

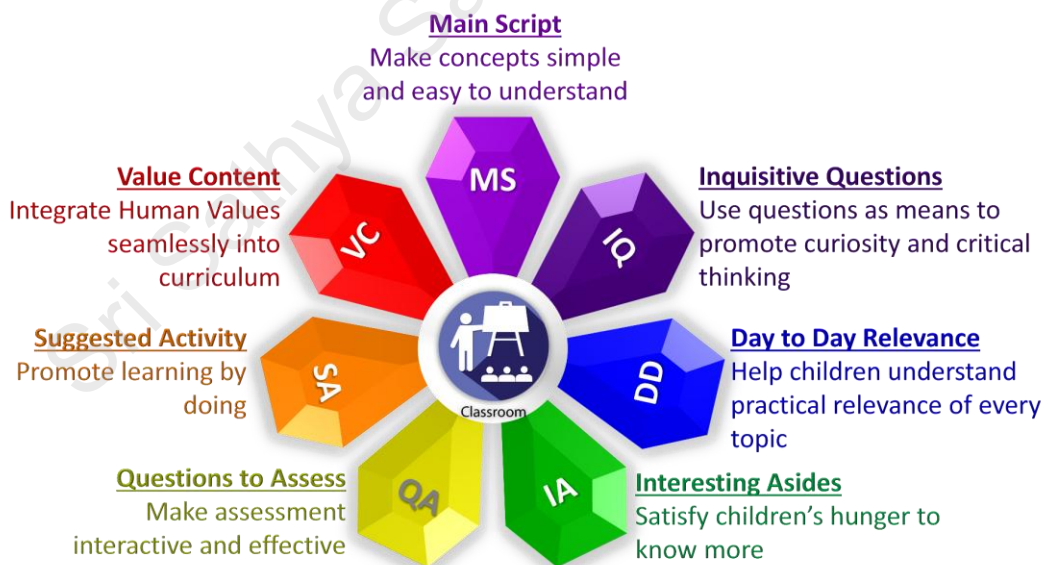
Master Lesson Plan

for

Drainage

Board	Standard	Subject	Chapter	Language	Creation date
NCERT	STD IX	Social Science	Drainage	English	

7 Assets [Components] of SSSVV



Sri Sathya Sai Central Trust

CURRICULAR GOALS	CG-4: Develops an understanding of the inter-relationship between human beings and their physical environment and how that influences the livelihoods, culture and the biodiversity of the region
COMPETENCIES AS PER NCF/NIPUN BHARAT	C-4.5: Critically evaluates the impact of human interventions on the environment, including climate change, pollution, shortages of natural resources (particularly water) and loss of biodiversity; identifies practices that have led to these environmental crises and the measures that must be taken to reverse them C-4.6: Develops sensitivity towards the judicious use of natural resources (by individuals, societies and nations) and suggests measurement for their conservation
SDG (Sustainable Development Goals)	SDG-6: Clean Water And Sanitation
Technology aids	PPTs, Video
Strategies	IQ_River Pollution - Case Study, Music Integration - Humaari Nadhiyaan
Assessment	Innovative technique - Catch the Bus, Reach your goal
Learning Teaching Materials (LTM)	1. IA_Patterns of River Systems, 2. DD_Save Ganga Movement - Ganga jal in copper container
Interdisciplinary Connections	Science - Water purification
Cross-Cutting Themes	Indian Knowledge System: Rivers are considered sacred and worshipped Values and Dispositions: Be like a river that perseveres and makes its own path, crossing all hurdles and obstacles to reach its goal - the ocean Educational Technology: Enriched with PPTs as teaching aids Care for the Environment: Awareness about keeping our rivers clean and free from all kinds of pollutants
Accommodations for Inclusive Practices	Audio book: youtu.be/D5CXVQhGFUM Source: epathshala.nic.in/

MS_Objectives_Drainage

Notes to the teacher: This asset lays down the proposed plan for transacting this chapter. It states the asset objectives of the MLP. This asset is for the teacher's reference and need not be taught to the students.

Students will be able to –

- relish information about the different types of rivers
- compare the different Drainage Systems in India
- practice perseverance to achieve goals in life
- analyse the features of the Himalayan River Systems
- explain the reasons for river pollution
- examine the measures undertaken by the Government of India to save the River Ganga
- classify the different Peninsular River basins of India
- differentiate between the landforms created by the Himalayan and the Peninsular rivers
- compare the Himalayan and the Peninsular rivers
- elucidate about the different types of lakes
- become interested in the information regarding diverse patterns of drainage systems of India
- determine how rivers and lakes play an important role in promoting tourism
- revise the Chapter - Drainage
- summarise about the diverse drainage systems and lakes in India in the chapter - Drainage.

Time to teach	Asset type	Theme	Sub Theme
3 minutes	Main Script	Resources	Drainage Systems In India

IA_Diverse River Types

Objective: The students will be able to relish information about the different types of rivers.

Teaching Aids: PPT

Notes to the teacher: Entry Ticket

The teacher can ask the students to put up an acrostic for the word river.

Example:

R - Revered

I - Intense force and

V - Vitality and zeal

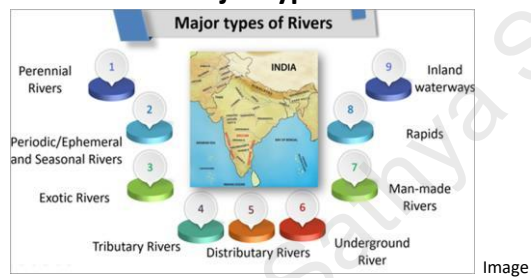
E - Energizing

R - Refreshing and rejuvenating all beings

Introduction:

A river is a natural freshwater body, which flows from a higher level region to finally meet a sea or an ocean. Most ancient civilizations like the Indus, Mesopotamia and the Egyptian flourished along the banks of large rivers.

Some of the major types of rivers are:



1) Perennial rivers - mostly have water throughout the year as they originate from glaciers. E.g., the Ganga (Ganges), the Indus, the Brahmaputra and the Yamuna.

2) Periodic/Ephemeral rivers and Seasonal rivers - are seasonal and do not flow throughout the year. E.g., the Pennar, the Krishna, the Mahanadi, the Tapi, the Narmada and the Banas river.

3) Exotic rivers - usually have their source in a humid region and flow through arid regions. E.g., the Luni river, Rajasthan. Unlike other rivers, this water body does not drain into any sea or ocean.

4) Tributary rivers - drain out into lakes or other rivers.

E.g., the river Yamuna and Son is a tributary of river Ganga, Chambal, Betwa and Ken are tributaries of the river Yamuna.

5) **Distributary rivers** - branch out as streams at the mouth of the main river.

E.g., the Hooghly and the Padma are distributaries of river Ganga. Paika, Birupa, Chitartala, Genguti and Nun are distributaries of the river Mahanadi.

6) **Underground River** - are also known as subterranean rivers and have their banks and beds under the earth's surface. E.g., the Saraswati river.

7) **Man-made Rivers (Aqueducts)** - are constructed with the objective of carrying freshwater to farm lands for irrigation or drinking water to cities. They are known as Aqueducts. E.g., Mahi Aqueduct (Gujarat), Mathur Aqueduct (Tamil Nadu).

8) **Rapids** - Flow of water in the rapids is very fast due to the steep grades in the river bed. E.g., Indus River at Ladakh, Barapole River at Coorg.



Rafting: pxhere.com/en/photo/1392963
Attribution: pxhere

9) **Inland Waterways** - include rivers, lakes, canals, etc. used as navigable channels to transport goods and people within a country.

E.g., India has 111 inland waterways. The longest waterway in India is Ganga-BhagirathiHooghly - 1620 km



Inland waterway: pxhere.com/en/photo/1357152
Attribution: pxhere

We have now learnt about the different types of rivers.

Time to teach	Asset type	Theme	Sub Theme
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4 minutes	Interesting Asides	Resources	Drainage Systems In India
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MS_The Drainage System of India

Objective: The students will be able to compare the different drainage systems in India.

Teaching Aids: PPT

Notes to the teacher: The teacher can start the asset by asking the following questions:

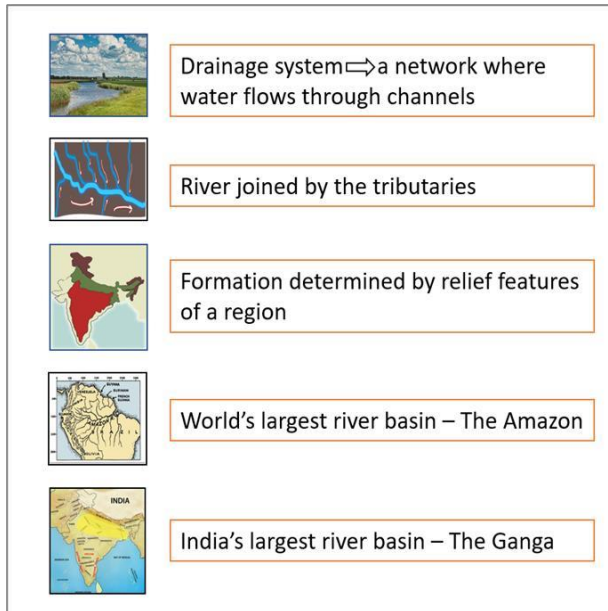
Q1. Name some of the major rivers of India.

Answer: The Indus, the Ganga, the Brahmaputra, the Godavari, the Krishna, the Narmada, the Tapi and the Mahanadi are some of the major rivers of India.

Q2. Which major physiographic division has been formed due to the depositional work of the rivers?

Answer: The Northern Plains has been formed due to the depositional work of the rivers.

