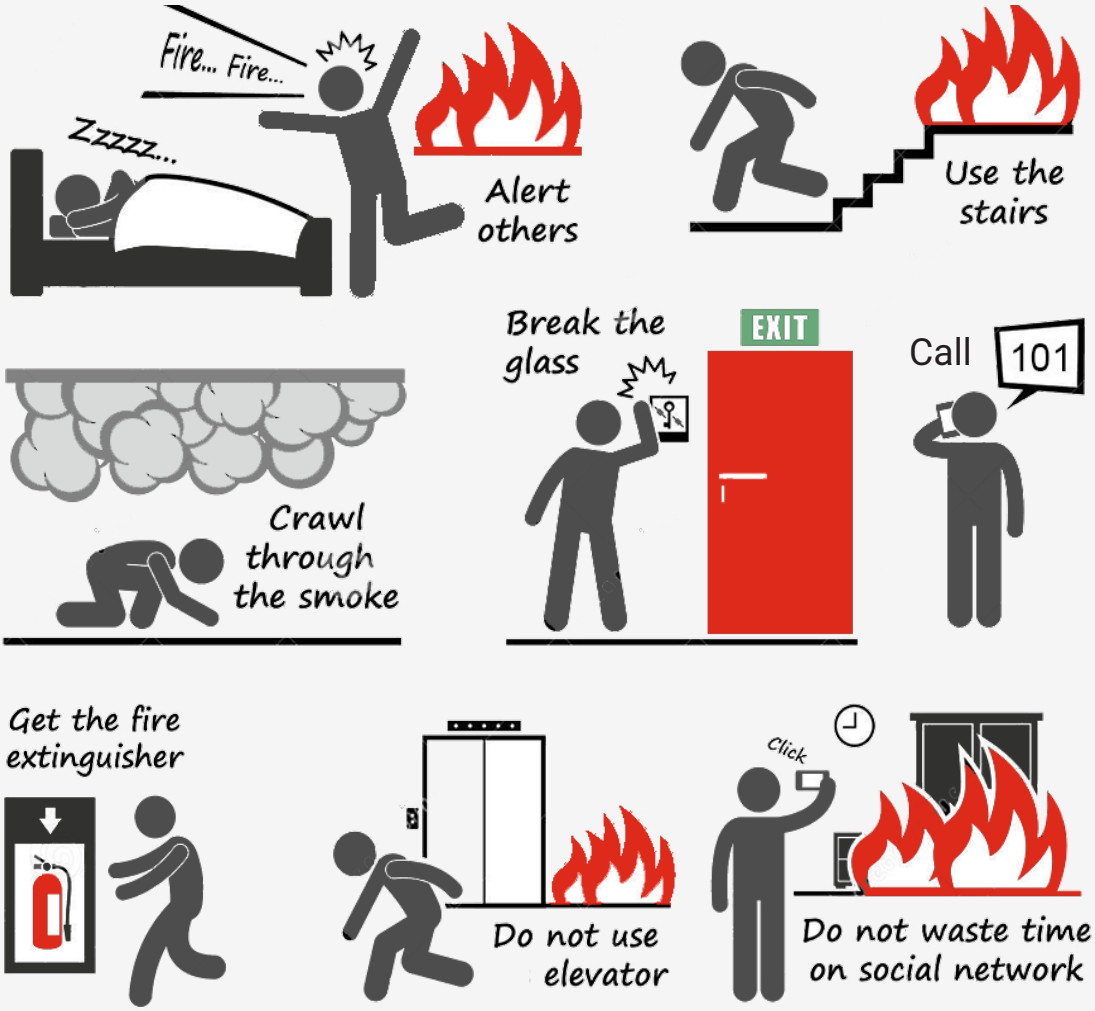
Disaster preparedness develops the knowledge and capacities to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.
It includes training, creating preparedness plans, carrying out emergency drills and installing protection systems in buildings.

What are emergency drills?

A fire drill is a method of practicing how a building would be evacuated in the event of a fire or other emergency.

Emergencies, such as fires and explosions, immediately threatening the health of the citizens, cannot be ruled out in most communities. In order to minimize the impact, it is necessary that every person in such a situation knows exactly what to do. This requires repeated exercises or drills. Planning and execution of these exercises has to be based on the experience of real scenarios, it has to involve the students, and the performance has to be evaluated. The drills have to be performed frequently to ensure that no one forgets the processes.

E.g. In case of fire emergency, we need to know where the exits are located, how to use the extinguishers, and other do's and dont's.



Credits: MS Toni Mcdonalid

Preparation for the drill

1. Allocating responsibility: Responsibilities are laid down according to type and function of the building.
2. Date and time setting: Date and time of the drill should be decided first and everyone in the building should be informed beforehand.
3. Monitoring the drill: Experts should attend and monitor the drill .

Why are these drills important?

1. Reduces anxiety and fear in event of a disaster
2. Reduces losses that accompany disaster
3. A small investment in preparedness saves thousands of lives and vital economic assets
4. Reduces cost and period of overall relief
5. Creates awareness in the community.

Process for carrying out emergency drill:

1. Alarm: Warning is given for one minute.
2. Response: Duck, cover, hold and other response action will be performed in the building or if you are outside, go away from tall buildings.
3. Evacuation: considering the building damage take decision to evacuate the building.
4. Assembly: Assemble at predetermined assembly point
5. Head Count: Identify the absentees and activate the search and rescue team
6. Evaluation: An evaluation of the drill must be conducted to identify the problems encountered during the drill and how this can be corrected in the future drills.

Exercise:

Now that you know about the disaster risk preparedness and various types of fire fighting systems, you can assess your building premises. Prepare a map of your skills by using your mapping skills and show all the facilities, fire fighting equipments, hazard locations and evacuation route on an A3 size paper in your groups. Submit this map to the trainer in the next session.

CHECKING FOR CLEANLINESS, SAFETY , AMBIENT ENVIRONMENT, STRESSES, HAZARDS , RISKS AND CAPACITIES AT NEIGHBOURHOOD LEVEL

In the previous session we examined various indicators of quality of life at the school level. In this session we shall examine the neighbourhood for similar indicators. The things we look at in the neighbourhood level might be similar to the things we looked at at the school level but will differ in many respects as the context we are looking at is broader and is affected by many different stakeholders.

What is hygiene and cleanliness at the neighbourhood level?

Hygiene is conditions or practices conducive to maintaining health and preventing disease, especially through cleanliness. Keeping our neighbourhood hygienic depends on every space and person being made hygienic.
The teachers along with the students are expected to inspect the hygiene and cleanliness of the various places in the neighbourhood like public toilets, bus stops, streets and footpaths and identify solutions for situations where conditions are not being met.

The teachers along with the students are expected to inspect the hygiene of the various places in the neighbourhood and identify solutions for situations where conditions are not being met.
We are going to look at Public toilets, Bus stops, streets and footpaths for hygiene and cleanliness.

What do we mean by solid waste management and waste segregation at the neighbourhood level?

At the neighbourhood level we must ensure that certain conditions are being met for waste to be segregated at buildings and houses as well as businesses, that the waste is collected properly from the places and that the waste is properly disposed of.

Exercise:

For your building or home:

Are there two dust bins for waste segregation? Yes No

How is the waste carried out of your building or home?_____

Where does the waste go when taken out of your building or home?_____

How many times a week is the waste removed from your building or home?_____

Public toilets

Hygiene and cleanliness in the community is as important as for individuals. Public toilets play an important role in community sanitation. Clean and hygienic toilets help to improve environmental health in the community and allows people to walk in their neighborhood.

