



The Yamuna River: It's Future and You

Teacher's Handbook

Modern Institute for Education

The Yamuna River: It's Future and You

Teacher's Handbook



Modern Institute for Education (MIE)
Centenary Block, Modern School,
Barakhamba Road, New Delhi-110001

www.yari.org.in

Modern Institute for Education

Publisher: Modern Institute for Education (MIE)

First Edition: 2025

© 2025 Modern Institute for Education (MIE)

This publication is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

You are free to read, download, share, and adapt this work for non-commercial purposes, provided appropriate credit is given.

This handbook has been developed as part of the Yamuna River Initiative (YaRI), aiming to support educators in building environmental awareness among students, with a focus on the cultural and ecological significance of the Yamuna River.

For feedback or additional copies, please contact:

Modern Institute for Education (MIE)

Website: www.mieglobal.in

Website: www.yari.org.in

Published by Sunil Sachdev and printed by Ravi Sachdev
at Allied Publishers Pvt. Ltd., D-5, Sector-2, Noida-201 301

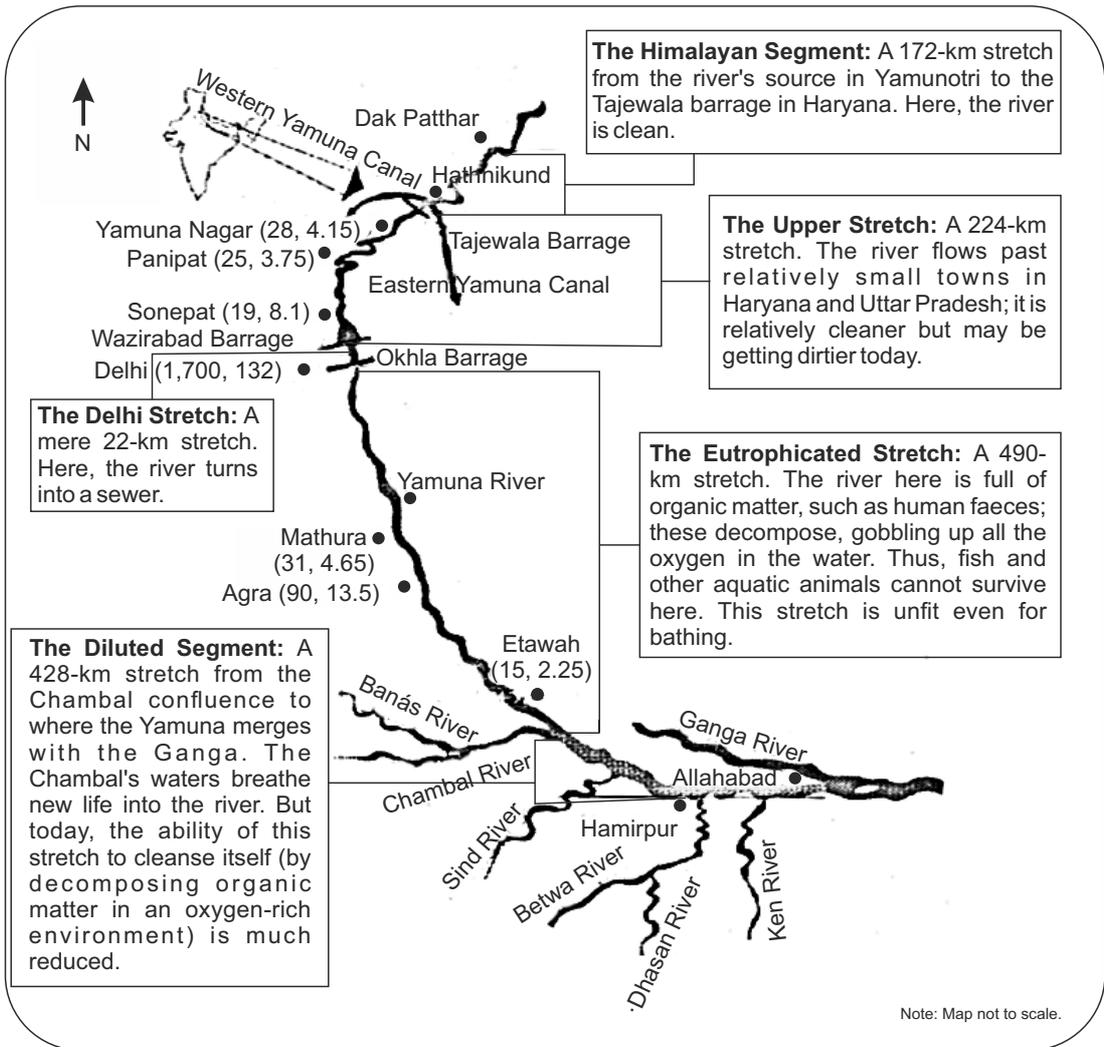
Preface

This handbook, “The Yamuna River: Its Future & You” is a modest endeavor to bring the story of the Yamuna River into classrooms. The Yamuna River is deeply associated with the mythology, history, and progress of not only Delhi but the whole nation. However, nowadays, it is tragically considered a lifeless river. Most of the residents of Delhi perceive the Yamuna River as merely a polluted drain. In this context, initiating dialogue, debate, and reflection on its significance is of utmost importance. It is particularly critical to inspire the next generation to value and cherish the river that has been fundamental to their city’s existence. Through this handbook, developed under the Yamuna River Initiative (YaRI), we aim to bring the Yamuna’s story into educational space.

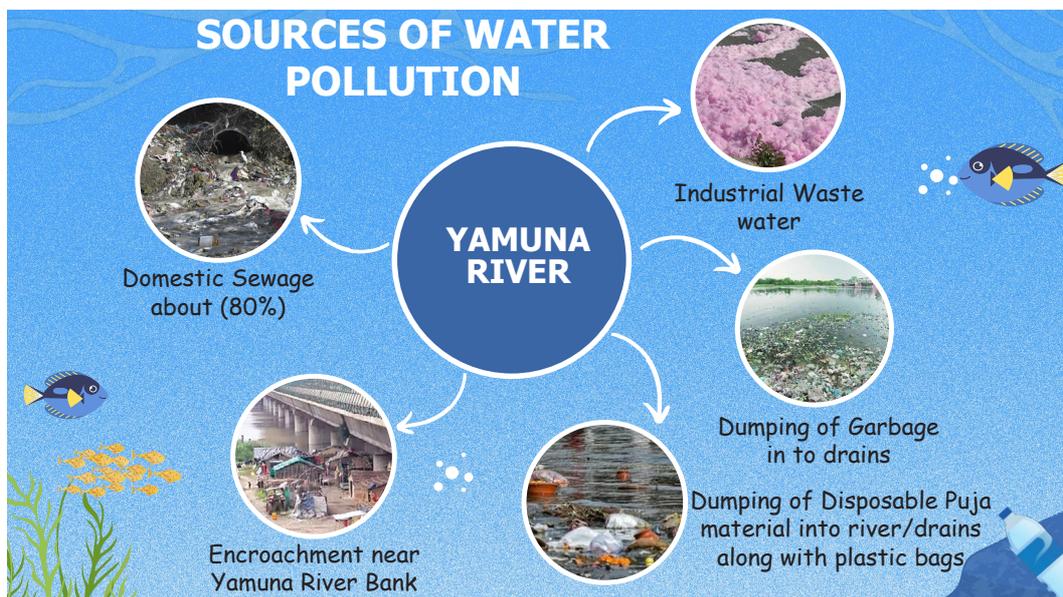
Drawing inspiration from national and international water-related policies, this handbook marks the beginning of a long and meaningful journey. Its success now is in your hands as your creativity and dedication will ensure its impact and reach.