-
- 'Drainage' is the flow of water through channels and the 'Drainage System' is the network of such channels
 - 'Drainage basin' is an area drained by a single river and its tributaries. Many small streams come together to form the main river, and ultimately drain into a large water body such as ocean, sea or a lake
 - The relief features of a region determine the formation of a drainage system
 - The world's largest drainage basin is of the Amazon river • River Ganga has the largest river basin in India



Water channel: pxhere.com/en/photo/1632826

Attribution: pxhere

Network: OC

Amazon basin: commons.wikimedia.org/wiki/File:Amazon_River_(PSF).png

Attribution: Pearson Scott Foresman

India maps: SSSVV Gallery

- 'Water divide' is an elevated boundary that separates areas drained by different river systems. Example - The Vindhya range is a water divide between the Ganga and the Narmada river basins
- The major rivers that make up the river systems of India are, the Indus, the Godavari, the Brahmaputra, the Krishna, the Tapi, the Narmada and the Mahanadi

Drainage systems in India have evolved and modified itself with the evolution of the three major physiographic divisions:

1) The Himalayas 2) The Indo-Gangetic Plain and 3) The Peninsular Plateau

On the basis of its origin, the drainage system of India are divided into two major groups: The Himalayan rivers and the Peninsular rivers.



Map: SSSVV Gallery

- The Himalayan and the Peninsular rivers differ from each other in many ways:

The Himalayan Rivers	The Peninsular Rivers
They are perennial and have water throughout the year.	They are seasonal.
They receive water from rain as well as melted snow from the lofty mountains.	They are dependent on rainfall.
The two main rivers - the Indus and the Brahmaputra originate from the north of the mountain ranges.	The two large rivers - the Narmada and the Tapi originate from the Central highlands and flow towards the west. Most of the rivers originate in the Western Ghats and flow towards the Bay of Bengal.
They have a long course from the source to the sea.	They have a shorter and shallower course.
The water flows all throughout the year.	During the dry season, the flow of water in the large rivers reduces.

- Rivers that originate from a high altitude flow very rapidly through the steep valleys and form deep gorges and waterfalls
- The famous gorge in India is the Gandikota gorge in Kadapa district of Andhra Pradesh which is known as the 'Grand Canyon of India'. It is formed by river Pennar originating in the Erramala hills



Canyon: pixahive.com/photo/grand-canyon-of-india-at-gandikota-andhra-prades/
Attribution: Sunny

- The erosion and transportation by the rivers is high in the upper course. The material brought down by the rivers gets deposited in the middle course due to the gentle slopes
- They are joined by their tributaries and the volume of water in it increases. They are wider now due to the erosion of the banks of the river
- The speed of the flowing water reduces leading to the formation of meanders and oxbow lakes

- The Kanwar Taal or the Kabartaal lake formed by the Gandak river, a tributary of the river Ganga, is the biggest freshwater oxbow lake in Asia
- The rivers in their lower course deposit silt and split into distributaries
- Triangular shaped deltas are formed at the mouth of the rivers
- The Hooghly river is a distributary of the river Ganga
- The Ganges-Brahmaputra delta is the largest river delta in the world in the Bay of Bengal

Time to teach	Asset type	Theme	Sub Theme
10 minutes	Main Script	Resources	Drainage Systems In India

VC_Keep Going

Objective: The students will be able to practise perseverance to achieve goals in life.

Teaching Aids: NA

Concept-Value Connection: The three major Himalayan rivers, the Indus, the Ganga and the Brahmaputra originate from the north of the mountain ranges. They have to cut through the mountains making gorges. The Himalayan rivers have long courses from their source to the mouth.

As the river flows through so many places, many times it has to bend and slow down in narrow paths due to boulders on the way. People pollute the river but the river continuously flows, irrespective of the obstacles. If it finds an obstacle in its way in the form of a heavy rock, the river fights to remove it from its path or finds an alternative path to move ahead.

We might face circumstances in life where we might feel disappointed and dejected. There will be problems, obstacles and blockades - but we should learn to make our way through it and move on like a river.



Bridge river: pixabay.com/photos/bridge-river-rocks-stones-stream-192982/
Attribution: FrankyFromGermany

Activity - 'Keep going'

Notes to the teacher:

1. Randomly choose any 2 students and make them stand opposite to each other at a distance of 2 ft or more.
2. Give a plastic/paper cup to one student and 10 small items to the other (erasers, marbles, small pebbles, etc.)
3. The student with the small items should toss the items one by one to the partner with the cup.
4. The partner has to catch all 10 items in the cup without dropping any.
5. The teacher may try with more pairs of students if time permits.

Discussion Questions

1. What were the challenges faced by both in this activity?

Possible answers:

- For the one who had to toss the items, the challenge was to toss at the right speed and angle
- For the one to catch, the challenge was to catch at the right time and angle, without missing

2. How did you overcome those challenges?

Possible answers:

- By being alert
- By staying focused
- Not allowing to be distracted

3. How does it feel when you are working towards a goal and face challenges?

Possible answers:

- Stressed
- Self-doubt
- Demotivated

4. How can you motivate yourself to keep going despite the challenges?

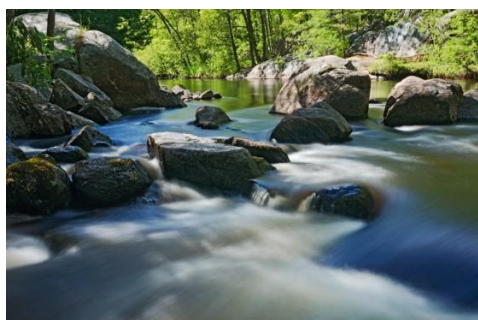
Possible answers:

By affirming:

- 'This is difficult, but if I keep trying, I will ultimately get it'
- 'Yes, I am lagging behind right now, but I will find strategies to catch up'
- 'I can do it. I will persist until I succeed'

Points to Ponder/reflect / summing up by the teacher

- At times of challenges never stop and keep going like a river
- Struggle is essential for building self-confidence
- Always keep your fighting spirit alive



River flowing: pexels.com/photo/river-flowing-through-boulders-and-rocks-12467715/ Attribution: Robert Schrader

Time to teach	Asset type	Theme	Sub Theme
12 minutes	Value Content	Right Action	Perseverance

MS_The Himalayan Rivers

Objective: The students will be able to analyse the features of the Himalayan River Systems.

Teaching Aids: PPT

Method: Innovative Self Study Technique

Notes to the teacher:

The teacher can -

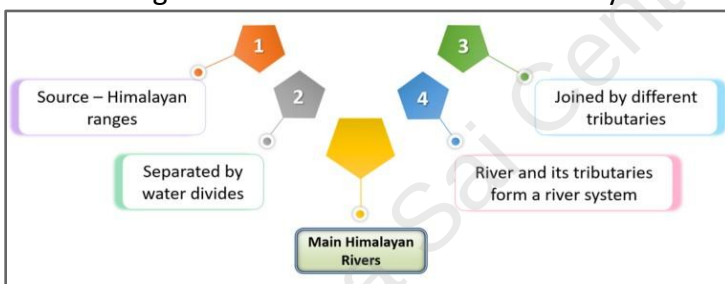
- give a brief introduction about the Himalayan Rivers
- put down the table on the board and ask each student to read the information given in the text
- then discuss the Indus river system and fill up the details on the board with the help of the students
- encourage the students to complete the other two major Himalayan river systems on their own in their respective notebooks
- discuss points related to the unique features of the river systems

This self-study method will encourage the students to read and gather information on their own OR

The teacher can either use the innovative self-study method or can explain the topic using the PPT and the information given in the tabulated form. The PPT can be shown to the students to take note of the exact location, direction of flow and tributaries through the maps depicted on the PPT.

Introduction:

- Rivers originating from the Himalayas in northern part of India are known as Himalayan rivers
- Himalayan rivers are perennial due to the rainfall, melting of snow and glaciers
- These rivers have their source in the Himalayan ranges and are separated by water divides
- The Indus, the Ganga and the Brahmaputra are the three major Himalayan rivers
- The large and important tributaries join these long Himalayan rivers
- A river along with its tributaries forms a river system



The main Himalayan Rivers are:-

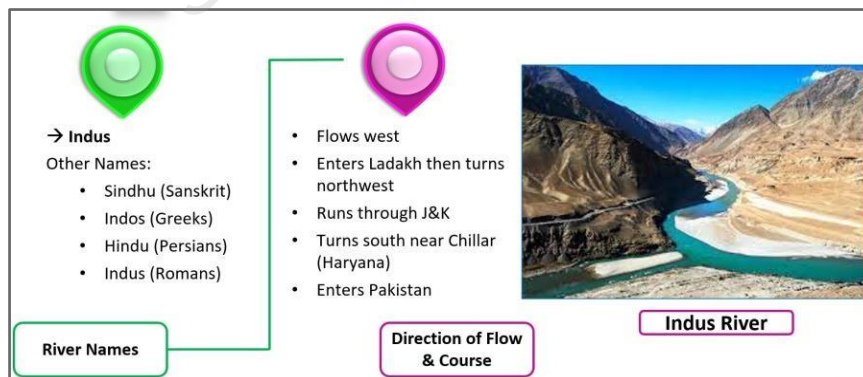
a) The Indus b) The Ganga and c) The Brahmaputra

Particulars	Description
Name of the River/Other Names	
Direction of the flow and course	
Special features	
Place of origin, length, elevation and area covered	
Regions covered	

Tributaries	
Distributaries	
Estuary/Delta	
Treaty	
Places of Tourist attractions	
Mouth	