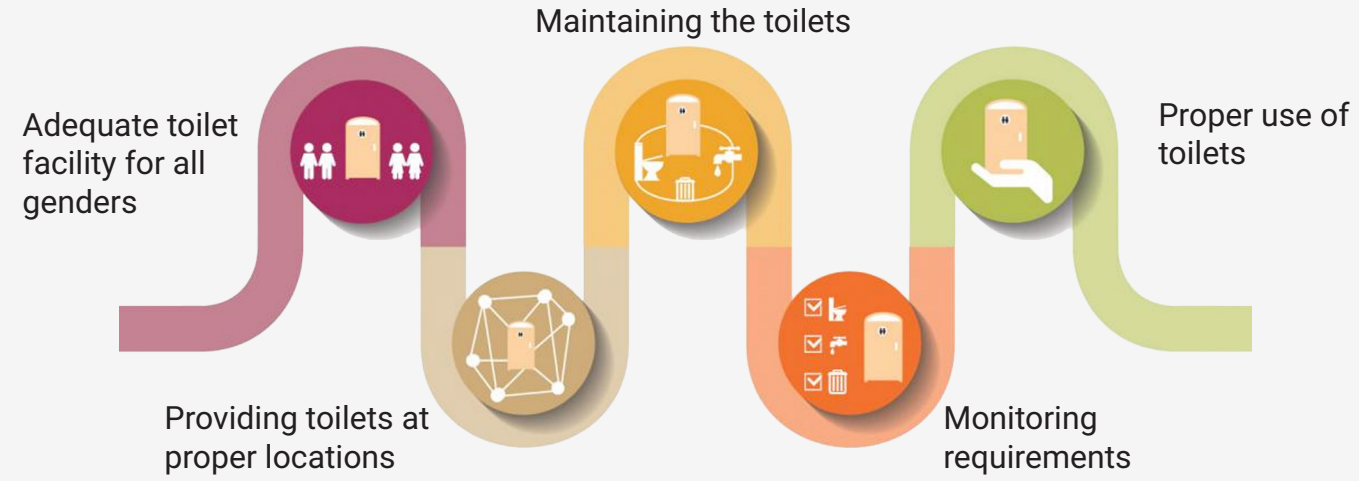
Why Public toilets are important?

Lack of proper sanitation is a serious issue which is affecting most of the countries. Hygienic toilets are important to prevent diseases which can be transmitted through human waste. There should be adequate number of public toilets to cater to the population of that area.

Norms

Recommended Norms for Public Toilets in Public Area as per Urban And Regional Development Plans Formulation And Implementation (URDPFI)Guidelines 2015:

- Public toilet on roads and for open areas: at every 1 Km, including in parks, plaza, open air theatre, swimming area, car parks, and fuel stations.
- Toilets shall be disabled-friendly and in 50-50 ratio (M/F).
- Provision may be made as for Public Rooms.



Credits: http://giz.mediagenies.com/content/blog/why-public-toilets

Do's

- Wash your hands to prevent the spread of colds and the flu.
- Wipe off the sink for the next user.
- Please use water and paper towels conservatively
- Flush the toilet after use and clean off the toilet seat if necessary.
- Notify management or replace toilet paper towels or soap when empty.
- Notify management if there is no water to flush or wash hands.
- Paper towels go in the trash can, not on the floor or in the toilet bowl.

Don't's

- DON'T use your toilet bowl as a universal garbage disposal.
- DON'T use the toilet as a ladder, or stand or sit on the toilet tank lid. It will crack if abused.
- DON'T soil/ wet the wash basin.
- DON'T Take any reading material in with you – finish your business as quickly as possible
- DON'T talk to anyone if they are in the stalls
- DON'T Draw graffiti on walls or doors.

Bus stops

A bus stop is a place where passengers board or get down from a bus.Bus stops are usually placed along the sidewalk next to the carriageway. Bus stop ranges from a simple pole and sign to complex structures with various facilities.

Exercise:

Identify the conditions of hygiene, cleanliness, comfort and safety for the bus stop

	Yes	No
Condition 1: e.g. Clean furniture	✔	
Condition 2: _____		
Condition 3:_____		
Condition 4:_____		
Condition 5:_____		
Condition 6:_____		
Condition 7:_____		
Condition 8:_____		

While doing the above activity, you have already come up with various solutions for making the bus stops better. Now we will discuss these points in detail. You can check if you have missed out any points.

Below is a picture of a bus stop. Observe and identify the objects which should be added to make this bus stop better.

Criteria for good bus stops

1. Good bus stops are easy to identify
2. Should provide safe and comfortable waiting space
3. Located conveniently and should not obstruct footpaths or cycle tracks.
4. Bus stop should have signages.
5. Seating area should be clean
6. Information boards should be displayed on the bus stops showing the bus schedule and bus route.

What are hazards at the neighbourhood level?

Now we will try to understand these hazards and the concept of a disaster in detail.
What we will learn about various types of hazards and factors that contribute to different disaster risks. These enable you to identify specific issues and general areas in your school and around your neighbourhood, where we have the greatest exposure to risks.

What is the difference between a Hazard and a disaster?

- A hazard is a situation where there is a threat to life, health, environment or property.
- Disasters are a result of the combination of the exposure to a hazard; the conditions of vulnerability that are present
- A disaster is an event that completely disrupts the normal ways of a community. It brings on human, economical, and environmental losses to the community which the community cannot bear on its own.

Types of Disasters:

Natural disasters

- Land slides
- Fire
- Floods , Tsunamis
- Earthquakes
- Tornado & Hurricanes
- Hails
- Drought
- Epidemics

Man made disasters

- Explosion
- Nuclear Blasts
- Chemical threats
- Radiological Emergencies
- Cyber attacks
- Civil Unrest
- Hazardous Materials

Risk

It indicates a chance or possibility, such as in “the risk of an accident” or indicates consequences or the “potential losses” for some particular cause, place and period.

Risk is related to hazard, vulnerability and capacity. More the vulnerability, more is the risk of the disaster. While vulnerability is directly proportional to risk, Capacity is inversely proportional. If you are capable of coping with a situation, you are at less risk.

$$\text{RISK} = \frac{\text{HAZARD X VULNERABILITY}}{\text{CAPACITY}}$$

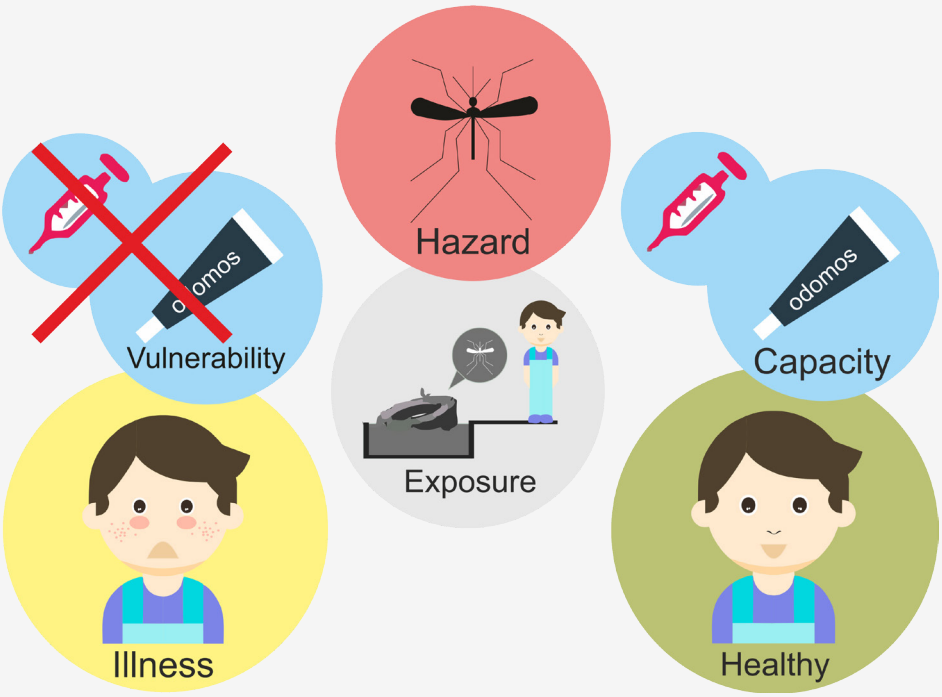
Vulnerability

The characteristics and circumstances that make us susceptible to the damaging effects of a hazard. There are many aspects of vulnerability, arising from various physical, social, economic, and environmental factors.