We invite you to see the Yamuna River not just as a subject, but as a call to action. This handbook helps you to ignite curiosity and care in your students. From classroom simulations to riverside fieldwork, the activities are suggested to make Yamuna River education accessible, engaging, and impactful for diverse students.

The future of the Yamuna River and all rivers rests with today’s students. As they grow into decision-makers, their understanding of the river will shape policies, innovations, and values. This handbook is your starting point to inspire a generation that views the Yamuna not merely as a resource, but as a partner in building a sustainable world. Let us work together to empower students as stewards of the Yamuna and champions of the interconnected ecosystem it sustains.



Source: CPCB, 2006–07.



Acronyms

BOD	-	Biochemical Oxygen Demand
CBSE	-	Central Board of Secondary Education
CCE	-	Climate Change Education
CPCB	-	Central Pollution Control Board
ESD	-	Education for Sustainable Development
EVS	-	Environmental Studies
IKS	-	Indian Knowledge System
MHRD	-	Ministry of Human Resource Development
NCERT	-	National Council of Educational Research and Training
NCF	-	National Curriculum Framework
NCF-FS	-	National Curriculum Framework for Foundational Stage
NCF-SE	-	National Curriculum Framework for School Education
NEP	-	National Education Policy
SDGs	-	Sustainable Development Goals

Contents

<i>Preface</i>	<i>iii</i>
<i>Acronym</i>	<i>vii</i>
Introduction	1
1. Why the Yamuna Matters?	3
2. Policies and Gaps in River Education	10
3. Building a Yamuna Centric School Culture	13
4. Rivers of the World: Global Lessons for Protecting Our Yamuna	16
5. A Way Forward	18
6. Teaching the Yamuna Across Subjects— Classroom Activities & Assessment	21
Suggestive Readings	32
River Glossary for Children	34
References	40

यमुना के प्रति

यमुने, तेरी इन लहरों में
किन अधरों की आकुल तान
पथिक प्रिया सी जगा रही है
उस अतीत के नीरव गान?
बता कहाँ अब वह वंशी वट?
कहाँ गए नट नागर श्याम?
चल-चरणों का व्याकुल पनघट
कहाँ आज वह वृंदा धाम?

सूर्यकांत त्रिपाठी निराला

Introduction

The study of rivers is not a matter of rivers, but of the human heart. (Shozo Tanaka)

Yamuna in our classroom – Yamuna River Initiative (YaRI) with Modern School

The Yamuna River flows through Delhi giving us water to drink, bathe, and live. But today, when we think of Yamuna, we picture froth and filth, not a living river. Headlines like:

‘Why Yamuna Remains Polluted Despite All the Efforts to Clean It’¹, ‘In ICU since 1993, Yamuna still died in Delhi: Can it be revived in three years?’², ‘Chasing a dying river: The Yamuna in Delhi’³, ‘Froth covers the Yamuna River in Delhi ahead of the festive season, posing health hazards’⁴ reminds us of its sad state. For a student specifically of Delhi, Yamuna is often nothing more than a geographical fact, a tributary of the Ganga, marked on a map and memorised for an exam. At best it features in History lessons, associated with the grandeur of Mughal Empire, the Red Fort, Chandni Chowk, and Jama Masjid, but to them Yamuna as a living entity still does not appear. While in the classroom of Hindi, it is there in the verses of Surdas and Raskhan, still here Krishna is more important than the role Yamuna plays in their lives.

We have grown used to ignoring it, but we can’t anymore. This handbook is about bringing Yamuna back into our lives – starting with – Modern School. It seeks to help bring the Yamuna River back into the hearts and minds of students, teachers, and – the school community. It is about reconnecting people with the river that has shaped their city, culture, and lives for centuries. The Yamuna is more than a polluted river – it’s a living part of our history, identity, and environment.

This handbook aims to make school community see it that way, so they care about it and feel responsible for its future. It’s about building a bond between the youth, and the river through education, not just cleaning drives or one day events, but a deeper lasting understanding.

The scope of this handbook is wide but focused. It looks at how the river can be woven into what students already learn subjects like history, science, literature,

and even arts, and math. It is not about adding more work to the busy schedule of school. Instead, it shows how we weave the Yamuna into subjects like science, history, math, and literature making learning richer and more meaningful. The goal is to help students see the Yamuna as part of their lives, so they care about its future.

This handbook is flexible. Teachers can pick ideas that fit their classrooms, from a poem about the river in English class to a science project on water pollution. It also encourages schools to involve parents and local groups, turning care for the Yamuna into a community effort. While focused on the Yamuna and Modern School, the ideas can inspire schools near every river, anywhere.

The handbook aligns with National Education Policy 2020, which advocates to practice hands-on learning, connected to local culture and rooted in Indian Knowledge System (IKS), and focused on sustainability. It also supports the Sustainable Development Goals (SDGs) like clean water (Goal 6) and life on land (Goal 15). Through this ‘Yamuna River Initiative (YaRI)’, we hope to make the Yamuna a friend to students, not a forgotten name.

Access to clean water is one of the greatest challenges facing New Delhi.

-
- 1 <https://www.indiatimes.com/explainers/news/sources-of-pollution-in-yamuna-567324.html>
 - 2 <https://timesofindia.indiatimes.com/city/delhi/in-icu-since-1993-yamuna-still-died-in-delhi-can-it-be-revived-in-3-years/articleshow/118813181.cms>
 - 3 <https://blogs.lse.ac.uk/southasia/2023/07/17/chasing-a-dying-river-the-yamuna-in-delhi>
 - 4 https://www.business-standard.com/india-news/froth-covers-delhi-s-yamuna-ahead-of-festive-season-posing-health-hazard-124101800661_1.html

Why the Yamuna Matters?

Water is life's matter and matrix, mother, and medium. There is no life without water. (Albert Szent Gyorgi)

This chapter explains the ideas why teaching about Yamuna is important. These are simple but powerful ideas to help teachers, students, and the school community to reconnect with the river in a meaningful way. The ideas are:

1. **The Yamuna as a living entity:** The river is not just water flowing through Delhi – its alive with history, culture, and nature. It's been a lifeline for people, flora and fauna, and cities for centuries, not just a resource to use. Teaching this helps students see the river as part of their world, not a far-off place. This idea encourages us to see the Yamuna as more than a polluted river, as something with a story and soul that we are part of.
2. **Cultural and ecological connection:** The Yamuna ties us to our past, like Mughal forts, Krishna's tales, or ancient temples – and to nature like the birds that migrate along its banks. It's a thread running through our traditions, art, and environment. Understanding this helps students feel it's not just 'out there' but part of their own identity.
3. **Interdisciplinary learning:** The river doesn't belong to just one subject. It can flow through science (pollution and ecosystem), history (civilization it nurtured), literature (poems and folklore), and even math (measuring water use). This principle says we should integrate these subjects together to make lessons more exciting and show how everything connects.
4. **Empathy over apathy:** Right now, many see the Yamuna as a lost cause – filthy and forgotten. The handbook wants to change this perception. By teaching its value and beauty alongside its issues, we can turn indifference into care. It's about making students feel the river matters to them personally.
5. **Sustainability as responsibility:** Caring for the Yamuna is not just for environmentalists or the government – its everyone's jobs. This ties into bigger ideas like India's "*Vasudhaiva Kutumbakam*" (the world is one family), where rivers are family members we protect. It's about teaching children they have a role in keeping it alive for the future.

6. **Experiential and Contextual:** Teaching about the Yamuna should go beyond textbooks in the classroom, it should involve real experiences like observing and experiencing the river, noticing its condition, and asking critical questions such as “Why does it smell bad?” As, Freire also mentions in his ideas that learning becomes meaningful when it connects to students’ real environments and everyday lives. Understanding the Yamuna’s state firsthand helps students develop a deeper sense of responsibility, awareness, and connection to critical environmental issues from an early age.