Particulars	Description
Name of the River/Other Names	Indus Sanskrit name - 'Sindhu' Persians - 'Hindu' Greeks - 'Indos' Romans - 'Indus'
Direction of the flow and course	It flows west and enters India in Ladakh and then turns northwest Runs through Jammu and Kashmir, turns south near Chillar (Haryana) and enters Pakistan
Special features	The ancient Indus valley civilization flourished here Only river that is home to 'Plantalista indicus minor', a type of river dolphin, also known as the Indus River Dolphin or blind dolphin

Place of origin, length, elevation, drainage area in India	Bokhar Chu glacier, northern slope of the Kailash Range in Tibet near Mansarovar Length - 2,880 km (Only 709 km is in India) Elevation - 5,150 m Drainage Area - 321,289 sq.km
Regions covered	1/3 of the Indus basin is located in India's Ladakh, Jammu and Kashmir, Himachal Pradesh and Punjab and the rest is located in Pakistan 3 Asian countries - India, China (Tibet) and Pakistan
Tributaries	Zaskar, Nubra, Shyok and the Hunza, join in the Kashmir region Rivers Satluj, Beas, Ravi, Jhelum and Chenab join the Indus near Mithankot in Pakistan
Estuary/Delta	-
Treaty	Indus Water Treaty (1960) - India can use only 20% of the total water for irrigation in Punjab, Haryana and the southern and the western parts of Rajasthan
Places of Tourist attractions	Indus Valley Trek - Major Attraction
Mouth	Flows southwards into the Arabian sea, east of Karachi



Indus River: commons.wikimedia.org/wiki/File:13-10-08_217_CONFLUENCE_OF_INDUS_RIVER_N.jpg Attribution: Sundeep Bhardwaj

Particulars	Description
Name of the River/Other Names	Ganga Ganges, Bhagirathi River Padma in Bangladesh
Direction of the flow and course	Flows eastwards till Farakka in West Bengal Bhagirathi-Hooghly, a distributary flows southwards through the deltaic plains to the Bay of Bengal Mainstream flows southwards into Bangladesh and is joined by the Brahmaputra
Special features	Kumbh Mela is a mass Hindu pilgrimage which takes place at the Ganges river every 3rd, 6th, 12th and 144th yr at Haridwar, Ujjain, Allahabad and Nashik respectively
Place of origin, length, elevation and drainage area in India	Gangotri Glacier - Uttarkashi, Uttarakhand onto the plains at Haridwar. It joins Alaknanda at Devaprayag, Uttarakhand
	Length - 2525 km Elevation - 7010 m Drainage - 8,61,414 sq.km
Regions covered	India, Tibet, Nepal and Bangladesh
Tributaries	North - Gomti, Gandak, Kosi and Ghaghra South - Yamuna from the Yamunotri Glacier - right bank tributary (largest tributary), merges in Allahabad Son, Chambal, Betwa, etc. from peninsular uplands
Distributary	Hooghly
Estuary/Delta	Sunderban Delta - formed by the rivers Ganga and Brahmaputra and derives its name from the Sundri tree Northernmost point of the Ganga Delta World's most fertile, largest and fastest growing delta Most famously known as the mangrove forest Home to the Royal Bengal tiger

Project undertaken by the Government	Namami Gange Programme (Clean and Protect River Ganga)
Places of Tourist attractions	Varanasi which is the oldest city and a pilgrimage centre is on the banks of the river Ganga
Mouth	Bay of Bengal



River Names

- Ganga
- Ganges, Bhagirathi
- River Padma in Bangladesh



Direction of Flow & Course

- Flows Eastwards in West Bengal
- Bhagirathi-Hooghly, a distributary flows southwards to Bay of Bengal
- Mainstream flows southwards into Bangladesh and joins Brahmaputra



Special Features

Kumbh Mela

- A mass Hindu pilgrimage
- Takes place at the Ganges river

- Every 3/6/12/144 years
- At Haridwar, Ujjain, Allahabad & Nashik



Place of Origin, Length, Elevation, Drainage Area in India

Gangotri Glacier

Length - 2525 km

Elevation - 7010 m

Drainage - 8,61,414 sq.km

Particulars	Description
Name of the River/Other Names	Brahmaputra (meaning son of Lord Brahma - Sanskrit) Tsangpo (Purifier) in Tibet Jamuna in Bangladesh

	After joining river Ganga in Bangladesh it is called as Meghna
Direction of the flow and course	Flows eastwards parallel to the Himalayas The Brahmaputra flows southwest through the Assam valley and south through Bangladesh as the river Jamuna
Special features	9th largest river in the world Is the only river having a masculine pronoun It comprises of braided channels and forms many riverine islands

Place of origin, length, elevation and area covered	Chemayungdung Glacier, Kailash range - east of Lake Mansarovar in Tibet, close to the sources of the rivers Indus and Satluj Length - 2,900 km (900 km in India) Elevation - at an altitude of about 5,150 m Drainage - 1,94,413 sq.km
Regions covered	Tibet, India and Bangladesh
Tributaries	Tista, Manas, Barak, Subansiri, Dihang, Dibang and Lohit
Estuary/Delta	Ganges-Brahmaputra delta
Dam	Rangit Dam, Sikkim
Places of Tourist attractions	‘Majuli’ (Mazuli), an island in the Brahmaputra, is the largest riverine island in the world The river also has the world’s smallest inhabited riverine island, the Umananda Island/Peacock Island The famous Kaziranga National park is on the banks of the river Brahmaputra
Mouth	Bay of Bengal

01 River Names	- Brahmaputra (meaning Son of Lord Brahma) - Tsangpo (Purifier) in Tibet - Jamuna in Bangladesh - After joining river Ganga in Bangladesh known as Meghna
02 Direction of Flow & Course	- Flows eastwards parallel to the Himalayas - Flows southwest through the Assam valley and south through Bangladesh as the river Jamuna
03 Special Features	9th largest in the world - Only river that has a masculine pronoun - Comprises of braided channels and forms many riverine islands

Time to teach	Asset type	Theme	Sub Theme
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20 minutes	Main Script	Resources	Drainage Systems In India
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IQ_River Pollution - A case study

Objective: The students will be able to explain the reasons for river pollution.

Notes to the teacher: The teacher may read out the following paragraphs related to river pollution to the class and pose the following questions to the students. Allow the students to think and come out with as many answers as possible before drawing a conclusion. If there is any difficulty in getting the answers, the teacher can ask leading questions.

Reports related to River Pollution

The local administration in Delhi had to hire boatmen to clear away the toxic foam that stretched upto 13 miles on river Yamuna, during the Chhath festival. Low production at hydroelectric power stations in Asia's longest river, Yangtze, caused severe power outages to millions of people in China.

As per the United Nations Environment Programme (UNEP) about $\frac{1}{3}$ of the rivers in Asia, Africa and Latin America suffer from severe pathogenic pollution which can lead to diseases.

1500 tons of microplastics find their way into freshwater bodies severely endangering aquatic life.

According to the report stated by the World Wildlife Fund (WWF) about $\frac{1}{3}$ of the world's food production and 40% of consumption of fish hinge on rivers.

Q1) Human intervention is compounding the problem of river pollution. Explain with reference to the above paragraph.

Answer:

- a) Global warming - Accelerated melting of glaciers can lead to floods during certain seasons which could be followed by seasons where the flow of water in the perennial rivers would be reduced drastically.
- b) Hydel power plants - This would reduce or bring electricity production to a standstill causing blackouts.
- c) Biodiversity - A reduced flow of water will affect flora and fauna leading to loss of biodiversity.

Q2. Rivers support people and economies. Justify.

Answer: Pilgrimage centres located on riverbanks see many visitors throughout the year. Local and international tourists indulge in wildlife viewing, water sports, river rafting and fishing and thereby generate employment opportunities and revenue for the economy. Rivers are efficient and cheaper for inland navigation and trade.

Time to teach	Asset type	Theme	Sub Theme
8 minutes	Inquisitive Questions	Resources	Drainage Systems in India

DD_Save Ganga Movement

Objective: The students will be able to examine the measures undertaken by the Government of India to save the River Ganga.

Teaching Aids: PPT

Notes to the teacher: The teacher can start the asset by asking the following questions:

Q1. When is World Rivers Day celebrated?

Answer: World Rivers Day is celebrated on the 4th Sunday of September every year.



Rivers Day: pixabay.com/photos/india-greenary-water-river-hills-4981397/
Attribution: Babusyams

Q2. Why did our ancestors throw copper coins into the holy rivers?

Answer: Our ancestors threw copper coins into the holy rivers to ensure that the water we took in was pure and clean as copper has antibacterial properties.



Copper coins: pixabay.com/photos/coins-pennies-money-currency-cash-912716/

Attribution: OlicheI

Coins in water: pixabay.com/photos/coins-water-money-time-flow-711355/

Attribution: UniBay

Q3. Name a few lakes or rivers in your district.

Answer: The teacher may accept all relevant answers.

Q4. What is the main source of water supply in your area? What efforts are taken to keep it clean?