Capacity

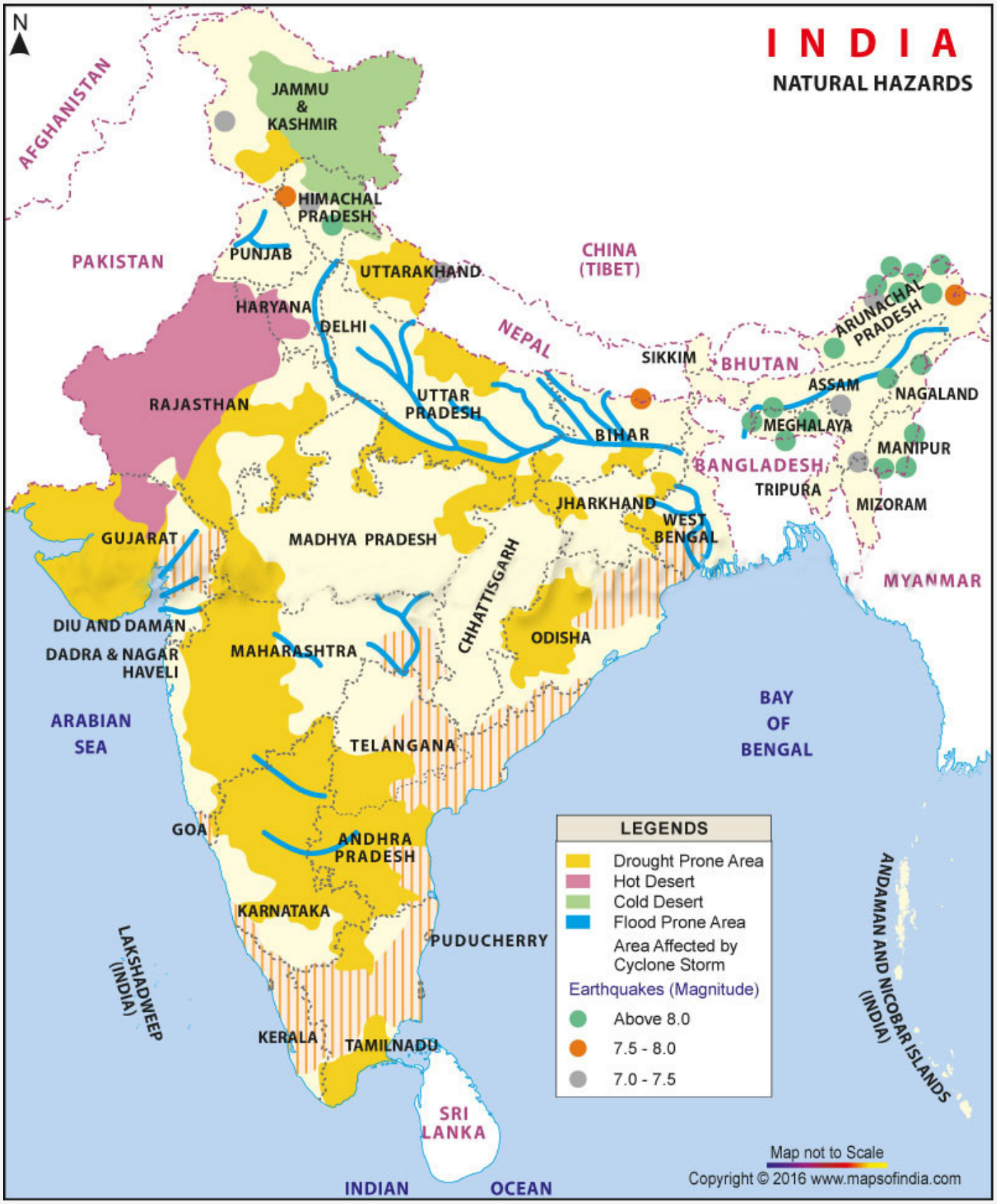
Capacity also may be described as capability. Capacity may include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes such as social relationships, leadership and management.
If we build capacity, we can reduce the risks of disasters.

The example to the right shows that the existence of a mosquito poses the risk of malaria. The mosquito is the hazard and unclean environment will increase its breeding. Exposure to such environment will increase the risk of having malaria or other diseases. This can be dealt with if we use a mosquito repellent such as odomos.
Also we need to be sensitive about keeping our environment clean to reduce vulnerability.



If we are prepared for a disaster, we can cope up with it or quickly recover from it. In this case, Impact of the disaster can be reduced to a large extent. While if we are not prepared, it increases the risk.

Map of Natural hazards in India



Disaster Management Cycle

Disaster management aims to reduce, or avoid, the potential losses from hazards, assure prompt and appropriate assistance to victims of disaster, and achieve rapid and effective recovery.

The Disaster management cycle illustrates the ongoing process by which governments, businesses, and civil society plan for and reduce the impact of disasters, react during and immediately following a disaster, and take steps to recover after a disaster has occurred.

Goals of Disaster Management:

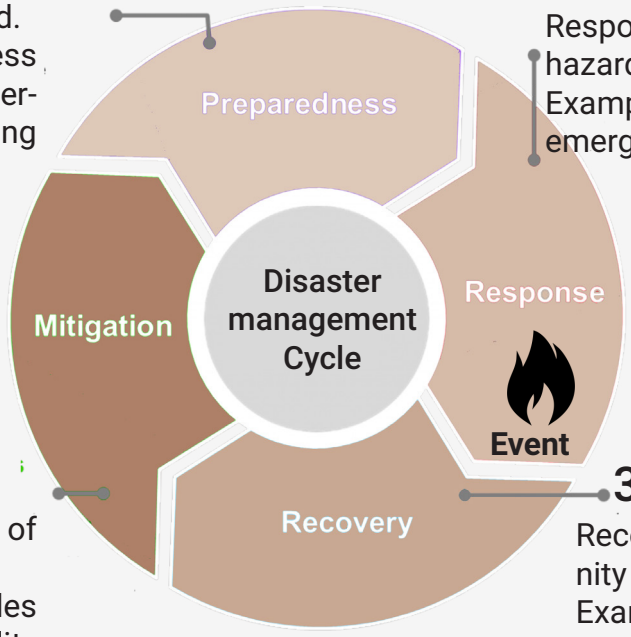
(1) Reduce, or avoid, losses from hazards;
(2) Assure prompt assistance to victims;
(3) Achieve rapid and effective recovery.

1.Disaster Preparedness

Planning how to respond.
Examples: preparedness plans; emergency exercises/training; warning systems.

2.Disaster Response

Response - Efforts to minimize the hazards created by a disaster.
Examples: search and rescue; emergency relief .



4.Disaster mitigation

Minimizing the effects of disaster.
Examples: building codes and zoning; vulnerability analyses; public education.

3.Disaster Recovery

Recovery - Returning the community to normal.
Examples: temporary housing; grants; medical care.

What is the concept of disaster relief?

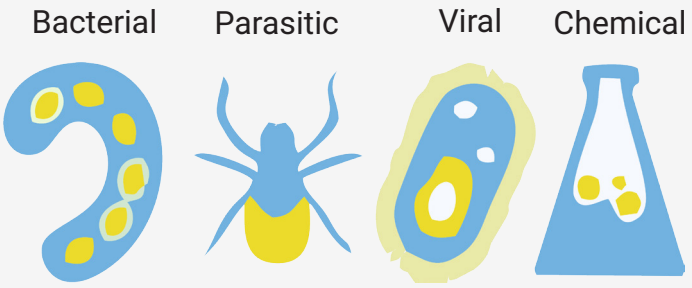
Disaster relief (or emergency management) refers to the process of responding to a catastrophic situation, providing humanitarian aid to persons and communities who have suffered from some form of disaster.

What is the concept of Disaster prevention

The outright avoidance of adverse impacts of hazards and related disasters.
Prevention expresses the concept and intention to completely avoid potential adverse impacts through action taken in advance.
Examples include dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high risk zones, and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake.

Biohazards

Biological hazards, also known as biohazards, refer to biological substances that pose a threat to the health of human beings. Biological agents are living things, or products of living things, that can cause illness and disease in humans. Biological agents include viruses, bacteria and fungi, as well as parasitic worms and some plants.



What are Contagious diseases?

Contagious diseases are transmissible diseases, which are transmitted to other persons, either by physical contact with the person suffering the disease, or by casual contact with vectors or water borne or airborne routes among other routes.
Vectors are small organisms such as mosquitoes or ticks that can carry pathogens from person to person and place to place. Maintain environmental hygiene to prevent breeding of vectors. These diseases are commonly found where access to safe drinking-water and sanitation systems is problematic.

Types of contagious diseases

Common Contagious Diseases in India:

HAZARD	Waterborne diseases	Airborne diseases	Vector borne diseases
VULNERABILITY	Diseases acquired by drinking contaminated water	Airborne diseases are spread when droplets of pathogens are expelled into the air due to coughing, sneezing or talking.	Diseases caused due to vectors. Vectors are organisms that carry disease-causing pathogens from host to host.
RISK	Cholera. Diarrhoea	Tuberculosis Influenza	Malaria, Dengue Chikungunya Kala-Azar, Filaria

Significance

Contagious diseases are prevalent all over the world. It is necessary to control the communicable diseases transmitted through vectors, air or water, which have a negative impact on physical and mental well-being of a person. Maintenance of good hygiene, pest control and vaccination are very important to prevent the spread of these infectious diseases.
With a little common sense and the proper precautions, you can avoid infectious diseases and avoid spreading them.

How do we observe the incidence of diseases in our neighbour-hood?