Building on these ideas, the next section explores how we perceive Yamuna, and its implications for school education.

How do we Perceive Yamuna?

Yamuna is not just a river – it’s part of who we are. In stories, she is the sister of Yama, the god of death, and a wife of Shri Krishna. Old temples show her statue guarding holy places. (Pattnayak, D.D., 2016). Long ago Sultans & Mughal emperors – built canals from Yamuna to water Delhi (Sharma, J.P. 2018), and cities like Indraprastha flourished on her banks. Poets like Kalidas and Ghalib, wrote about her beauty. Even today, people pray to her during Chhath puja. She is in our history, songs, and prayers – a lifeline for people and flora and fauna, including those birds who travel from faraway places during winters.

From mythology to history, geography, and literature, Yamuna is central to the lives of people. By interweaving Yamuna into these disciplines, schools can create an interconnected curriculum that inculcates empathy and understanding of environmental conservation. It also influences a wide range of sculptures paintings, artifacts, and musical compositions. Not to forget the myth and folklore depicting the river’s characteristics, its shifting path, and the cultural heritage it has preserved for hundreds of centuries.

Still, we are not perceiving it in its true essence and importance. While thinking about Yamuna the first thought that comes to mind is froth and filth as depicted time and again in the newspapers. Secondly, juxtaposing this filth and froth comes the pictures of devotees who thronged the Yamuna ghats during Chhath puja and other religious festivals to take a holy dip and pray. Rivers being central to Indian or Hinduism, it is revered by people. Nonetheless, how at the same time we mourn the demises of the river and offer our prayers to her as being a divine figure. How does this juxtaposition happen? (Jain, S., 2011).

Again, with students, their engagement with the river, or for Delhi students with Yamuna is limited to textbook definitions, geography lessons, and environmental case studies (Kanujia & Gorana, 2019).

When we try to extend the relationship with River/Yamuna we organize cleanliness drives, street plays, and rallies on specific days. In short, we attempt to undertake some stop-gap approach viz. celebrating Earth Day, Environment Day, etc. to bridge the gap between Yamuna and our future citizens.⁵ However, these occasional efforts are not enough. It is crucial to provide alternative, continuous solutions that encourage a deeper, sustained connection, because only by offering such pathways can society begin to perceive Yamuna in the right spirit and treat her with the respect she deserves. The issue is the way we perceive Yamuna will shape our behavior towards her. When we look back it used to be a divine figure and still is, it is the cradle of civilizations and a living entity. Yamuna has a character, a life, whose story needs to be told to our students and our children. More importantly, the students must unravel the story of Yamuna on their own. They must come to see the river not as a distant water body, but as an inseparable part of their lives and identity.

Where does the Yamuna Stand Today?

Today Yamuna is in trouble. Since the 1990s, it's been called 'in ICU' – full of sewage, factory waste, and froth. However, as Delhi grew and expanded, mostly after partition in 1947, and industrialization happened, the Yamuna was the first victim of industrialization and population growth. From a divine figure, it became a resource – for irrigation, industry, urbanization, drinking water, etc. In a nutshell the cultural identity gradually faded away and the economic utility became of utmost importance (Haberman, D. 2023). Yet, it holds its position in society as both a sacred goddess and an exploited resource juxtaposing each other. This mix of reverence and neglect is something students can explore. Why do we honour the river but let it die? What can we do to fix it?

For most of the people, as well as students in Delhi and beyond, the river Yamuna is non-existent. Even when they think about it, it is generally in negative problem to be solved, not a presence to be cherished. As far as cultural identity is concerned the students have rarely seen it in that way. As a result, in urban spaces, the Yamuna is increasingly absent from public consciousness (Baviskar, A. 2011).

However, the government, non-government organizations, and schools have all attempted to engage students with Yamuna through cleaning campaigns, environmental fairs, awareness campaigns, and Yamuna walks. Despite being

important, these programs fail to capture Yamuna's tremendous significance, which encapsulates almost all walks of life of not only residents of Delhi but the country as a whole.

River and Human Rights

Clean rivers are not just nice to have – they are human right (Schiff, J. 2018). Everyone in Delhi should have safe water to drink, cook, and bathe with, but the Yamuna's pollution steals that from millions. Families near the river cannot trust it anymore, people get sick from polluted water. That's not just an environmental issue – it's a human rights issue. The Universal Declaration of Human Rights says we all deserve a decent life, and clean water is part of that. When the Yamuna foams with chemicals, or stinks of sewage, it's not just nature suffering – its people losing what's their by birth. Schools can teach this by asking big questions: Who gets hurt most when river dies? Why should we care if our neighbour cannot drink safely? May be students could map where clean water stops and pollution starts, or talk to people who have fought for their water rights. This is not abstract, its personal. NEP 2020 wants children to learn justice, and SDGs push for clean water by 2030. Teaching about Yamuna as rights issue fits both – it shows children they are part of a bigger fight, not just for a river, but for equity. If they see the Yamuna as their right to, they might stand up for it one day. Study show that teaching gender and environment builds equity (Sultana, 2011).

Why Schools must Act

Schools can help students love and respect the Yamuna. They will eventually protect it. Right now, they learn about her in bits: a map in geography, a poem in Hindi, a pollution case in science. But they do not see the whole story. We can tie these pieces together and show how Yamuna connects to their lives – food, water, festivals, everything. This builds a bond that lasts. Studies show place-based education, like learning about local rivers, makes students care more about nature (Sobel, 2004). In India, environmental education is part of NEP 2020, but it's often restricted to textbook teaching rather than hands-on experiences (Kanaujia & Gorana, 2019). We can change this by making the Yamuna a real part of learning.

Schools as Keepers of Heritage

Schools must serve their community by conserving, preserving, and upholding the cultural heritage they are rooted in. Abiding by the constitutions, NCF-FS, NCFSE,

and the constitutional provisions, schools must strive to meet the aspirations of the local community while integrating national ethos, aspirations, and global standards of education.

While educational policies have provided scope to incorporate Education for Sustainable Development (ESD) within Environmental Studies (EVS), and to integrate water education and river conservation across school subjects, the schools have overlooked the broader perspective of inculcating critical thinking about water resources. This includes understanding their importance and raising awareness among students about local concerns regarding the availability of freshwater, rivers, bodies, etc. for Delhi, this particular calls for garnering interest in Yamuna among students.

Schools are custodians of their community's collective knowledge, heritage, and culture. Rivers in general, and the Yamuna, in particular, are central to Delhi's heritage and culture. Therefore, it is the responsibility of schools to cultivate interest in the Yamuna, developing a positive relationship with the river.

The Yamuna is not to be lamented as a 'dead river' but cherished as an entity to discover, learn about, and care for just as one cares for oneself. By doing so, schools can create socially aware students who understand their responsibilities to themselves, their society, and the environment, which includes the rivers. This aligns with the five pillars of Social-Emotional, & Ethical Learning.

The Need for River Education

The question is why we must reclaim our rivers through school education. We historically viewed rivers as sacred and sentient beings. From the hymns of Rigveda to the bhakti poetry celebrating river deities, Indian culture has long hailed rivers as spiritual mothers, divine forces, and cradles of cultures. Therefore, students must feel Yamuna is part of themselves then only they will be responsible for its future. Just as children grow up identifying with their family history, local festivals, and social mores and traditions, they should also feel a personal connection to Yamuna that has shaped their city, culture, and heritage. It must be communicated to the students that Yamuna is as integral to their lives as the language, food, festivals, and the economy. Seen from this perspective, the river Yamuna as we perceive it today is not just an environmental issue, it is a cultural and moral crisis that needs to be addressed as soon as possible. To bring it into the focus is not the responsibility of policymakers alone, it is our collective duty to be responsible for conserving not only a stream of water but the essence of our lives. Such a transformation will

happen only when the Yamuna becomes an integral part of our school curriculum, flowing through every subject, much like it nourishes all aspects of our lives.