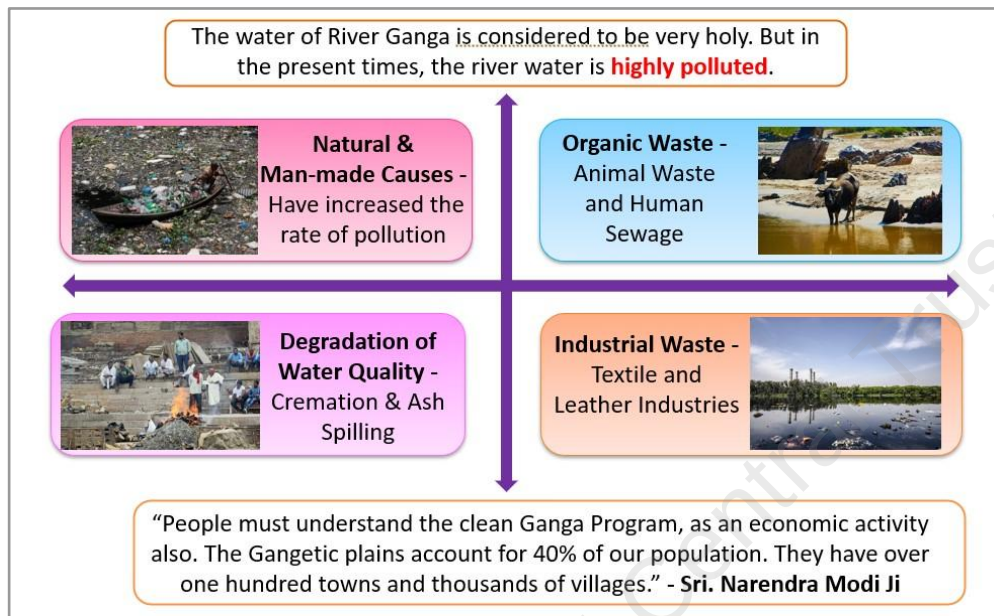
Answer: The teacher may accept all relevant answers.

Teaching Learning Material (TLM): Gangajal in copper container

What do you need?: Gangajal in a copper container and copper coins

Get Ready: The teacher can procure it from one of the students to show it in the class.

Notes to the Teacher: The teacher can mention that the water of river Ganga is considered to be holy and is preserved in small sealed copper containers. The teacher can show the copper container to the students.



Natural and man-made: pixabay.com/photos/river-pollution-bangladesh-5859444/

Attribution: 19661338

Organic waste: pixabay.com/photos/oxe-river-drinking-rocks-cow-989078/

Attribution: terimakasih0

Cremation: pixabay.com/photos/cremation-ground-hindu-cremation-4848805/

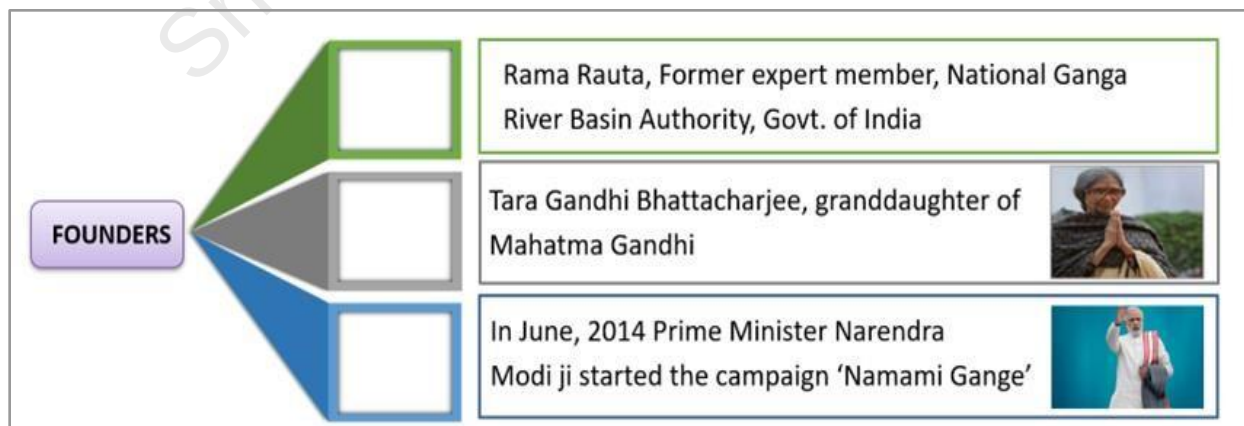
Attribution: balouriarajesh

Industrial waste: pixabay.com/photos/contamination-water-pollution-lake-4286704/

Attribution: yogendras31

Name of the project: Namami Gange

Founders of the movement:



Tara Gandhi: picryl.com/media/joe-and-jill-biden-lay-a-wreath-at-the-martyrs-column-at-the-gandhi-smriti-e1a990

Attribution: Executive Office of the President of the United States

Modiji: flickr.com/photos/146931246@N07/29542111756

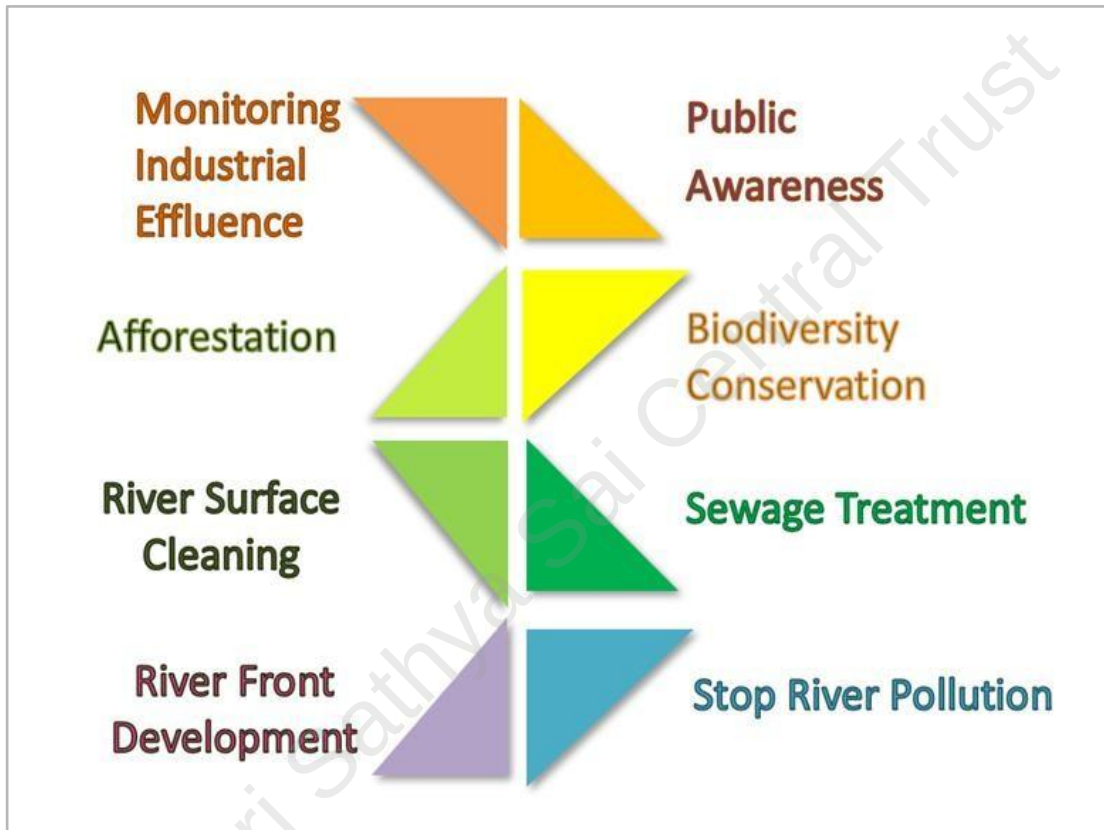
Attribution: Jhon Don

Aim of the project: Covers 8 states, 47 towns and 12 tributaries to purify the river Ganga and bring it back to its original glory.

Budget: 20,000 crores

Achievements: Out of 341 projects, 147 have been completed.

Initiatives undertaken by the Government of India:



International collaboration for Ganga rejuvenation:

Australia, United Kingdom, Germany, Finland and Israel

Notes to the teacher: The teacher can play the video - 'Humaari Nadhiyaan.mp4' attached which has the lyrics and tune to the song. Students may be encouraged to learn the song and present it in the school assembly.

Humaari Nadhiyaan

Ch: Humaari nadhiyaan

Hai hum sab ki pyaari

Swatch rakle hum inko sadaa

Ye bahenge jahan

Pragathi hai vahan
Ye jaldhaara hai desh ki jeevan dhaara

Puraani hai Nadhiyaan Bharath ki
Is pe hai nirbhar har praani
Maan karen hum inki
Nadhiyaan MAA hai hum sabki
Kyun ki Rivers are the lifeline of our country
Ye jaldhaara hai desh ki jeevan dhaara
(Humaari Nadhiyaan ...)

Sundar nadhiyaan hai Bharath ki
Ganga, Yamuna aur Kaveri
Jaago Jaago hey logo
Baath gambheer hai ye jaano
Kyunki Rivers are the lifeline of our country
Ye jaldhaara hai desh ki Jeevan dhaara
(Humaari Nadhiyaan ...)

Humaari Nadhiyaan
Hai hum sab ki pyaari
Swatch rale hum inko sadaa
Ye bahenge jahan
Pragathi hai vahan
Ye jaldhaara hai desh ki jeevan dhaara
Kyun ki rivers are the lifeline of our country
Swatch rakhle hum inko sadaa

River video: ixabay.com/no/videos/elven-skog-foss-kaskade-at-natur-120254/ Attribution: Engin_Akyurt

Besides the government, we as citizens should understand the unparalleled importance of river Ganga and should pledge to keep it clean and pure.

Time to teach	Asset type	Theme	Sub Theme
5 minutes	Day-to-day Relevance	Resources	Drainage Systems In India

MS_The Peninsular Rivers

Objective: The students will be able to classify the different Peninsular River basins of India.

Teaching Aids: PPT

Notes to the teacher: The teacher can start the asset by asking the following question:

Q1. Classify the following rivers into the Himalayan and the Peninsular rivers.