You need to visit a nearby hospital and identify the top five contagious diseases recorded in that hospital in the past few weeks. Note the name of these diseases in the space provided below

Q1. Top five contagious diseases.

Today's date:_____

Start date from the hospital:_____

_____ Number of cases_____.

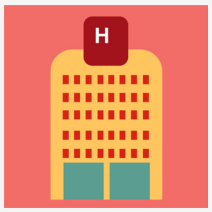
_____ Number of cases_____.

_____ Number of cases_____.

_____ Number of cases_____.

_____ Number of cases_____.

How to collect data?



Visit a hospital and note down the address

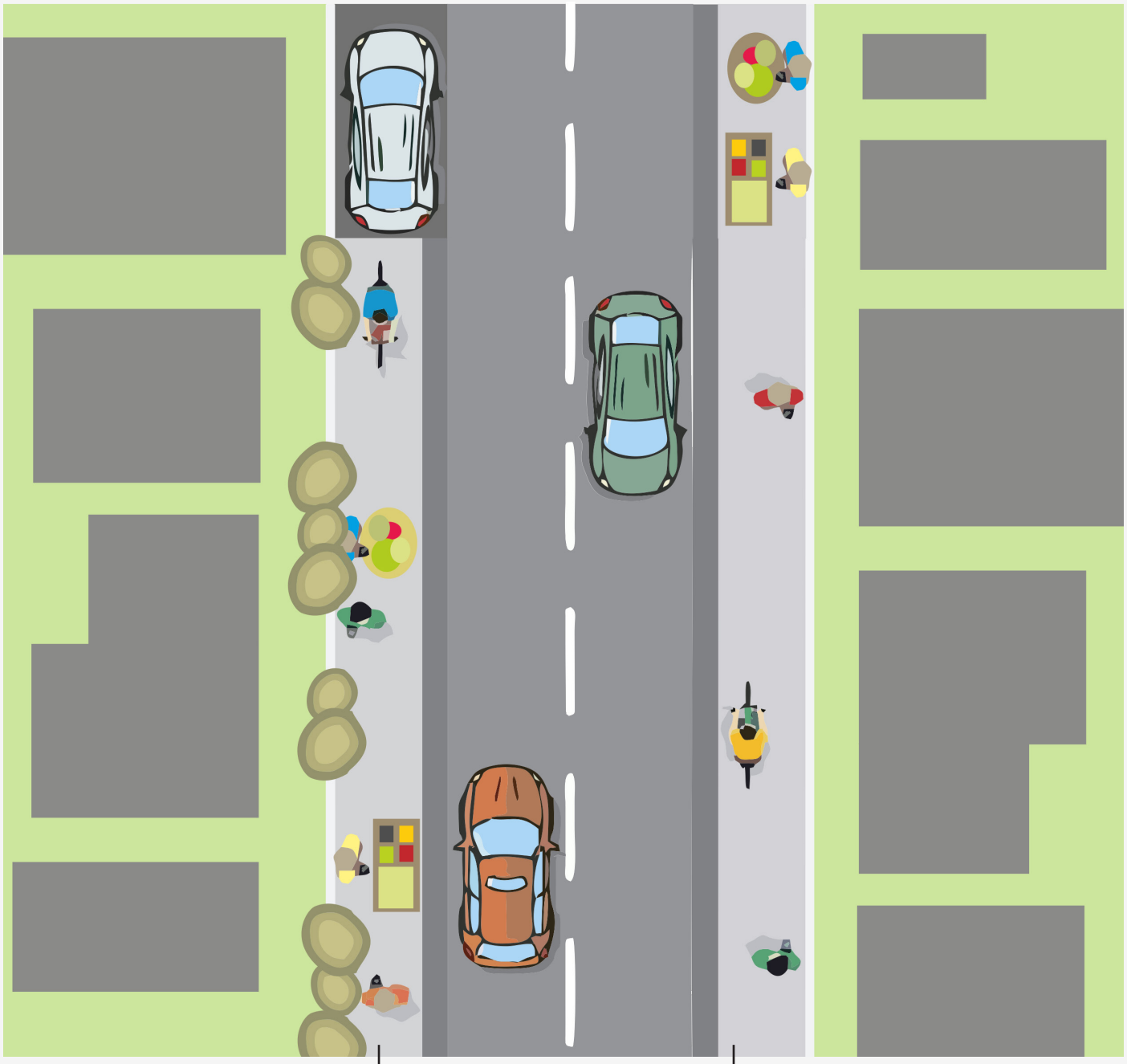
Inquire about the top five contagious diseases reported in that hospital in past two months

Fill the details using your mobile app.

Make sure that the most reported disease comes first in the list, then the next most reported and so on

What do we mean by walkability or safety of movement in the neighbourhood?

Below is a view of a street. Observe and identify the objects which should be removed to make this street walkable. Walkable simply means, where you can walk without any obstructions.



List the things which you feel are wrong in this picture:

_____

_____

_____

_____

_____

What is walkability?

Walkability is the ability to walk safely and continuously without any obstructions.

Walkability determines the ease of access around the neighborhood, for various reasons like commuting to and from work, going to the market, visiting family and in particular for children walking to and from schools and playgrounds etc.

Walkways should be planned and made in such a way so as the children, the elderly and the disabled can use them easily.

Credits: Urban Street Design Guide, National Association of City Transportation Officials (NACTO)

Stresses

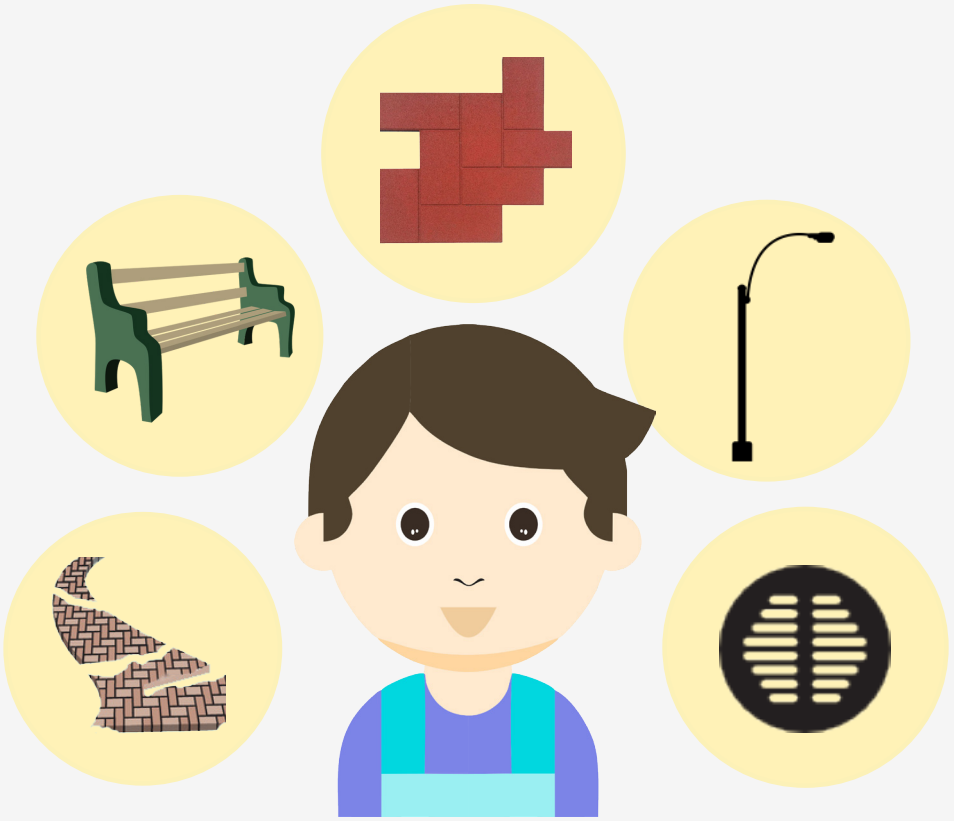
Importance of walkability

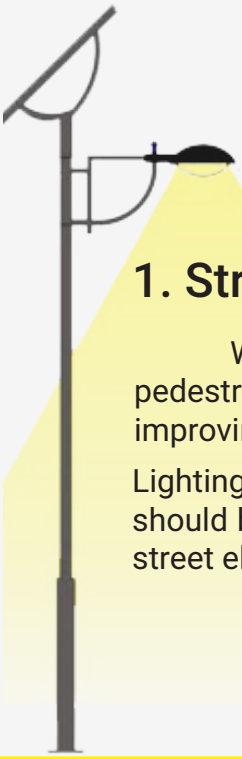
Walkable areas experience reduced automobile traffic and therefore reduced congestion and air pollution.
The more walkable a neighborhood, the more likely are the people to walk which leads to an increased the environmental and social benefits as seen above.