We cherish rivers as holy in our culture. Yet there's a clear disconnect: we weave rivers into our national emblems, anthems, and big tales, but our everyday actions don't reflect that respect. Loud gestures and proud words can't replace steady care, understanding, and involvement. Education has to step up to close this divide.

Children today are raised in a fast paced, technology-driven world where they are disconnected to natural world and its beauty. Their connection to their environment is guided by technology and not by direct experience. This detachment affects not only their comprehension skills but also their emotional connection to nature.

Hence, River Education is not just about geography or science, it is a bridge between memory and meaning, between culture and conservation.

What can the School as a Learning Organisation Do?

Schools being a dynamic learning community, can play a vital role in reconnecting students with the Yamuna, making the river an essential part of their education and identity. To encourage a deep, personal connection, schools can integrate the Yamuna meaningfully across various subjects and activities. Lessons of history in classroom can explore the river's impact on earlier civilization and urban settlements making children learn more about its causes and consequences. While in language the teacher can use stories, poems and reading comprehension essays centered on the Yamuna. In science, students can study the river's ecosystem, its diverse flora and fauna through active classroom discussions and field visits, offering hands-on learning experiences. Art periods can be dedicated to creating posters, paintings or craft projects that reflect the river's beauty and its significance. To enhance it further and root this awareness, schools can also organize "Yamuna Day" annually, where students, teachers and parents come together to celebrate, learn and pledge to protect the river. Saying that, we emphasize on the fact that parent engagement is equally a crucial aspect, thus schools can hold meetings and workshops to involve families in conservation effort and encouraging conservations that extend beyond the classroom. Hence, by weaving Yamuna into the classrooms, we can nurture a generation that sees river not just as a water body reduced into sewer, but as living, breathing part of their cultural and moral heritage.

Extra Burden or Seamless Integration into Existing Curricula

However, whenever an initiative is proposed the first question that comes to mind is: Are not our students already overburdened with an exhaustive curriculum to cover and are constantly under pressure to perform or perish? The answer lies within our educational policies. From the Kothari commission (1964–66) to National Education Policy (NEP) 2020 seeks to create citizens who are modern in thinking, possess a scientific temperament, are rooted in their culture, uphold their heritage, and embrace the philosophy of *Vasudhaiva Kutumbakam* – meaning the whole Earth is our family. This philosophy teaches us to view rivers as part of our family, as our nurturers and lifelines. Just as we care for our family members, it is our duty to protect and honour the rivers that sustain us.

At the crux of this discussion is the role we as a learning community should play in making students understand that as residents of Delhi, we owe our existence to Yamuna and as humankind to all the rivers of the world. We should intervene to help students uncover the story of Yamuna from all perspectives- mythology, history, culture, geography, economics, as well as society to understand her role in their lives and perceive her as a living entity and not some dead river. Schools are uniquely positioned to bridge the gap between policy goals, and educational practices.

Delhi's historic Bundhs & Baolis stand as testament to a network of public spaces that functioned in harmony with the seasons, landscape, and the Yamuna River itself.

Policies and Gaps in River Education

The river is not just a moving road of water. It is a living thing that carries the memory of the land. (Wendell Berry)

This chapter explains how national and international policies support teaching about rivers and why there's still a gap between these ideas and what happens in classroom.

Policies that Support River Education

NEP 2020: The policy wants students to learn through real-life experiences, and pushes for hands-on, holistic, inquiry-based, and learner-centred teaching.

NCF-SE 2023: The NCF-SE 2023 states, “Learning about and caring for the environment is an integral part of this NCF across all School Stages. This is reflected in different ways, as part of Learning Standards at every stage (as reflected in Curricular Goals and Competencies), as part of pedagogical processes across Stages, conceptually integrated into Curricular Areas, and as a separate Curricular Area. There are 13 Curricular Goals and 20 Competencies that directly address learning about and caring for the environment in this NCF across Curricular Areas and School Stages.” (pp. 177, NCF-SE 2023).

NCF-FS 2022: For young children (ages 3–8), this framework suggests playful ways to learn about nature, like drawing rivers or singing about water.

SDG Goal 6 (Clean water), and Goal 15 (Life on Land) calls for protecting rivers. Teaching about the Yamuna helps students understand these goals.

The NEP 2020 and NCF 2023 talk at length about incorporating local knowledge systems, experiential learning, and environmental consciousness into classroom experiences. However, one key theme, River Education, while mentioned in spirit, remains poorly integrated into actual curricular content. The textbooks may bear traces of river-based activities or prompts, but this tokenistic inclusion falls short of fostering a deeper, meaningful understanding among learners. Environmental education is not a new concept. It has been addressed in great detail in previous

policies also. However, the implementation of these policies at ground level is altogether different from what policies intended to achieve.

The Gap in Classrooms

Despite these policies, environmental education in general and river education in particular remains neglected because of several reasons.

1. **The supremacy of textbooks:** Textbooks continue to hold an unchallenged authority, becoming the primary if not the only voice in the room (Leder & Leder, 2018). This centrality of the textbook suppresses open dialogue between teachers and students. Even when issues like environmental degradation are known and experienced by students in their localities, these rarely become part of classroom conversations because the textbook does not initiate them. Also, the textbooks present river or water into bits and pieces and do not offer opportunities to explore their full story (Bhalla, 2024). This leaves students with facts, not feelings.
2. When it comes to NCERT textbooks, the approach to environmental and climate topics feels disjointed. Instead of weaving these issues throughout the curriculum, they often appear confined to isolated sections within Science or Social Science materials. This limited scope clashes with the broad, interconnected vision outlined in national policy documents.
3. **Teacher training:** Even if textbooks lack explicit content, NEP and NCF emphasize teacher agency to bring in relevant themes in discussion. However, in the absence of textual prompts, and lack of training to integrate environmental education in the everyday classroom practices, (Leder 7 & Leder 2018) many teachers stick to the syllabus rigidly, thus missing opportunities for discussion on real-life issues like river pollution, cultural significance of rivers, or sustainable water usage.
4. **No real-life connection:** Lessons often feel far from students' lives. A study by Kaushik (2020) found that NCERT textbooks focus on general environment ideas, not specific cases like river pollution, missing chances to engage students. Missing from the narrative is a personal touch, the stories that immediately garner interest among students to perceive their immediate environment with a lens of sustainability.

Addressing the Gap

Schools can bridge this gap without extra burden:

- **Use existing lessons:** Add the Yamuna to current topics, like pollution in science or Mughal history in social studies.
- **Capacity building of Teachers:** Simple workshops can show teachers how to link the Yamuna to their subjects.
- **Go beyond Textbooks:** Use stories, field trips, or art to make the river real for students. This handbook offers tools to make these changes, keeping lessons fun and meaningful.

From the Hathnikund barrage in the Himalayan foothills to Wazirabad barrage in Delhi, a distance of over 250 KM, there is no water flow in the Yamuna River during the dry season.

Building a Yamuna Centric School Culture

Rivers are integral to our health, culture, religion, art, and commerce...No one will protect our rivers for future generations like we will. So start now. (David de Rothschild)

Teaching about Yamuna is not enough. It should be part of a school culture. This chapter shows why and how to make the river a living part of school life.