(a) The Ganga (b) The Narmada (c) The Kaveri (d) The Brahmaputra (e) The Tapi (f) The Yamuna (g) The Godavari

Answer: The Himalayan rivers - The Ganga, the Yamuna and the Brahmaputra

The Peninsular rivers - The Narmada, the Tapi, the Godavari and the Kaveri

Introduction:

- The rivers that originate from the Peninsular plateau in the Western Ghats are known as the Peninsular rivers. These rivers are seasonal as they are rain fed
- The Western Ghats create the major water divide for the Peninsular rivers

Based on the direction of flow, the Peninsular rivers are divided into:

1. The West flowing rivers and 2. The East flowing rivers

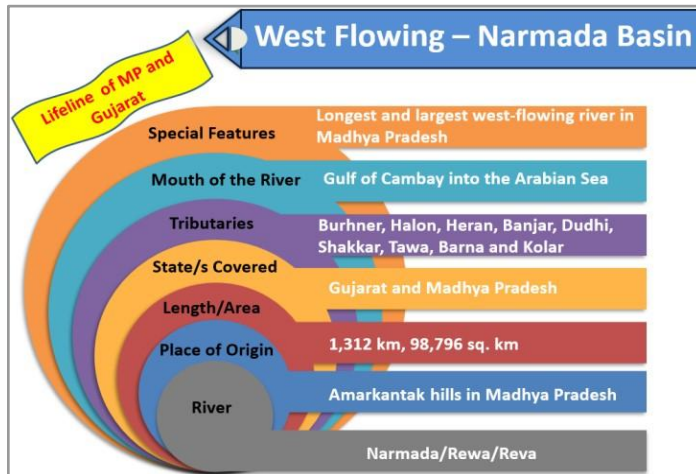
Notes to the teacher: The teacher can display the map of the rivers of India while she discusses these points in the asset namely - source, direction of flow, states through which the river flows, tributaries, distributaries and the mouth of the river.



India map - SSSVV Gallery

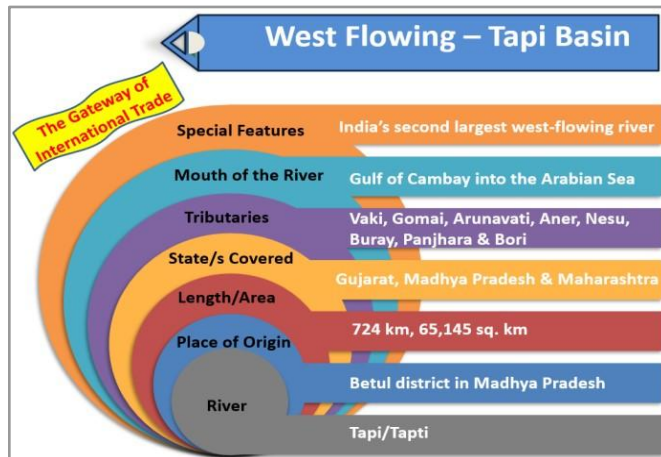
The West flowing rivers:

The Narmada Basin:



1. **Special features:** Longest and largest west-flowing river in Madhya Pradesh. It is also known as the 'Lifeline of Gujarat and Madhya Pradesh'.
2. **Projects undertaken by the Government/Dam:** The 'Namami Devi Narmade' - movement to maintain the river and keep it pollution free. Sardar Sarovar dam - largest river project in Gujarat.
3. The first ever **solar canal project** has been launched by the Government of Gujarat over the 532 km long network of canals over the river Narmada to generate electricity and also to reduce the evaporation of billions of litres of water.
4. **Places of tourist attraction:** The 'Marble rocks', and the 'Dhuandhar falls' near Jabalpur, Madhya Pradesh.

The Tapi Basin:



Special features: India's second largest west-flowing river; Regarded as 'Narmada's twin or hand maid' and is also known as 'The Gateway of International trade'.

Projects undertaken by the Government/Dam: Ukai Dam also known as Vallabh Sagar Dam built across the river Tapi, is the second largest reservoir in Gujarat.

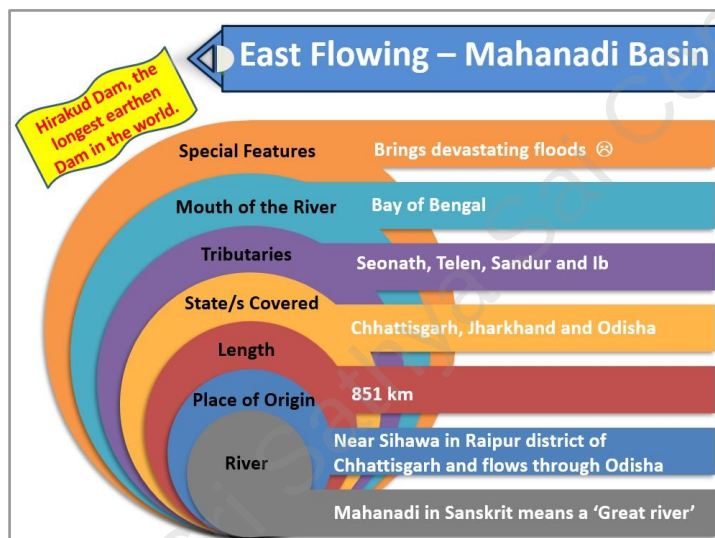
The East Flowing Rivers

The Godavari Basin:

1. **Name of the river and other names:** Godavari, also known as Dakshin Ganga/Vridha Ganga.
2. **Direction of the flow:** East-flowing
3. **Place of origin:** Near Trimbak in Nashik district of Maharashtra
4. **Length** - 1500 km
5. **Area** - 3.13 lakh km²
6. **States covered:** Parts of Maharashtra (about 50% of the basin lies in Maharashtra), Andhra Pradesh and Telangana.
7. **Tributaries:** The Purna, the Wardha, the Pranhita, the Manjra, the Wainganga and the Penganga
8. **Fresh water lake:** Lake Kolleru is located in the deltaic region.
9. **Mouth of the river:** Bay of Bengal in West Godavari district, Andhra Pradesh
10. **Special features:** The longest and largest peninsular river of South India
11. **Projects undertaken by the Government/Dam:** Gangapur Dam, Jayakwadi Dam and Sriram Sagar Dam are few dams constructed in the river basin of the Godavari river.

The Mahanadi Basin:

1. **Name of the river and other names:** Mahanadi in sanskrit means a 'Great river'
2. **Direction of the flow:** East-flowing
3. **Place of origin:** Near Sihawa in Raipur district of Chhattisgarh and flows through Odisha
4. **Length:** 851 km
5. **States covered:** Chhattisgarh, Jharkhand and Odisha
6. **Tributaries:** Seonath, Telen, Sandur and Ib
7. **Distributaries:** Paika, Birupa, Chitartala, Genguti and Nun
8. **Mouth of the river:** Bay of Bengal
9. **Special features:** It is known as 'Sorrow of Odisha' (due to devastating floods)
10. **Projects undertaken by the Government/Dam:** The Hirakud Dam - the longest earthen dam in the world is built across this river



The Krishna Basin:

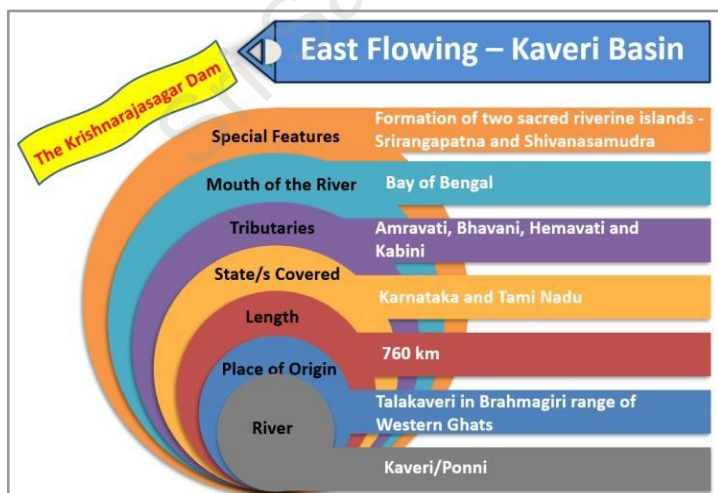
1. **Name of the river and other names:** Krishna, also known as 'Krishnaveni'
2. **Direction of the flow:** East-flowing
3. **Place of origin:** Mahabaleshwar in the Western Ghats of Maharashtra
4. **Length:** 1400 km
5. **Area:** 2.58 lakh sq.km
6. **States covered:** Maharashtra, Andhra Pradesh, Karnataka and Telangana
7. **Tributaries:** The Ghataprabha, the Malaprabha, the Bhima, the Tungabhadra, the Koyna, the Peddavagu and the Musi river
8. **Delta:** The Krishna-Godavari delta is known as 'The Rice Granary of India'
9. **Mouth of the river:** Bay of Bengal

10. **Special features:** Third longest river of India
11. **Projects undertaken by the Government/Dam:** Nagarjunasagar Dam - The world's largest masonry dam is built across the river

The Kaveri Basin:

1. **Name of the river and other names:** The river was called 'Ponni' due to its deposit of fine silt and is known as 'Dakshin Ganga'
2. **Direction of the flow:** East-flowing
3. **Place of origin:** Talakaveri in the Brahmagiri range of the Western Ghats, Kodagu district in Karnataka
4. **Length** - 760 km
5. **States covered:** Karnataka and Tamil Nadu
6. **Tributaries:** Amravati, Bhavani, Hemavati and Kabini
7. **Distributaries:** Breaks into large distributaries
8. **Delta:** Forms a wide delta which is thickly populated
9. **Mouth of the river:** Bay of Bengal
10. **Special features:** Formation of two sacred riverine islands - Srirangapatna and Shivanasamudra. The Shivanasamudra falls is the second biggest falls in India made by river Kaveri
11. **Projects undertaken by the Government/Dam:** The Krishnarajasagar Dam
12. **Srirangam** in Trichy too is a riverine island formed by rivers Kaveri and its tributary Kollidam. The town of Srirangam is located in the centre of this island

Notes to the Teacher: The teacher can mention the first and the third biggest waterfalls in India - the Kunchikal falls in Shimoga district, Karnataka and the Gersoppa (Jog) falls on the river Sharavati in Karnataka



These rivers have a great religious and cultural significance in the lives of the people. Apart from the major rivers, the Damodar, the Brahmani, the Baitarani and the Subarnarekha are some of the smaller rivers flowing towards the east.