Factors affecting walkability

Hindrances on the footpath or street can reduce our walkability.
These include

1. Street lights
2. Street furniture
   a. Garbage Bins
   b. Signages
   c. Vendors and other encroachments
   d. Tree lines
3. Drains
4. Broken footpaths
5. Material of footpath





1. Street lights

Well-designed street lighting enables motor vehicle drivers, cyclists, and pedestrians to move safely and comfortably by reducing the risk of traffic accidents and improving personal safety through improved visibility.

Lighting should be sufficient, and ensure that all the areas are covered. All the lights should be working and the placement of street lighting should be coordinated with other street elements and it should not come into the way of pedestrians.

2.Street Furniture

Street furniture provides people with places to sit, rest,and interact with each other. Street furniture also includes services-related infrastructure, such as

- Garbage bins
- Signages
- Street vendors

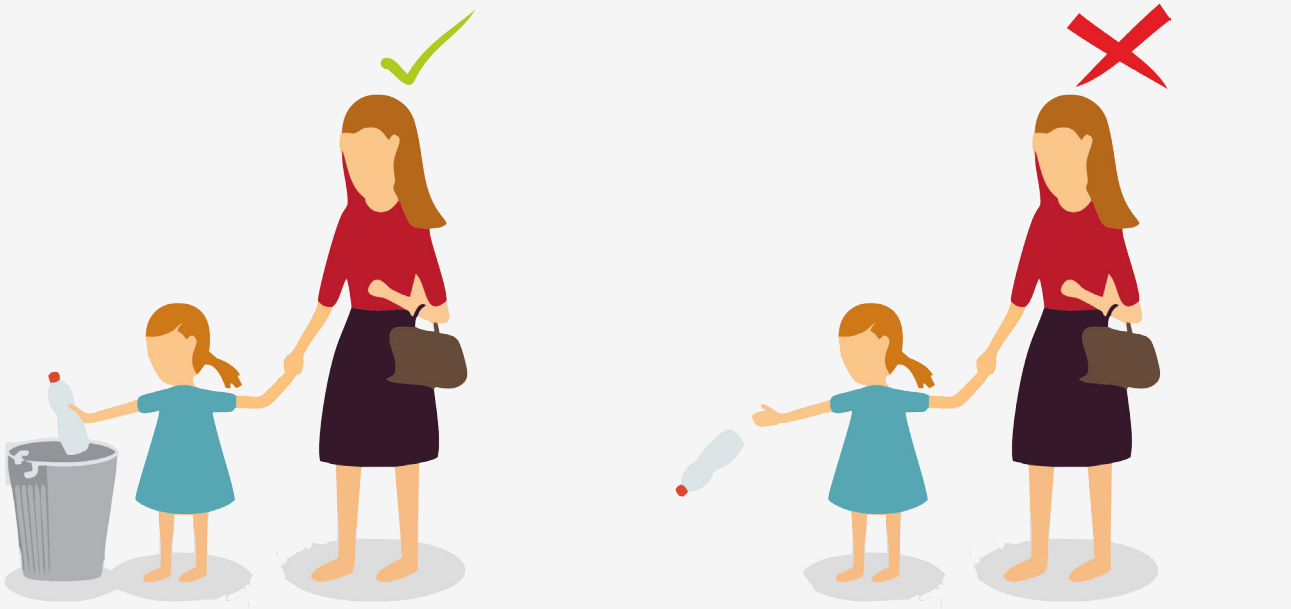
Furniture and signposts placed in the middle of a footpath can reduce or eliminate the clear space available for walking. Hence furniture and amenities should be located where they are likely to be used . Also they need to be maintained properly.

a. Garbage bins:

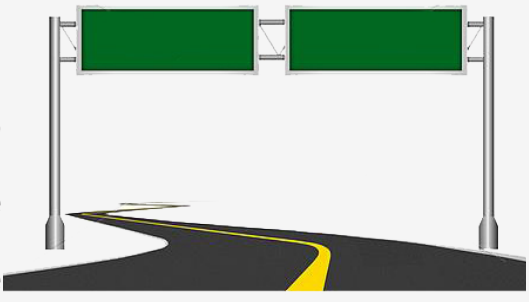
Dumping garbage (littering) is the result of individual behavior—choosing to litter or being careless in the handling of waste. And once litter is on the ground, it attracts more litter. Carelessly discarded garbage causes harm to people and animals, damages our waterways, costs us money. Litter is also a threat to public health as it is a breeding ground for bacteria.

Litter can also lead to a fire hazard. It also creates an unhealthy environment and gives a bad impression about the neighbourhood and the people living in it.

A clean community, by contrast, can discourage littering and improve community appearance and quality of life.



b. Signages:



Traffic signs or road signs are signs placed in specific areas to give instructions or provide information to road users to ensure their safety.

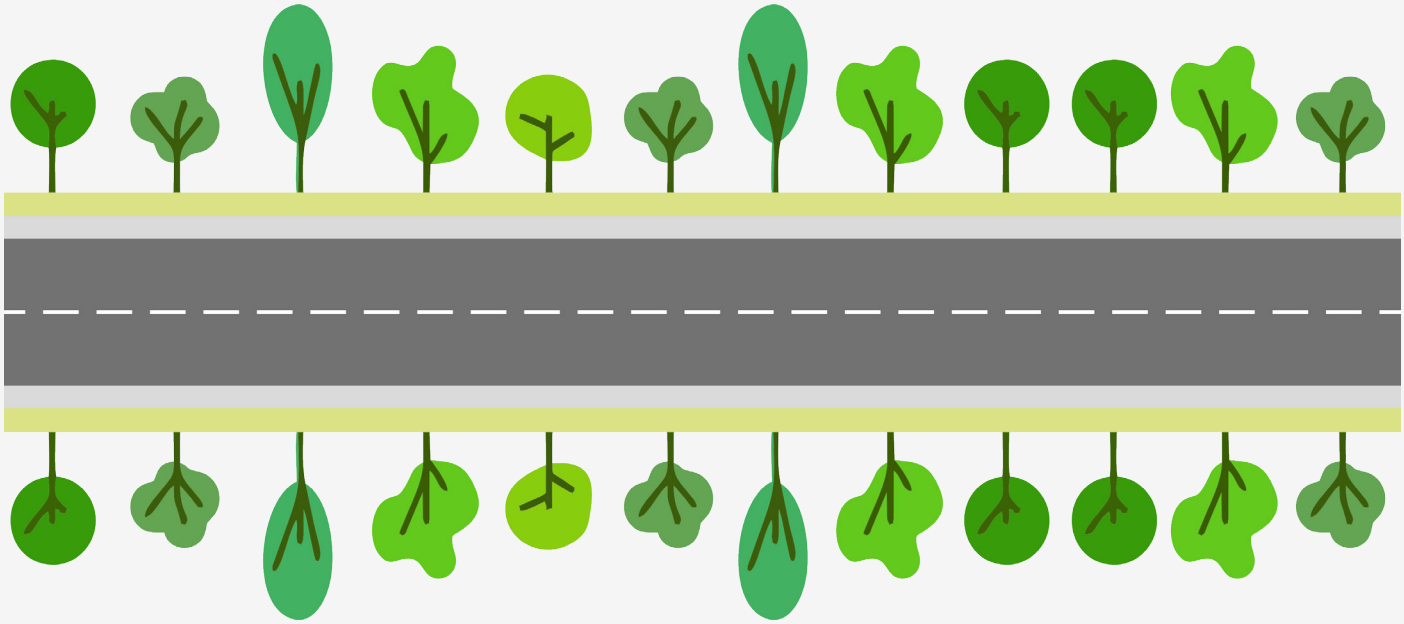
Signages should be placed wherever required and should be placed so that they do not block the footpath.

Signages are the great way to inform citizens the importance of places and importantly what habits are allowed or not allowed.

c. Vendors and other encroachments:

Well-planned spaces for street vending provide citizens with secure and dignified areas for the trade of goods and services.
Street vendors should be accommodated where there is demand for their goods and services—near major intersections, public transport stops, parks etc along with provision of supporting infrastructure and adequate space.
Vending areas should be positioned so as to ensure the continuity of cycle tracks and footpaths

d. Tree lines:



Landscaping improves the walkability of the streets.
It plays a functional role in providing shade to pedestrians, cyclists, vendors, and public transport passengers. It also enhances the aesthetic qualities of streets. The locations of trees should be coordinated with the position of street lights.
Tree lines should be arranged so that shade falls on footpaths and cycle tracks.