Like rivers that meander through the earth creating cultures, nurturing flora and fauna, and developing civilizations, the river Yamuna must meander through subject areas taught in schools. This will create a unique interconnected syllabus that introduces students to the all-pervasiveness of the river Yamuna in their lives. It will eventually create a school culture that nurtures both the minds and the souls of students and the wider school community.

The school both as a community and as a contributor to the larger society it serves will ensure that the rivers should also lead a happy and healthy life just as we aspire to for ourselves. Moreover, community ownership (Demartoto, A. *et al.*, 2025) has emerged as a sustainable and impactful solution to address the issue of freshwater scarcity. Ghana, Kerala, and Orissa (Schiff, J. 2018) have developed a successful model of river conservation and proved that local engagement plays a vital role in river conservation. Therefore, as micro-community schools play a crucial role in introducing students to the river's rich cultural, ecological, and other important aspects shared with us.

A school culture is not just about rules or routines – it's a shared feeling that reflects what matters. Research shows education for Sustainable Development flourishes when schools align their ethos, practices, and community with Sustainable goals. Regarding Yamuna this means becoming a place where its value – once ignored – becomes undeniable. This is not only about saving a river; it is about rediscovering its soul through students' eyes. A conducive culture turns apathy (it's not a river, it's a sewer) into empathy (it's our river, our identity), creating a connection that lasts. Nonetheless, studies have shown that schools with strong environmental cultures help students act for nature (Dunbar, 2021).

Ideas for Creating Yamuna Centric School Culture

- **Murals and display:** Paint a Yamuna Mural in the school hallway; Show images or drawings of the Yamuna’s journey from Yamunotri to Delhi.
- **Water saving projects:** Set up rainwater harvesting or a small garden using recycled water.
- **Events:** Host a “Yamuna Day” with songs, stories, and parent talks about the river.
- **Clubs:** Start a Yamuna club for students to plan clean-up drives or awareness campaigns.

Engaging Everyone

- **Teachers:** Embedding Yamuna in classroom practices and subject teaching.
- **Students:** Let them lead projects, like a school newspaper or magazine with Yamuna stories, paintings, sketches etc.
- **Parents:** Invite them to Yamuna walks or talks by local experts.
- **Community:** Partner with NGOs or the Delhi Jal Board for field trips or resources.

Yamuna’s story includes everyone – for women and girls, the river often means extra workload fetching water for cooking or washing clothes (UNICEF, 2017) when taps run dry. In many homes near the Yamuna’s banks, women spend hours dealing with the polluted water because pollution makes it unusable without boiling or filtering. Men though might see the river more as a place for fishing and farming if they use it at all. This difference is not just about tasks, it’s about how society expects women to handle water problems while men often get a pass. Schools can change that by teaching children to notice these gaps. Imagine a class where students talk about why their mother or sisters worry more about water than their dads or brother. Or a project where they interview women living near the Yamuna – how do they cope with the stench or the lack of clean water? It’s not just about facts, it’s about equity. If girls learn early that rivers affect them differently, and boys see it too, they might grow up wanting to fix this together. The Yamuna is just not a river, it’s a mirror showing how gender shapes our lives, and schools can help children see those reflections clearly.

Schools can teach this by

- Discussing why women worry more about water.
- Interviewing families near the Yamuna about their daily life.

The Journey from Apathy to Empathy

To create such a conducive school culture, the efforts must begin from the top i.e. the leadership (here, it is Honorary Secretary, BoT, who is leading this initiative). When leaders imbibe love for their heritage, nature, and Yamuna, it reflects in their behavior and it automatically percolates to every aspect of the school environment. While efforts must be taken to embed Yamuna into pedagogical practices and integrate it into curriculum across subjects, the school operations and facilities should also reflect Yamuna's worth through living sustainability. It can be achieved through cutting waste water with rainwater harvesting (we practice), and other such initiatives.

Without adopting a 360-degree approach we cannot endeavour to integrate Yamuna into school culture. Moreover, Yamuna's worth isn't just a school's story. It's a shared one. Therefore, schools must engage with parents, and local groups to deepen their empathy for Yamuna. Schools should partner with parents, NGOs, and government agencies such as the Delhi Jal Board, MHRD, Department of Education, etc. to initiate dialogue at a broader scale and spectrum and develop positive relationships with the Yamuna.

Most importantly, students, our champions must lead this journey. In a nutshell, to develop a Yamuna centric culture, values need to be inculcated among all the stakeholders of the school. Yamuna should become a part of everyday routine of school. It should have a tangible presence in the form of mural, sculpture, or storyboard depicting its journey from Yamunotri to Delhi, on the school premises to remind everyone that Yamuna is one of us. It belongs to all of us.

Historically, Delhi's urban structure was closely integrated with its natural environment.

Rivers of the World: Global Lessons for Protecting Our Yamuna

If there is magic on this planet, it is contained in water. (Loren Eiseley)

Across the globe, numerous initiatives have demonstrated how we can protect and revitalize our rivers, offering valuable lessons in preserving our natural heritage. From Southern California to the banks of the Thames, young students are leading efforts to restore and protect their local rivers, bringing attention to the pressing need for environmental conservation. These initiatives show how hands-on learning, community involvement, and creative projects can help safeguard rivers for future generations. The success stories of the Wishtoyo Chumash Foundation, the Yakima River restoration, and the Thames Festival Trust's international art program highlight the power of youth engagement and cross-border collaborations in river conservation. As we look to these inspiring examples, it becomes evident that there is much we can learn from the world to ensure that our own rivers, like the Yamuna in Delhi, are protected, celebrated, and preserved. It is time to weave these lessons into our own educational frameworks, cultivating a deep sense of responsibility and connection to the Yamuna, an essential lifeline to Delhi's history, culture, and future.

Learning from the World

Schools worldwide have begun taking steps to bridge the gap between education and rivers. Urbanization and industrialization have taken a heavy toll on rivers like the Yamuna and countless others, particularly in city regions, making restoration efforts more vital than ever. A quick online search uncovers inspiring global projects designed to bring kids and young people closer to the natural world.

Southern California science students received funds from the Wishtoyo Chumash Foundation for the protection of Santa Clara River. Under this project Students receive financial support to pursue their studies in water resources and environment protection. They conduct fieldwork and research on the conservation of the Utom watershed, studying its biodiversity, water quality, and ecological significance. The fund emphasizes the importance of investing in young scientists and advocates to

achieve conservation goals and protect the ecological and cultural significance of the Utom river.

Another initiative by Eisenhower High School students is working to restore the river bank along the Yakima River in Columbia, USA. Students collaborate with various organizations and companies to learn and know the techniques of water conservation and improving water quality. In one such initiative they collaborated with fisheries to plant native trees to create a Natural buffer to reduce soil erosion and add shade to keep the water cool for fish. The project provides hands- on conservation education, teaching students the importance of local ecosystem and water quality. Rivers of the World, the flagship art and education programme of the Thames Festival Trust delivered in partnership with the British Council, has been and inspiring pupils and teachers in countries across the world since 2006. The project enables young people to explore and celebrate their local environment, learn about other cultures and engage with global issues. Aligned with Sustainable Development Goals, this initiative is an international art and education programme by the Thames Festival Trust in partnership with the British Council. It enables students to explore local and global river environments while developing creative and critical thinking skills. It encourages interdisciplinary learning through six themes: river of life, river city, working river, resourceful river, polluted river, and river culture. Students participate in activities such as fieldwork, research, artistic project, debates, and collaborative projects with partner schools throughout the world.

These projects bring students closer to the rivers on whose banks their ancestors lived and thrived, and inculcate a sense of community and harmony. Some initiatives have even transcended borders, creating collaborative programs involving multiple nations.