Time to teach	Asset type	Theme	Sub Theme
15 minutes	Main Script	Resources	Drainage Systems In India

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IQ_Rivers - Himalayan - Peninsular

Objective: The students will be able to differentiate between the landforms created by the Himalayan and the Peninsular rivers.

Teaching Aids: NA

Notes to the teacher: The teacher can pose the following questions to the students and allow them to think and come out with as many answers as possible before arriving at a conclusion. If there is any difficulty in getting the answers, the teacher can ask leading questions. **The teacher can take a printout of the image given below and carry it to the class to show it to the students.**

Q1: What features can you see in the picture? Why do you think such features created by the Himalayan rivers are more spectacular than those created by the peninsular rivers?



Himalayan river: unsplash.com/photos/b6rs6V_9IH4
Attribution: Sukant Sharma

Possible Answer: The rivers flowing down the Himalayan mountains have enormous amount of water due to the continuous melting of glaciers. Therefore, with such a huge volume of water, the perennial rivers easily cut the mountain surfaces into deep gorges and canyons, which are very spectacular. The peninsular rivers on the other hand are mostly rain fed. The volume of water is comparatively less.

Q2: Why do we not find such an extensive fertile plain enriched with silt in the peninsular part as we find it in the north?

Possible Answer: The Himalayan rivers while flowing down the mountains carry out extensive erosional activity powered by the huge volume of water. The erosion of rock fragments results in formation of silt and alluvium while the peninsular rivers are non-perennial in nature and have water only during the rainy season. Hence, they cannot carry out erosional activity to a large extent throughout the year.

Q3: Why do you think there is an absence of estuary formation by the Himalayan rivers?

Possible Answer: Estuaries are formed by the peninsular rivers like the Narmada and the

Tapi due to their comparatively short courses and absence of silt. The Himalayan rivers are filled with silt and have long courses with a larger volume of water. Therefore, estuary formation is not possible by the Himalayan rivers.

Q4: Why do we generally find the Himalayan rivers displaying a more distinctive course with prominent features than peninsular rivers?

Possible Answer: The Himalayan rivers with a huge volume of water carve out prominent valleys and gorges. With a huge load of silt, depositional features also become distinctive. Erosion, transportation and deposition activities are more visible in perennial rivers as they are continuously fed with water by glaciers while the peninsular rivers lack such prominent features due to less amount of water.

***Keyword:** Estuary - An area where a stream or a freshwater body meets the ocean.

Time to teach	Asset type	Theme	Sub Theme
8 minutes	Inquisitive Questions	Resources	Drainage Systems In India

QA_Recap - Drainage

Objective: The students will be able to compare the Himalayan and the Peninsular rivers.

Teaching Aids: Worksheet

Brief Introduction of the activity: Innovative technique - Catch the bus

This is a team race activity that is a quick way to assess the learning of your class. This method of assessment helps the teacher to know the subtopics which may need a recap or clarification.

Notes to the teacher: The teacher can divide the entire class into 4 groups. Each group is allocated 5-7 minutes to answer all the questions. A stop watch can be used to keep track of time. The teacher can conduct this assessment using the innovative techniques '**Catch the bus**' or in the form of a quiz.

The worksheet can be given to the students as homework activity.

Prior Preparation for the Assessment: The teacher can prepare the cards for the assessment before conducting it in the classroom.

Procedure:

- Create a set of 25 question cards covering the entire topic. These questions should have relatively straight forward answers
- Mix up all the question cards and place them on the desk
- Ensure that all the team members of each group are seated together
- One person from each group runs to the front of the room to collect the first question. They run back to their group, read out the question and as a group decide on the answer. A different student will then give out the answer
- If the answer is correct, they pick up the next card
- If a student gives a wrong answer, they must return to their group to deliberate the answer until they get it right
- Every group will take turns to try and answer 5 questions
- Points should be awarded according to the correct answers given
- The team that answers correctly all questions within the stipulated time can be declared the winner

Sample questions with answers:

1. Only peninsular river in the Deccan Plateau - Godavari

2. River which has the largest delta - Ganga
3. Main tributary of River Ganga - Yamuna
4. The upland that separates two drainage basins - water divide
5. Two broad divisions of drainage systems of India - The Himalayan and the Peninsular plateau rivers
6. Two major perennial Himalayan rivers - The Indus and the Ganga/Brahmaputra
7. The place where the river originates - Source of the river
8. Define a river system - A river along with its tributaries forms a river system
9. Two major Himalayan rivers that join the Arabian Sea - The Indus and the Sutlej
10. The place where river Ganga originates - Gangotri glacier
11. One major distributary of River Ganga - River Hoogly
12. The delta formed by River Ganga and Brahmaputra - Sunderban delta
13. Place where River Brahmaputra originates - East of Mansarovar lake
14. Two rivers that rise in Tibet - The Indus and the Brahmaputra
15. Two tributaries of river Yamuna - The Chambal and The Betwa
16. Largest riverine island formed by River Brahmaputra - Majuli
17. Two west flowing peninsular rivers - The Narmada and the Tapi
18. River that originates in the Amarkantak hills in Madhya Pradesh - Narmada
19. River that flows through Madhya Pradesh and Gujarat - River Narmada
20. The river basin which covers parts of Madhya Pradesh, Gujarat and Maharashtra - Tapi
21. Largest peninsular river - The Godavari
22. Two peninsular rivers that drain in the Bay of Bengal - The Mahanadi and the Krishna
23. River that flows through Odisha - River Mahanadi
24. The Tungabhadra, the Koyna and the Bhima are the tributaries of this river - River Krishna
25. This river forms the second biggest waterfall in India - The Kaveri

Time to teach	Asset type	Theme	Sub Theme
20 minutes	Questions to Assess	Resources	Drainage Systems In India

MS_Lakes of India

Objective: The students will be able to elucidate about the different types of lakes.

Teaching Aids: PPT

Notes to the teacher: The teacher can start the asset by asking the following question:

Q1. Name some of the famous lakes in India

Answer: Dal Lake, Hussain Sagar Lake, Pulicat Lake, Vembanad Lake, etc., are some of the famous lakes of India.

The water body surrounded by land is known as a lake. There are many lakes around the world which are formed in different physiographic divisions. Out of the 71% water available on the earth's surface, only 3% is freshwater and the rest 97% is salt water. .

Lakes are formed due to rainwater, snow, melting ice, streams and groundwater seepage. Most freshwater lakes originate from the glaciers in the Himalayan region. India has many lakes which differ in size and other characteristics

Types of Lakes	Name of Lake	Formation of Lake	State/UT
Freshwater Lake	Wular and Dal, Loktak, Barapani, Bhimtal and Nainital	Wular - Tectonic activity Others formed by melting of snow	Jammu and Kashmir, Manipur, Meghalaya and Uttarakhand
Oligotrophic Lake (Poor in plant nutrients)	Gadsar	Glacial scouring	Jammu and Kashmir
Lagoon Lake	Chilika, Pulicat, Kolleru and Vembanad	Chilika - Silting action of the river Mahanadi	Odisha, Tamil Nadu, Andhra Pradesh and Kerala

Salt Lake	Sambhar	Short streams draining into low depression forming temporary lakes in deserts	Rajasthan
Oxbow Lake	Vynthala	Formed by the winding of river Chalukudy	Thrissur district, Kerala
Meteorite Lake	Lonar	Formed due to the impact of meteorite	Buldana district, Maharashtra



Chilika lake: commons.wikimedia.org/wiki/File:Chilika_Bhubaneswar.me.jpg
Attribution: Government of Odisha/ Saileshpat

- The lakes in the basins of inland drainage like the semi-arid areas contain water only during the monsoon
- Lakes are also formed due to the action of wind, river and human activities
- A wide meander of a river cuts off to create a free-standing U-shaped lake or water body known as an oxbow lake
- These stillwater lakes are not fed by any stream or spring and do not have a natural outlet



Meander: pixabay.com/sv/photos/slingra-sig-en-flod-england-kv%c3%a4ll-1462370/
Attribution: diego_torres

Uses of lakes:

- A lake helps in preventing floods during the heavy rains
- During the dry season, they become a source of water
- Water stored in the lakes is used for irrigation in times of drought
- The artificial lakes formed due to the damming of rivers are used for the generation of hydel power
- They maintain the aquatic ecosystem and climate balance
- Lakes add natural beauty to the environment. They promote tourism and recreation which are of great value to human beings



Hydel power: pixabay.com/sv/photos/vattenkraftverk-huanza-peru-1264100/
Attribution: tuproyecto

Time to teach	Asset type	Theme	Sub Theme
10 minutes	Main Script	Resources	Drainage Systems In India