3.Drains

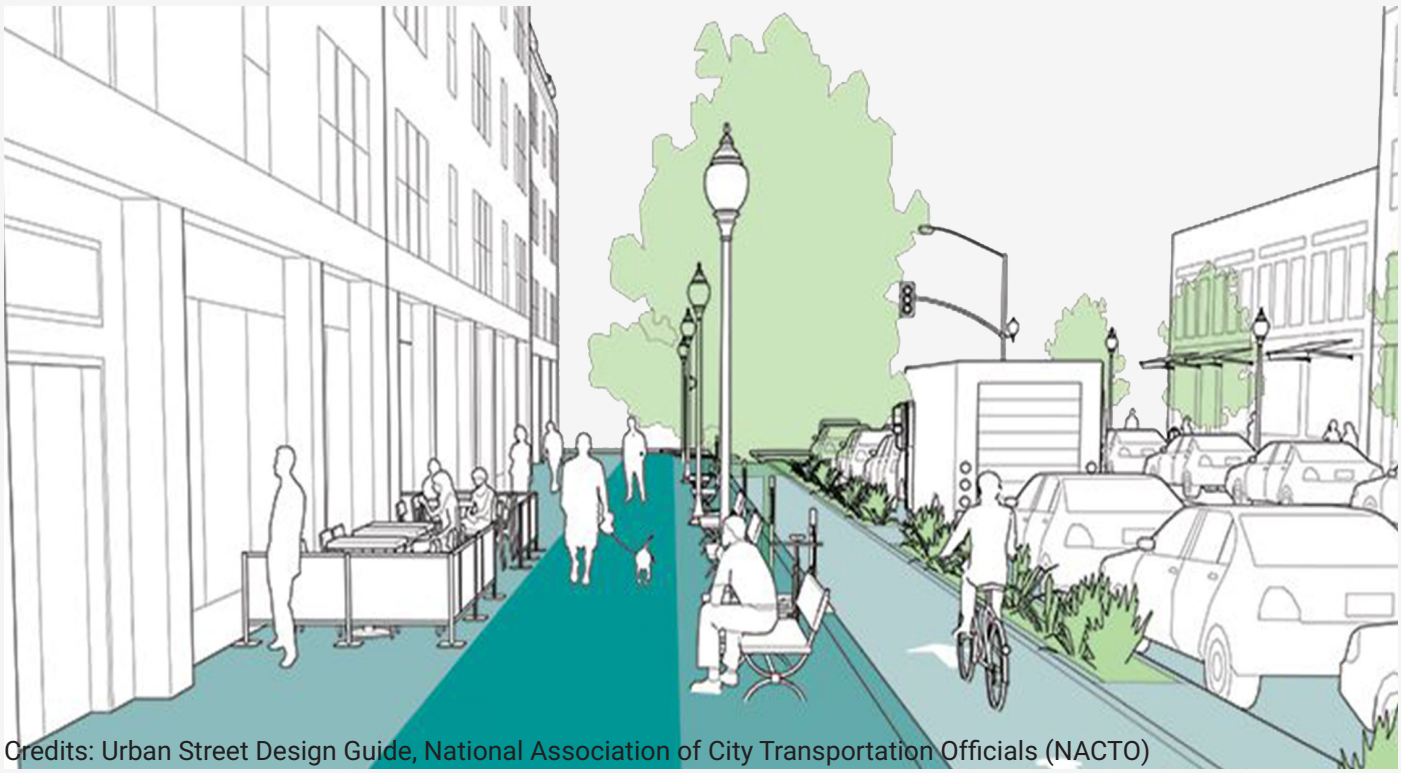
The design of many streets places pedestrians and cyclists at the lowest point in the cross section, forcing them to wade through water and mud during the rainy season. Actually the lowest point should occur on the road and drains should be placed in the carriageway.
Drains are often placed in random manner and are not leveled with the surrounding road surface.

4.Broken footpaths

Good footpaths promote safe and comfortable pedestrian mobility. But many a times due to the lack of maintenance, footpaths are broken. Broken footpaths also impede access to buildings at many points. Broken and discontinuous footpaths don't allow pedestrians to move comfortably. This situation increases walking time and indicates bad walkability.

5. Material of the footpath

Using appropriate materials for footpaths and cycle tracks is essential. Slippery materials can cause accidents. Deteriorated surfaces also may cause accidents and thus imply costs beyond direct maintenance expenses.



Credits: Urban Street Design Guide, National Association of City Transportation Officials (NACTO)

The above picture shows good walkability as there are no hindrances in the way of pedestrians. Light poles, street furniture are separately placed and there is a clear walking space for pedestrians.

Exercise:

Add/ remove elements in the following picture to create a safe and ideal street.

View of Copenhagen street

Exercise :

We have identified and reflected on factors that impact walkability and ambient environment in your neighbourhood, now let us conduct a walkability and comfortable assessment near your school area. The goal of the project is to check whether the school neighbourhood is walkable. You will be given a map of your surrounding area. You can do this exercise in groups.

1. Go to the street outside your school and locate yourself.
2. Prepare a map of the street
3. Measure the road width and footpath width
4. Mark the following things on the map by using the map
5. Light poles

- Garbage bins
- Vendors/ encroachment
- Tree line
- Signages
- Broken footpath/ Material of footpath

6. Identify and note the factors which made the street bad for walkability.
7. Using mobile application record maximum, minimum and average sound levels of the area
8. Record the type quality and source of the smell of that area.

Now, when you are walking on a street in your neighborhood, try to answer the following questions (Refer to previous pages)

Footpaths

•Do I have enough room to walk on the footpath?

_____

•Are there any objects blocking my way (e.g. parked cars)?

_____

•Will people be safe if they walk on the footpath, or are there risks (e.g. overgrown bushes, trip hazards)?

_____

Facilities

•Would it be comfortable to walk here on a hot day, and is there a shelter if it rained?

_____

•Are signs, seats or shelters suitable and in good condition?

_____

•Is there shelter for people waiting for buses or public transport?

_____

Traffic

•Do cars make me feel uncomfortable or unsafe while walking on this street?

_____

•Do I think cars are going too fast in the area, or is their speed about right?

_____

•Are people safe at drop-off or pick-up areas? (Like bus stops)

_____

•How do people on bikes affect my ability to walk?

_____

Crossing roads

•Do I feel safe crossing the roads?

_____

•Is there a place to stop in the middle of a busy road?

_____

•If there are traffic lights, do they give people enough time to cross?

_____

•Can I see drivers, and can they see me?

_____

What is Road safety?

We all use roads in some way, for driving, riding, walking or travelling as a passenger. Roads are used by various users like pedestrians, cyclists, motorists, vehicle passengers, and passengers of on-road public transport. Road traffic safety refers to the methods and measures used to prevent these road users from being killed or seriously injured.

Factors affecting road safety

Various factors affect the road safety of the people.

1. These include design of the road or street, i.e carriageway, footpaths, cycle tracks, parking spaces etc.
2. Location of street furniture on the footpaths
3. Use of appropriate signages.
4,. Behaviour of the various users of the road.

Why is road safety important?

Road safety is important, because it ensures that all drivers use roads safely and cautiously to help keep themselves, passengers, motorists and pedestrians safe. Traffic accidents are a leading cause of injury in many countries including India. Children can be especially at risk as either pedestrians or passengers in a car. However these can be avoided if drivers are careful and not distracted.

Facts and Figures:

One serious road accident in the country occurs every minute and 16 die on Indian roads every hour.

1214 road crashes occur every day in India.

Two wheelers account for 25% of total road crash deaths.