These perspectives create the base for including water related themes in our school curricula. A cursory look at the curricula and books will reveal that an attempt has been made to bring water related themes across various subjects. However, the issue of fresh water and its primary source – our rivers – requires greater attention, especially considering the alarming state of Yamuna in Delhi. Therefore, a novel attempt has to be made to weave together the concept of Yamuna as living entity- an important aspect of Delhi that it addresses the issue while at the same time fulfilling the aims and objectives of schooling. After all, if an education system fails to sensitise students about their rivers, it can be said that it has not fully lived up to its responsibilities.

45 percent of Delhi's residents are not connected to the sewage system.

A Way Forward

सच्चाई यह है
कि तुम कहीं भी रहो
तुम्हें वर्ष के सबसे कठिन दिनों में भी
प्यार करती है एक नदी (Kedar Nath Singh)

If children are to be stewards of tomorrow's environment, we must move beyond technical jargon and offer them emotional, cultural, and ecological perspectives on our rivers. River education should not be a footnote – it must be a foundational theme, woven through disciplines and brought alive through storytelling, field visits, local heritage, and reflective dialogue.

The failure to see climate change as a cross-disciplinary challenge in the NCERT books reflects not a lack of awareness, but a lack of curricular imagination and structural integration. If India's educational system is to equip learners as climate-resilient, responsible citizens, then every subject must speak the language of sustainability, each in its own dialect but contributing to a collective discourse. Blending climate change education into lessons in a way that's both interdisciplinary and rooted into students' surroundings echoes the ideas of Paulo Freire's critical pedagogy. This approach sees education as a means to empower and inspire change. By using hands-on, participatory methods, students don't just grasp concepts intellectually – they also reflect deeply and take action (praxis) based on the social and ecological world around them. This fits well with experiential learning ideas, particularly David Kolb's cycle, which highlights how active involvement in real-life situations drives deeper understanding.

Moreover, tackling climate change through education goes beyond simply updating what's taught in textbooks. It calls for a broader shift in how learning happens, reaching into the ways students connect with and respond to the world they live in.

It requires capacity-building for teachers, both at the pre-service and in-service levels, enabling them to confidently teach dynamic and evolving content related to sustainability and climate science. Here, Shulman's concept of Pedagogical Content Knowledge (PCK) becomes vital. Teachers must not only know the subject matter

but also possess the pedagogical strategies to effectively communicate complex climate issues in developmentally appropriate ways. Which again emphasizes that only subject matter is not important but also how to teach and represent the content in a more comprehensive and reflective manner.

Though their names still evoke wonder – Amazon, Yamuna, Congo, Mississippi, Niger, Platte, Volga, Tiber, Seine, Ganges, Mekong, Rhine, Colorado, Marne, Orinoco, Rio Grande – rivers themselves have all but vanished from the consciousness of the modern world. To the extent that they exist in our imaginations, it is largely through a lens of nostalgia. For instance, the memory of the Mississippi has been reduced to a Mark Twain-themed attraction in Disneyland.

Historically, our railroads followed the contours of rivers, and later, highways traced the paths laid by rail lines. Even our movements, consciously or not, mirror the flow of rivers. Yet, today, the disconnection is stark, our children no longer know where their electricity comes from, nor the source of the water they drink. Their attention is consumed by mechanical and superficial matters, rooted in shallow understanding.

We have forgotten the reverence we once held for rivers – how they shaped our folktales and folklores, how they were the lifelines of civilizations and sacred symbols of fertility and divinity. Once seen as life-giving forces and objects of worship, rivers have now become symbols of environmental degradation. They reflect the destructive impact of modern human activity over the past two centuries. Once revered, they are now ecological mirrors, bearing witness to our neglect and excess.

Folk traditions like bhatiyali, a river-inspired music and dance from West Bengal and Bangladesh, once breathed life into the region's river-centered heritage. Boatmen sang these melodies, their voices carrying the pulse of the waterways and the stories of those who earned a living on them. Beyond preserving culture, these songs nurtured a profound bond that tied communities together and upheld their sense of self.

Therefore, it is not enough to merely add chapters on environmental awareness to textbooks. Teaching children about rivers cannot be reduced to another unit to memorize and be tested on. This handbook does not aim to increase the burden on students or teachers by expanding the syllabus. Problems are not solved by adding to them. What we need is innovation – rethinking the existing curriculum through more interactive, interdisciplinary, and meaningful approaches. Only then can we restore the cultural and ecological consciousness that rivers once inspired.

Let us ensure that the river isn't just out there but flows within us – nurturing empathy, curiosity, and action.

Natural drains are an integral part of an ecosystem; a 1976 drainage map indicates 201 natural stormwater drains in Delhi. Yet, as the city grew, little attempt was made to preserve their function and drains became clogged with trash sludge. Najafgarh Drain is the major polluting drain of Yamuna River in Delhi contributing about 40.3% of total pollution to river followed by Shahdara drain.

Teaching the Yamuna across Subjects— Classroom Activities and Assessments

The sun shines not on us but in us. The river flow not past, but through us...
(John Muir)

This chapter shares ways to bring the Yamuna into different subjects, making it seamlessly integrate into everyday classroom process. Its about small changes to existing lessons, not new work.

Why Teach across Subjects

The Yamuna touches many parts of life—nature, history, culture, and more. Teaching it in one subject, like science, or geography, misses its full story. Mixing it into science, history, English, Hindi, and math helps students see how everything connects. This matches NEP 2020’s aim of implementing interdisciplinary approach, for example in science students can test Yamuna’s water quality. In history, they can learn how it shaped Delhi. Together, these show why the river matters today.

For Example: Discussions about rivers can connect with:

- **History:** Civilizations that grew along rivers
- **Science:** Ecological degradation and water conservation
- **Art:** Folklore, poetry, and rituals linked to rivers
- **Civic Studies:** Policies, rights, and responsibilities
- **Legal studies:** Human rights, and water and river policies

These conversations should include narratives from local communities, farmers, boatmen, and elders, those who have witnessed the transformation of rivers and are bearing its consequences. This will not only anchor learning in real experiences but also inspire action and empathy. For example, Gruenwald (2003) showed that learning about local places, like rivers helped students think critically and act responsibly.

Activities to Integrate Yamuna into Classroom Practices

The activities suggested in the following pages weave together different subjects and deepen each one, offering examples to inspire teachers. They're simply suggestions, to create a flexible classroom environment where teachers and students explore, experiment, and express their creativity and learn together. These can be used for assessment, projects, debates, or even can be blended into main lessons provided there is space. The aim is to offer a starting point that ignites creativity, letting teachers and students explore together in a way that works best for them.

These activities can be adapted to suit the needs of the grades. For example, case study analysis, projects, debate, and mock court can be used in grades 6 to 12 with different intensities. In grades 6 to 8, these can be simplified into a discussion about courts and their role in protecting the environment using basic ideas like protecting rivers, for 9–10 role play and basics of legal concepts, and senior students, these can be aligned with political science, civics, and legal studies and discussions in detail about the judiciary, property law, and sustainable development to build advanced analytical and research skills. Similarly, its cultural, historical, and national significance can be woven into lessons through below mentioned ideas.

1. Rivers embody national identities, cultural meaning, and symbolic power. In the classroom, it could be explored as a symbol of Indian national identity mainly through its depiction in art, literature, and cultural narratives (e.g., its association with Krishna in paintings or poetry.) Teachers may guide students to study the representation of the Yamuna in Indian art, such as Mughal miniatures and contemporary paintings, and discuss with them what these depictions indicate regarding national identity, pride, or environmental concerns.
2. Yamuna is personified as the goddess, a nurturing mother figure in Hindu mythology. It is linked to Krishna and purity, yet it is subject to modern degradation. Teachers could use this to discuss the Yamuna's mythological role (e.g., its descent from heaven, its connection to Yamunotri) and compare it to its current ecological state, initiating a dialogue on reverence versus neglect.
3. The Yamuna could be seen as a historical thread in India's narrative, from its role in ancient times through Mughal capitals (e.g., Agra, Delhi), to its modern significance in urban development. Teachers could create a timeline activity tracing the Yamuna's role in Indian history (e.g., its mention in ancient texts, its banks as sites of Mughal Architecture like the Tajmahal, and its current role in Delhi's water supply), linking it to national identity.