IA_Drainage Patterns of Rivers

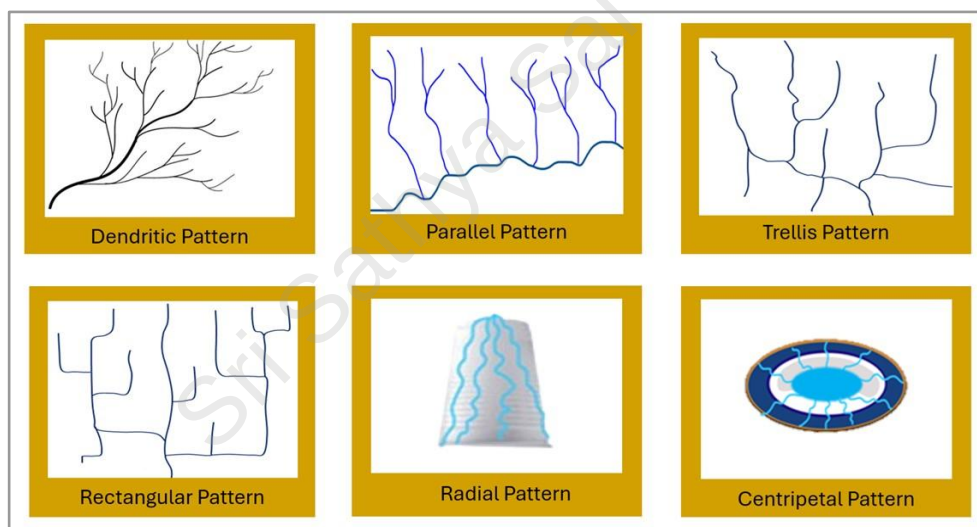
Objective: The students will become interested in the information regarding diverse patterns of drainage systems of India.

Teaching Aids: PPT

Teaching Learning Material (TLM): The teacher can show different types of drainage patterns

What do you need?: Woollen threads of various colours (blue, yellow...), one paper dish, one ice-cream cup, six cardboard pieces, six small strips of paper with names of drainage patterns written on it.

Get Ready: The teacher should prepare the drainage patterns on the cardboard sheets with the help of the woollen threads as shown in the diagrams below. The paper dish and the ice-cream cup can be used to depict Centripetal and the Radial drainage patterns respectively. The strips with the names of the drainage pattern can be pasted on the cardboard pieces. The teacher should be ready with the TLM before she goes to the class.



Dendritic Pattern:

commons.wikimedia.org/wiki/File:Dendritic_Drainage_pattern.jpg

Attribution: Tshf aee at English Wikipedia

Parallel Pattern: SSSVV Media Bank

Trellis Pattern: opentextbc.ca/geology/chapter/13-2-drainage-basins/

Attribution: Physical Geology by Steven Earle

Rectangular Pattern: opentextbc.ca/geology/chapter/13-2-drainage-basins/

Attribution: Physical Geology by Steven Earle

Dinner plate: publicdomainvectors.org/en/free-clipart/Blue-dinner-plate-vector-illustration/12387.html

Attribution: Openclipart

Plastic cup: pixabay.com/sv/vectors/kopp-disponibel-plast-149036/

Attribution: OpenClipart-Vectors

Notes to the teacher: The teacher should show each of the drainage patterns as she explains that concept.

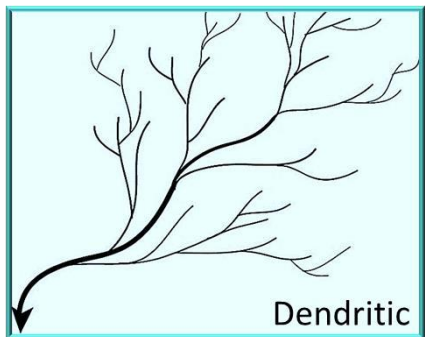
Definition of a drainage pattern: The pattern which a river, along with its tributaries forms from its origin to its mouth over a period of time is referred to as a 'Drainage Pattern'. The patterns depend on the slope, surface of the land, rock structure beneath and the conditions of the area. Now let us look into the different types of drainage patterns.

1. Dendritic drainage pattern:

- The word dendritic is derived from the Greek word 'Dendrite' which means a tree
- It is the most common type and looks like the branches of a tree root when joined by the tributaries

Examples - In the northern plains - the Ganga with its tributaries

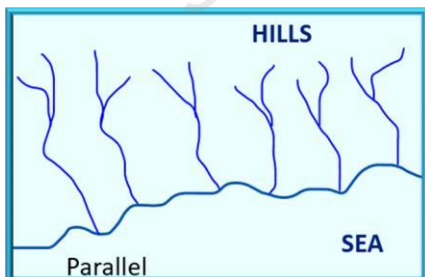
In the peninsular plateau - the Godavari, the Mahanadi, the Krishna and the Kaveri



Dendritic Pattern:
commons.wikimedia.org/wiki/File:Dendritic_Drainage_pattern.jpg
Attribution: Tshf aee at English Wikipedia

2. Parallel drainage pattern:

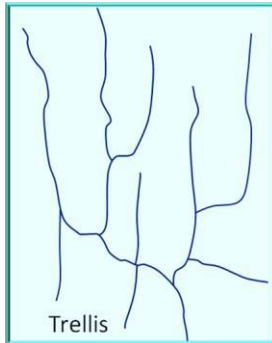
- The steep slopes with some relief features cause this pattern. The tributaries flow in the same direction as the slopes and are parallel to each other. Example - the Godavari, the Kaveri, the Krishna, and the Tungabhadra originating from the Western Ghats



Parallel Pattern: SSSVV Media Bank

3. Trellis drainage pattern:

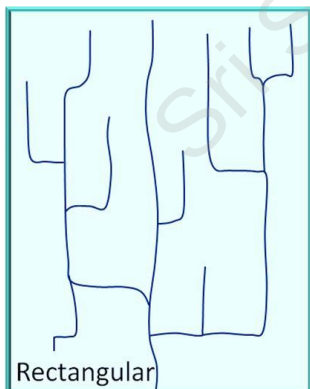
- These patterns look similar to the common garden trellis and is formed when the primary tributaries of main rivers flow parallel to each other and the secondary tributaries join them at right angles
- Hard and soft rocks erode at varying rates and make way for the tributaries.
Example - The rivers in the upper Himalayan region - the Indus, the Ganga and the Brahmaputra. This type of pattern can be found in the Chotanagpur and the Deccan plateau



Trellis Pattern: opentextbc.ca/geology/chapter/13-2-drainage-basins/
Attribution: Physical Geology by Steven Earle

4. Rectangular drainage pattern:

- It is generally developed in the regions where the rock joints form rectangular pattern and are found in areas that have been exposed to faulting
- This allows the tributary streams to make sharp bends and enter the main stream at high angles Example - Streams originating in the Vindhya mountain range; the Chambal, the Betwa and the Ken

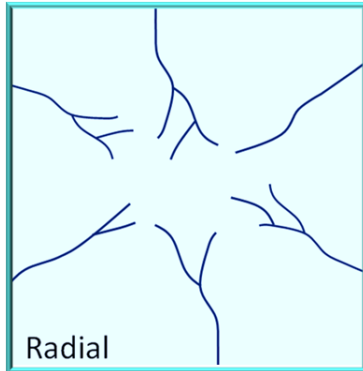


Rectangular Pattern: opentextbc.ca/geology/chapter/13-2-drainage-basins/
Attribution: Physical Geology by Steven Earle

5. Radial drainage pattern:

- The radial drainage pattern forms when a river originates from a hill and flows in all directions

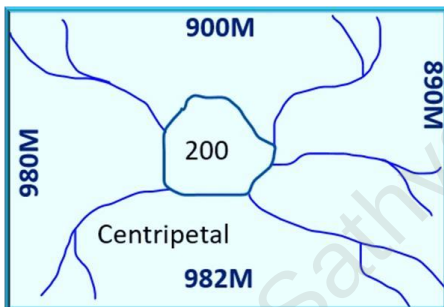
- They develop around a centrally raised point and resemble a cone shaped feature - like the volcano. Example - The rivers originating from the Amarkantak range; the Narmada and the Son (tributary of the river Ganga)



Radial Pattern: opentextbc.ca/geology/chapter/13-2-drainage-basins/
 Attribution: Physical Geology by Steven Earle

6. Centripetal drainage pattern:

- In this pattern, the streams flow from all directions into a lake or a depression
- Salt flats are created occasionally in these dry lake beds. Example - Loktak lake in Manipur



Centripetal Pattern: SSSVV Media Bank

Thus different regions have different drainage patterns.

Time to teach	Asset type	Theme	Sub Theme
4 minutes	Interesting Asides	Resources	Drainage Systems In India

SA_Drainage System of India

Objective: The students will be able to determine how rivers and lakes play an important role in promoting tourism.

Teaching Aids: NA

Notes to the teacher: The teacher can suggest a list of topics on which the students can design a poster using their creativity. The students can be encouraged to select any other sub-topic from the chapter for the poster.

Suggested topics for poster designing

Himalayan rivers	Peninsular rivers	Lakes
Indus Dolphin	Dhuadhar Falls	Wular Lake
Hemis National Park (Indus)	Marble Rocks	Dal Lake
Ganga Aarti	The gateway of international trade - The Tapi	Lonar Lake
Sunderban Delta	Rice granary of India - river Krishna	Vembanad Lake
Kumbh Mela	Shivanasamudra waterfalls	
Kaziranga National Park	Famous temples on the banks of rivers	
Umananda/Peacock Island		
Majuli Island		

Aim: To depict interesting information about the diverse drainage systems of India through a poster designing.