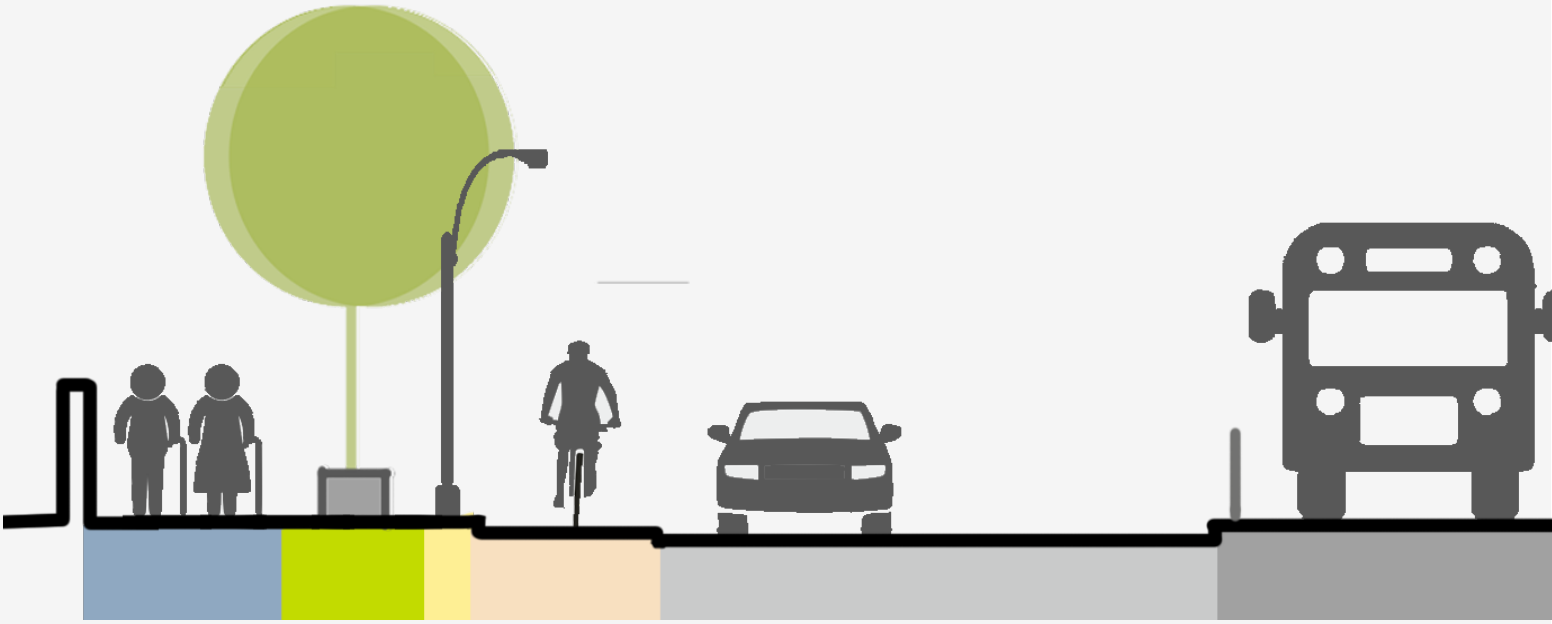
20 children under the age of 14 die every day due to road crashes in the country.

377 people die every day, equivalent to a jumbo jet crashing every day.

Top 10 Cities with the highest number of Road Crash Deaths (Rank –Wise):
Delhi
Chennai
Jaipur
Bengaluru
Mumbai

Source: National Crime Records Bureau, Ministry of Road Transport & Highway, Law commission of India, Global status report on road safety 2013

Typical street section



1. Carriageway

What is a carriageway?

A carriageway provides dedicated space for motorized vehicles, but in case of small streets, carriageway is shared with pedestrians and cyclists. A carriageway also can include segregated space for public transport.

Criteria for good carriageway

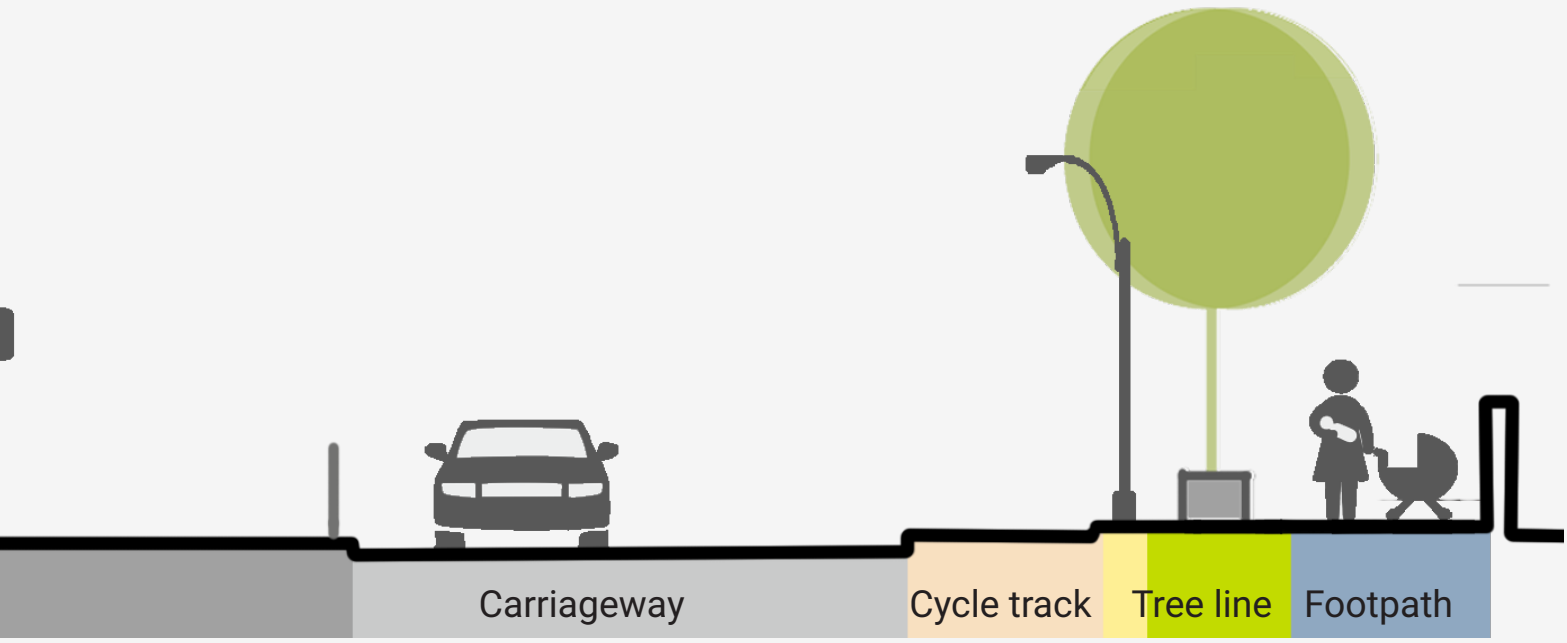
The carriageways should be designed for appropriate speeds suited to the street's role in the city's street network.
Carriageways should satisfy the following:

1. Constant width, thereby ensuring the smooth flow of vehicles. Irregular carriageway widths cause traffic jams where the width narrows again.
2. Clear boundaries defined between carriageway and footpath through curbs and material differences.
3. On major streets, a width of 6 m (two implied lanes) in order to accommodate large vehicles such as trucks and buses are required.
4. Street space should be allocated to the carriageway after adequate usable space has been reserved for walking, cycling, trees, and street vending. Otherwise, such activities will spill over onto the carriageway.

2. Footpath

What are footpaths?

Footpaths are designated lanes for pedestrian movement. Together with other elements like street furniture, landscaping , these act as public spaces for people to walk, interact, sit and eat. Footpaths provide designated spaces for people and reduce risk of accidents and hence increase safety.
If planned properly, footpaths can reduce a pedestrian's travel time and offer shade.
Poorly designed footpaths remain under - utilized and are easily encroached by parked vehicles and shops and avoided by pedestrians in many situations.



Criteria for good footpaths

1. A continuous unobstructed minimum width of 1.5m.
2. No breaks or obstructions at property entrances and side streets.
3. Continuous shade through tree cover
4. No railings or barriers that prevent movement on and off the footpath
5. Elevation over the carriageway (e.g. minimum +150 mm). Adequate slope for storm water runoff. At the same time, the height should be low enough for pedestrians to step onto and off of the footpath easily.

3. Cycle track

What are Cycle tracks?

Cycle tracks are designated lanes for cycling. By segregating them from the carriageway, safety and comfort of cyclists can be ensured.
The cycle is an important mode of urban transport.
Cycles offer low-cost, pollution-free mobility and occupy only a fifth as much driving and parking space as automobiles. Hence this mode of transport needs to be promoted. Provision of safe and convenient dedicated cycle lanes may attract new users. Where motor vehicle lanes are saturated, cycling in a segregated track is often faster than using a private motor vehicle. Cycling also improves health.
Efficient cycle tracks are safe, convenient, continuous, and direct.