4. Visual depiction of the shape of the river (e.g., in paintings, photographs, or modern media) shapes how it is perceived by the people. Teachers could use art analysis exercises where students compare historical depictions of the Yamuna with modern images discussing shifts in cultural perceptions.
5. The Yamuna's severe pollution, especially in an urban area like Delhi, parallels the Thames's historical pollution issues, offering a lens to explore environmental degradation and national response. Teachers can incorporate a case study comparing the Thames clean-up with efforts to restore the Yamuna, encouraging students to evaluate successes, failures, and cultural attitudes towards river conservation.
6. The Yamuna has been harnessed for modern purposes (e.g., irrigation, urban water supply, hydel power generation) shifting its role from a purely sacred entity to a utilitarian Resource. Teachers could assign students projects to investigate modern intervention on Yamuna (e.g., dams, barrages) and discuss how these reflect India's developmental goals versus traditional reverence.

Stagewise Exemplary activities to integrate Yamuna River into classroom processes
Foundational stage (Preschool to class 2).

To teach young students about the Yamuna River and its ecosystem, start with a fun five-minute activity called "Who lives in Yamuna?" Show a one-minute video sourced from YouTube that displays a clean Yamuna and ask the children, "What animals do you see?" Point out birds or other creatures and say that "The Yamuna is their home."

Next, move to a 15-minute exploration called "Yamuna's Friends." Share simple facts about the flora and fauna of Yamuna, like turtles and fish, which live in the river and need clean water to thrive. Hand out worksheets with a river outline, where each student sticks an animal sticker, such as a fish, and colors the river blue. Ask them what their animal likes.

Then, spent 10 minutes explaining why Yamuna needs care. Talk about how trash makes the river dirty. And why keeping it clean makes it happy. Invite each child to share one word about the river like blue and connect this to their EVS lessons by saying we help animals by not throwing plastics in it. For the next seven minutes, dive into the river song. Teach the children a simple song. Have them clap and sing along.

Finally, wrap up with a three-minute evaluation called "My Yamuna". Ask students to show their worksheets and say 'My animal is a Collect these for display at the

parent meeting as a part of the parenting calendar. Assess the worksheets for creativity like how stickers are placed and colours are used and note their one-word oral responses about the Yamuna. This lesson blends art through colouring, language through speaking, and music with the song encouraging curiosity, and care for the river’s ecosystem.

Preparatory Stage (Class 3 to 5)

Yamuna’s water story: For students in classes 3 to 5 a 40 minutes lesson called “Yamuna’s water story” blends Science, English, and Social Studies to help them understand the Yamuna River’s water cycle and its role in communities, aligning with NCF-SE goals of explaining the water cycle and describing community’s role. Began with a 5-minute activity where does Yamuna start? Show a map tracing the Yamuna from the Himalayas to the Ganga and ask where the river water comes from. Share a fact that the Yamuna begins as ice in Yamunotri using a map activity. Next, show a video of the water cycle. Students label a worksheet diagram with terms like cloud, rain, and Yamuna answering how Yamuna fits here. Connect this to a toxic link fact that dirty harms farms.

Then take 20 minutes to explain “how the Yamuna helps us”. Discuss how the Yamuna provides water for farmers, but pollution creates challenges, asking “Who uses the Yamuna?” To create answers like farmers or cities. Have students write one sentence on their worksheet such as, “The Yamuna helps...”

For the next 10 minutes move to farmers’ tale where student draw a farmer by the Yamuna on their worksheets adding detail like crops. In pairs, they share what their farmers need like clean water.

Finally, wrap up with a 5 minute evaluation called “Yamuna’s Gift.” Collect worksheets. Ask two students to read their sentences aloud and display drawings to encourage parents’ discussions as part of the parenting calendar. Assess the worksheet for accurate cycle labels and clear sentences and check drawings for relevance to the farmer Yamuna connection. This activity integrates science through the water cycle, English with writing social studies via community roles, and art with drawing helping students feel empathy for Yamuna’s ecology and its impact on people.

Middle Stage (Class 6 to 8)—“Yamuna’s Health Check”

For an 80-minute activity spanning two 40-minute periods over a week an activity called “Yamuna’s Health Check” aimed at middle school students, can be planned. The focus is on analyzing Yamuna River pollution using data and

proposing solutions, covering science, math, civics, and art. The objective aligns with competencies given in NCF-SE 2023 encouraging students to investigate environmental issues, represent data, and suggest civic actions.

Resources include 2025 CPCB data showing BOD levels, a worksheet with a data table and graph grid, chart paper, markers, and a CPCB data printout.

The activity starts with a 15-minute engagement activity called “Is Yamuna sick?” Where students see a snapshot of CPCB data. The teacher explains that high BOD reduces oxygen for fish and other living things. Next in a 25-minute exploration phase called “Graphing Pollution” students work in groups using CPCB data for Delhi, Agra, and the desirable BOD limit. They plot a bar graph on the worksheet grid and answer questions like “Where is Yamuna dirtiest? Why?” and consider impacts like fish dying. In the 15-minute explanation phase “Who Can Help?”, the class discusses how factories and cities pollute the Yamuna and brainstorm solutions like cleaning sewage, connecting to civics by noting that citizens and leaders both play a role.

For the 20-minute elaboration activity, “Yamuna Awareness Poster,” groups create posters showing the Yamuna with a pollution sign (like toxic foam) and a solution slogan (like stop sewage, save Yamuna).

In the 5-minute evaluation phase, “Our plan” groups present their posters, and students complete a worksheet answering “One way to save Yamuna”.

Secondary Stage (Class 9–12) “Yamuna’s Cultural Cry”

For an 80-minute activity spanning two periods in a week, the activity titled, “Yamuna’s Cultural Cry” designed for secondary students in classes 9–12, the focus is on evaluating the Yamuna River’s cultural significance and the impact of pollution through debate and data analysis covering English, History, Civics, and Math. Resources include a 2-minute video showing Chhath puja alongside toxic foam, and CPCB data indicating fecal coliform levels in Delhi at 84,00,000 MPN/100 ml (desirable is lower than or at 2500). Materials needed are a worksheet for debate preparation a data table, the video, and a chart for debate points. The lesson begins with a 10-minute engagement activity called “Yamuna’s Two Faces,” where students watch the video and discuss why it’s polluted. In the 25-minute exploration phase, “Data and History” students work in pairs on a worksheet. For math, they calculate the coliform excess and answer why it is dangerous, like health risks. For history, they note the Yamuna’s past such as its use in clean Mughal

Garden, and consider how its role has changed. The 10-minute explanation phase, “Cultural Loss”, involves a discussion on how the sacred but unsafe Yamuna can be fixed, using the Chhath puja context. Students list cultural events tied to the Yamuna, like festivals. In the 20-minute elaboration phase, “Debate Solutions” students debate whether the Yamuna can be cleaned in 10 years. Pairs prepare arguments: those in favor use CPCB data, like sewage treatment success elsewhere, while those against use facts such as water pollution levels. Each pair writes an argument, and two pairs present one in favor of the other one against.

The 5-minute evaluation phase, “My stand” has students complete a worksheet quest, “Do you think Yamuna can be saved? Why?” Their arguments are collected for a project portfolio. The activity integrates English through debate, History via cultural roles, Civics through policy discussions, and Math with data analysis, sharpening critical thinking and advocacy.