Resources Required:

1. Poster Board/A4 Sheets
2. Pictures of topics chosen by the students
3. Glue sticks
4. A pair of scissors, ruler/scale, sketch pens/coloured pens

Setting for the Activity: Indoor

Type of Activity: Designing a Poster

Preparation of Activity: The teacher may ask the students to select a particular topic a week in advance and ask them to collect relevant pictures for designing the poster. Students can also be encouraged to draw or paint the images for the poster.

Role of the Teacher: Facilitator

Procedure: The students can get the poster board or the teacher can distribute the A4 sheets during the class for designing the poster.

Observation: The students will be able to recollect the diverse drainage systems of India.

Conclusion: The poster activity will enable the students to use their imagination and creativity in understanding and appreciating the diverse river systems of India that contribute to the economy by promoting tourism.

Precautions: The students can be encouraged to complete the activity within the stipulated time.

Troubleshooting: If the activity cannot be taken in the classroom, it can be given as a project activity to be completed at home.

Presentation: All the posters can be put up on the class notice board or in the corridor.

Time to teach	Asset type	Theme	Sub Theme
20 minutes	Suggested Activity	Resources	Drainage Systems In India

QA_Review - Drainage

Objective: The students will be able to revise the Chapter - Drainage.

Teaching Aids Provided: Worksheet

Brief Introduction of the activity: Innovative technique - Reach your Goal

Notes to the teacher: The asset may contain some extra information. The teacher may use her discretion to include or to avoid those questions while conducting the assessment. The teacher can revise and assess the student's learning for the chapter by conducting the assessment in this innovative way.

Prior Preparation for the Assessment: The teacher can prepare the main cards and cards depicting the other related points for the assessment before conducting it in the classroom.

Procedure: This innovative technique tests how good your memory is or how fast you can recall the contents in the lesson.

The class can be divided into 4-5 groups. One student from each group has a main card.

Main Cards:

Names of Himalayan, Peninsular rivers and lakes

Example: 1) The Indus 2) The Ganga 3) The Brahmaputra 4) The Godavari 5) The Krishna 6) Loktak 7) Dal Lake 8) Wular Lake

Card 1 - Main River/Lake

Card 2 - Source

Card 3 - Tributaries

Card 4 - Mouth

Card 5 - Alternate names/Special features

Card 6 - States through which it flows/the place where the lake is located

Card 7 - Type of lake

- The teacher first distributes the main cards having names of rivers or lakes
- These students can be made to hold the placards in such a way that the entire class is able to see the main cards
- Each student in the class has to pick up a placard
- The student can read the information put up in the card picked up by him and try to join the student holding the main card relevant to his/her card
- This assessment can be timed to make it interesting and enjoyable for the students

Example:

Card 1 - Indus

Card 2 - Bokhar Chu Glacier

Card 3 - Beas

Card 4 - Arabian Sea

Card 5 - Sindhu

Presentation: Once all the 5 or 6 card holders assemble together, one student from the group presents the entire information related to that river or lake in 2 minutes.

Notes to the teacher: The worksheet can be given to the students as a homework activity.

Time to teach	Asset type	Theme	Sub Theme
20 minutes	Questions to Assess	Resources	Drainage Systems In India

MS_Summary - Drainage

Objective: The students will be able to summarise about the diverse drainage systems and lakes in India in the chapter - Drainage.

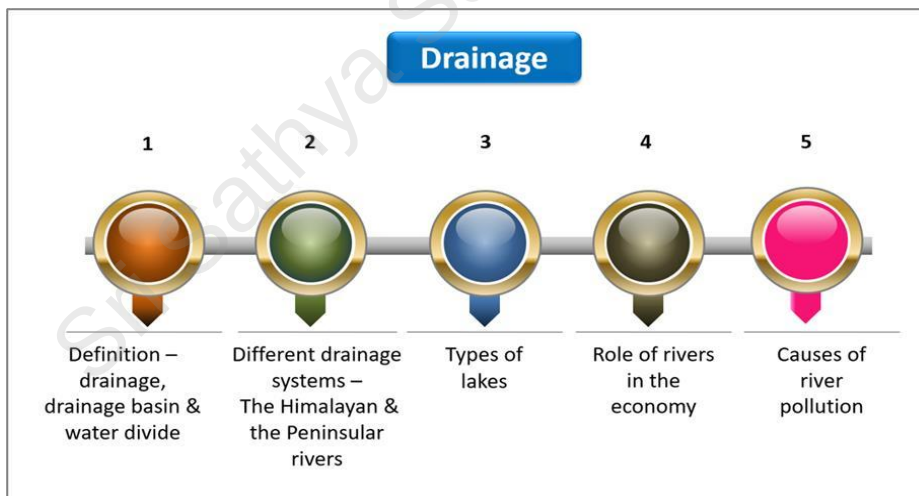
Teaching Aids: PPT

Notes to the teacher: The teacher can draw the mind map or write the main points of the summary on the blackboard.

The teacher can introduce the asset by saying, “Let us summarise what we have learnt from this topic”.

Summary - In this chapter we discussed:

1. Definition of - drainage, drainage basin and water divide
2. Different types of drainage systems - The Himalayan rivers and the Peninsular rivers
3. Types of lakes
4. The role of rivers in the economy and
5. Causes of river pollution



Time to teach	Asset type	Theme	Sub Theme
3 minutes	Main Script	Resources	Drainage Systems In India



Sri Sathya Sai
VIDYA VAHINI
श्री सत्यसाई विद्या वाहिनी

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Annexure to Master Lesson Plan

What is the purpose of this Master lesson Plan?	This Master Lesson Plan (MLP) prepared by Sri Sathya Sai Vidya Vahini (SSSVV), covers the entire chapter for the given board. The MLP for the chapter given in the textbook is broken down into smaller modules known as assets. Any chapter can be taught using the 7 asset types in SSSVV methodology. Several different assets together complete the entire chapter. Depending on the requirement, each asset is supported by teaching aids such as animated presentation, audio, video, and learning aids such as worksheets. The MLP is for the teacher's preparation and the teaching aids are for use in the classroom.
How to use it?	You can prepare for your class with this MLP by following 3 simple steps: 1. Read your textbook; 2. Go through the information given in the assets (document & multimedia); 3. Prepare your teaching notes. Great! Now you are ready to transact the chapter.
Duration	Kindly note the duration given for each asset. Due care has been taken in planning the assets, to ensure the chapter is completed within the time specified by the Board. Note: Preparation time is not included in the asset duration. The teaching time depends on the duration of the teaching aids and is not impacted by the length of the MLP.
What is a 'Main Script' (MS) Asset?	The Main Script asset is there for explaining the main concepts of the chapter clearly. The information given in the textbook is simplified, organised and structured to give more clarity. Additionally, you may find a video or mnemonics or a graphic organiser to deepen the understanding of the concept.
How to teach using the MS asset?	Please use the blackboard, slides and interaction to develop the concept.
What is an 'Inquisitive Questions' (IQ) asset?	The Inquisitive Questions asset uses questions to promote higher order thinking like the n th why, what-if, new perspectives, cause-effect, and others, creating curiosity.
How to teach using the IQ asset?	You may use the questions to connect with the students, encourage exploration to engage them in the learning process. You may allow multiple responses and instead of rejecting any of the responses, ask why, before revealing the suggested answer or hints.
What is a 'Day to day Relevance' (DD) Asset?	The Day to Day Relevance asset helps students understand the practical relevance of every topic, making them eager participants in the classroom. If students connect the concepts to their environment, they would learn meaningfully without dislike or simply memorizing for exams.
How to teach using the DD	You may use the asset by asking questions about their experience and use it to establish why they are learning the topic. If necessary you may substitute with a

asset?	recent or local example.
What is an 'Interesting Aside' (IA) asset?	The Interesting Aside asset uses attention grabbing tidbits or anecdotes to bring joy and satisfy the child's hunger to know more. This is a quick/short asset intended to bring attention back to the main concept being taught.
How to teach using the IA asset?	You may use this asset to give a piece of interesting information relevant to the topic, without prolonged explanation/discussion. You may suggest appropriate books for further reading.
What is a 'Suggested Activity' (SA) Asset?	The Suggested Activity asset provides a detailed step by step procedure for the teacher to conduct a hands-on activity. This promotes Activity Based Learning.
How to teach using the SA asset?	You may use this asset to energise your students to learn by doing simple, fun-filled activities based on the topic. The asset includes - preparation, activity, and follow-up. You may engage the students in the preparation and follow-up stages to develop collaboration and responsibility. You could try it once, yourself, before the actual delivery to be more comfortable with it. Note: The duration mentioned in the asset is usually for the activity part only.
What is a 'Value Content' (VC) Asset?	The Value Content asset integrates Universal Human Values (such as empathy, inclusivity, respect for nature that translates into responsible behaviour) seamlessly into the curriculum, as the "End of education is character".
How to teach using the VC asset?	You may use this asset to engage with the students to bring out their innate values and connect with the intrinsic values in the topic/concept. The asset includes pointers on the specific pedagogical technique followed.
What is a 'Questions to Assess' (QA) asset?	The Questions to Assess asset uses an interactive approach to check learning of different types of learners, and provides feedback to the teacher for appropriate action. The questions cater to all the levels of Bloom's Taxonomy. Questions from 'Apply' level and above enable students to reflect on their learning.
How to teach using the QA asset?	You may go through the slides to understand its flow and know when to click for the answer (slides include suggested answers). While presenting in the class, you may display the question and encourage multiple responses, before revealing the answer. In some cases, this asset may include extra questions/worksheet that can be given as homework.