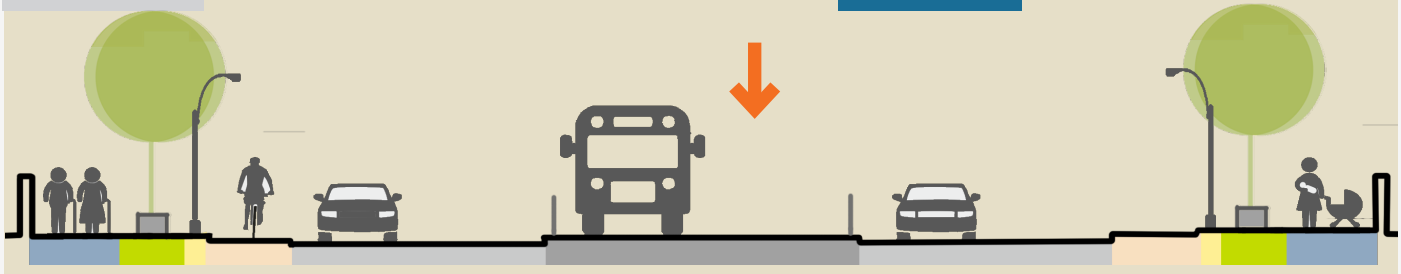
Criteria for good cycle tracks

1. A minimum width of 2 m for one-way movement and 3 m for two-way movement is essential to allow reasonable speed.
2. A smooth surface material—asphalt or concrete. Paver blocks must to be avoided
3. Manhole covers should be avoided and, if unavoidable, should be level with the surrounding surface
4. Continuous shade through tree cover

How to measure the road section?

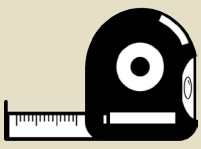
Identify and mark your location on the map in the field sheet from where you are going to take the measurements.

Note down the street name in the app.



Road width

Measure the entire road width including footpath, cycletrack carriageway, treeline and median as shown in the diagram



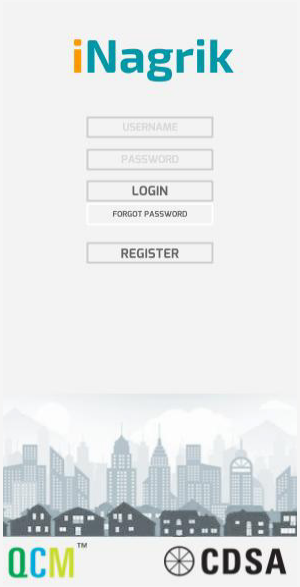
Also measure the width of the footpath, cycle track and carriageway separately

Note the measurements of the roads in the app.

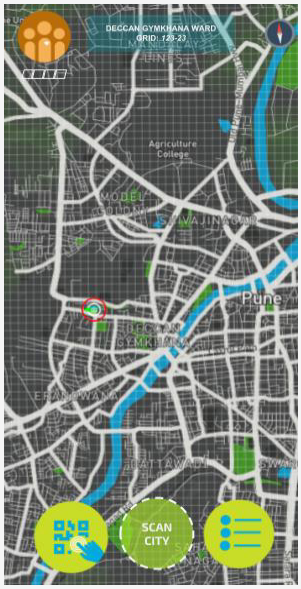
DATA COLLECTION USING I-NAGRIK APP

Congratulations ! You have now completed the QCM -DRR training to become the citizen ! In order to become the Guardian, you need to complete few missions. You will be using inagrik app to complete the missions! Your first mission is to collect the data of your neighborhood for various indicators that you have learnt.

How to use the app.?

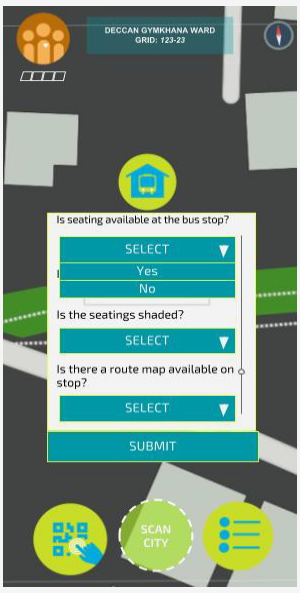


Register with the I nagrik application



App will show your location and time

Select the indicator from the list that you want to report on at a particular location.



Collect data on various indicators by answering the questions.

You can also report complaints and emergencies through this app.

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www.who.int/

APPENDIX

Norms for various indicators are given below:

Indicator	Category	Population served	Area req. (Ha)	Source
Schools	Pre primary	2500	0.08	URDPFI
	Primary	5000	0.4 (0.2:playfield+0.2)	
	Secondary	7500	1.8 (1:playfield+0.6+0.2)	
	Integrated	1 lakh	3.5 (2.5:playfield+0.7+0.3)	
	College	1.25	5 ha	
	University		10-60Ha	
Medical facility	Dispensary	15000	0.08 - 0.12 Ha	NBC, URDPFI
	Polyclinic	1 lakh	0.2 - 0.3 ha	
	General hospital (500 beds)	2.5 lakh	6 Ha	
	Multi speciality (200 beds)	1 lakh	9 Ha	
Sports	Residential unit play area	5000	5000 sq.m	
	Neighborhood unit play area	15000	1.5 ha	
	District Sports centre	1 lakh	8 ha	
Fire	Fire post (3-4km radius)		0.6 ha	MPD 2021, URDPFI
	Fire station	2 lakh	1 ha	
Crime	Police post	40000-50000	0.16	URDPFI
	Police station	90000	1.5	
	District jail	10 lakh	10 ha	

Water supply

Type of Occupancy	Consumption per head per day (in lt.)
Residential	
a) In living units	135
b) Hotels with lodging accommodation (per bed)	180
Educational	
a) Day schools	45
b) Boarding Schools	135
Institutional (Medical Hospitals)	
a) No. of beds not exceeding 100	340
b) No. of beds exceeding 100	450
c) Medical quarters and hostels	135
Assembly- Cinema theatres, auditoria, etc. (per seat accommodation)	15
Government or semi public business	45
Mercantile (Commercial)	
a) Restaurants (per seat)	70
b) Other business building	45
Industrial	
a) Factories where bath-rooms are to be provided	45
b) Factories where bath-rooms are not to be provided	30

	Scale	Range	Source
Temperature	Ideal	20-30C	
	Acceptable	15-35C	
	Slightly uncomfortable	5-10C & 35-40 C	
	Uncomfortable	<10 & >40 C	
Ambient sound	Whisper	20 db	
	Quiet office	40db	
	Normal conversation	60db	
	Hearing damage	>60 db	
Smell	Predetermined rating system scale		
	1- Barely perceptible		
	2- Slight		
	3-Moderate		
	4-Strong		
	5-Very strong		
Ambient light	Insufficient daylight	<100 lux	
	Useful daylight	100 -2000 lux	
	Discomfort	>2000 lux	

Water and Sanitation

	Day School	Boarding Schools	
Water			
Basic	5lit/per/day	20lit/per/day	UNICEF/ WHO
Additional	20lit./per/day/	5lit/per/day(non resi) 40lit/per/day	
Shower	1 shower/20 students		UNICEF/ WHO
Water point with soap	I toilet and kitchen and other critical points		
Hygiene	Correct use & maintenance of facilities		UNICEF/ WHO
	Handwashing with water and soap after food and toilet		
	Cleaning toilets		
Toilets	1/25 girls and 1 for female staff		UNICEF/ WHO
	1 toilet+1 urinal for 50 boys		
	1 for male staff		
	Cleaning toilets- once per day		

Sanitary Unit	Boarding Institution		Other Educational Institution	
	For Boys	For Girls	For Boys	For Girls
Ablution Taps	One in each W.C.	One in each W.C.	One in each W.C.	One in each W.C.
Urinals	One per every 25 pupils or part thereof	--	One per every 20 pupils or part thereof	--
Wash Basins	One for every 8 pupils or part thereof	One for every 6 pupils or part thereof	One for every 40 pupils or part thereof	One for every 40 pupils or part thereof
Baths	One for every 8 pupils or part thereof	One for every 6 pupils or part thereof	--	--
Drinking Water Fountains	One for every 50 pupils or part thereof	One for every 50 pupils or part thereof	One for every 50 pupils or part thereof	One for every 50 pupils or part thereof
Cleaner's Sink	One per Floor minimum	One per Floor minimum	One per Floor minimum	One per Floor minimum

Nursery Schools Sanitary Unit	Requirement
Ablution Taps	One in each W.C.
Wash Basins	One for every 15 pupils or part thereof
Baths	One bath sink per 40 pupils
Drinking Water Fountains	One for every 50 pupils or part thereof

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Centre for Development Studies and Activities

Survey Nos. 58 & 49/4, Paud Road, Ba-
vdhan Khurd, Pune, Maharashtra 411021

Tel : 02064730010

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