Some other activities curated from practices adapted from various river projects that can be incorporated into classroom practices:

1. **Rivers All Around:** Rivers are found on every continent. They can connect us, to our past, and the world around us. As an introduction, ask your class to name as many rivers of the world as they can. Which have they visited, paddled in, or traveled on? Do they have any strong memories or connections with rivers? What do they know already about rivers and what would they like to find out? Ask them to write their questions, thoughts, and memories on sticky notes. Then ask students to interact with older family members or community elders by recording short interviews where they ask about past experiences with nearby water bodies – how time was spent by the riverside? What kind of activities were common? and the role such places play in daily life? These conversations will serve as a bridge between generations, offering insights into the lifestyle and emotional connection people once had with rivers. Following this, students will make a diary entry reflecting on the differences between past and present, analyzing how subtle environmental and societal changes have reshaped our relationship with nature. This personal reflection not only encourages introspection but also highlights the gradual detachment from natural spaces. The activity will then transition into a broader historical lens, connecting these reflections to the history of the Yamuna River, particularly its central role in the development of Delhi. Students will explore the relationship between trade, agriculture, economic prosperity, and Yamuna. It will help them understand the interrelationship between Yamuna and the prosperity of Delhi. In this way, the classroom turns into a lively space where history,

geography, environmental science, and personal experiences blend, sparking a sense of care and duty toward the world's natural treasures.

CORE SKILLS: *Critical thinking and problem-solving, creativity and imagination, digital literacy, communication and collaboration, student leadership, and personal development.*

2. Many of the world's major cities have grown up along the banks or mouths of large rivers and the stories of these rivers reflect the history of the cities themselves. The teacher can begin by initiating a conversation with students about their native places, where they currently live, and where their grandparents come from. This leads to a broader discussion about what makes these places special or well-known, incorporating both cultural and geographical significance. Students can then be encouraged to share whether a river flows through or near those regions, prompting a reflection on the condition of those rivers today. The teacher can bring a large political map of India into the classroom, allowing each student to locate and mark the river(s) relevant to their narratives. As students place these rivers on the map, they can also share personal stories or experiences connected to them, fostering an emotional and cultural connection. Questions that can be encouraged are:

- Why did people originally settle here?
- What was life like along the Yamuna in days gone by?
- How did people shape their homes back then, and what drove their choices?
- In what ways did the river sustain their livelihoods?
- What pivotal moments in history has it witnessed or shaped?

To weave a broader, interdisciplinary thread into the activity, the conversation could stretch to explore the festivals, traditions, and rituals that pulse along these riverbanks – especially the Yamuna's deep ties to spiritual and cultural life.

CORE SKILLS: *By blending geography, culture, and social studies, this approach not only sharpens students' view of rivers as natural wonders but also reveals their rich historical, cultural, and emotional aspects.*

3. The activity can begin with a classroom dialogue where children are encouraged to share their understanding of rivers and discuss why rivers are considered a vital source of livelihood. Students can reflect on real-world water-sharing disputes, like those tied to the Yamuna, and consider their ripple effects on communities, trade, agriculture, and interstate or international ties. To dig

deeper, they'll hunt for online articles, gather newspaper clippings, and investigate recent or ongoing river conflicts. In class presentations, they'll weigh whether these clashes found resolution, what strategies or agreements smoothed them over, and if lingering friction remains.

- **CORE SKILLS:** *This exercise sharpens critical thinking and teamwork while awakening students to the environmental and social stakes of river conservation and fair resource distribution. It also introduces them to ideas like governance, federalism, and conflict resolution in a tangible way.*
4. Invite students to slip into the swirling currents of the Yamuna River and pen a diary entry from her perspective. In this creative twist, Yamuna emerges as a vibrant, wise figure – brimming with centuries of stories, feelings, and memories. Through her voice, students trace her path from the tranquil Himalayan heights to the gritty, polluted urban stretches, pondering her sacred heritage, her environmental battles, and her dreams for renewal. This personification stirs a deeper connection to rivers, urging students to see the Yamuna as more than a waterway – a living presence with a tale to tell.

CORE SKILLS: *This task fosters empathy and imaginative expression, knitting together threads of environmental science, geography, history, culture, and civic duty.*

5. For a spirited, collaborative project, students can channel their insights into short blog posts or pieces for a student-crafted school newspaper. This publication GIVES opportunity to explore diverse perspectives – blending creative sparks and individual takes on rivers, with the Yamuna as the heart of the theme. Displayed around the school or shared beyond its walls, the newspaper amplifies awareness about the Yamuna's plight, its vital role, and the toll of pollution. This group endeavor empowers students to step up, grow into informed citizens, and champion river protection through a blend of education and action.

CORE SKILLS: *Here, students find their voice while mastering teamwork, research across subjects like science, social studies, language, and art, and meaningful discussions on environmental challenges.*

6. To spark environmental stewardship, launch a classroom conversation about safeguarding our water bodies, zeroing in on the cherished Yamuna River in Delhi. Tie this to the United Nations Sustainable Development Goals – clean water, responsible consumption, climate action – helping students see

how their choices ripple outward. Follow up with hands-on projects: crafting eco-friendly bags, shaping biodegradable plant pots, or designing posters that spotlight plastic's harm to ecosystems and rivers. This activity molds students into young advocates who grasp the urgency of protecting resources like the Yamuna and feel inspired to take small, meaningful steps toward sustainability.

CORE SKILLS: *Merging science, environmental studies, art, and social science, this approach not only unpacks the challenges facing rivers but also nudges students toward an eco-conscious way of living.*

7. Show your children a picture of a dripping tap. Discuss what is happening in the picture. Why is it a problem? A tap that drips once every 10 seconds will waste about 315 liters of water in a year – that's about two large bathtubs full of water. Ask your students to keep a log of the amount of water they use each day and create a database of the amount used by individuals. They could use less water by making small adjustments to their routines – turning the tap off when cleaning their teeth (this could save four liters a day) or showering for less time. Ask your students to discuss what they would prioritize if they had to drastically reduce their water usage. How could they reuse some water? Invite them to use a storyboard grid to create a short comic strip to persuade young people to save water.

CORE SKILLS: *Communication and collaboration, creativity and imagination, citizenship, personal development, and student leadership.*

Building a Yamuna Centric School Culture

Yamuna literacy activity grid for grades 1 & 2 based on NCFFS

The following grid outlines interdisciplinary activities to integrate river literacy into the Grade 1 & 2, aligned with NCFFS 2022 principles of play based, experiential learning. Each activity targets specific competencies and connects to Yamuna as a theme. The grid shows how integration of Yamuna River will look like in a classroom.

<i>Domain/Subject/ Area</i>	<i>Activity</i>	<i>Description</i>	<i>NCFFS Competencies</i>
Language & Literacy Development/ Listening, speaking, reading with comprehension, and writing creative expression	Storytelling	Students listen to a story about Yamuna, then retell it in their own words or draw a sequence of events based on the story	C-9.5 Comprehends narrated/readout stories and identifies characters, storyline and what the author wants to say C-9.6 Narrates short stories with clear plot and characters
	Yamuna/river word bank	Students create a word bank of Yamuna/river related words (e.g., flow fish, water, bank etc.) and use them to write simple sentences, or a short poem	Writes a paragraph to express their understanding and Experiences
	Yamuna: Role Play	Students roleplay as river animals, people using the river (e.g., fisher, farmer), or the river itself, discussing their roles and needs.	C 12.2 Explores and plays with own voice, body, spaces, and a variety of objects to create music, roleplay, dance and movement.
Cognitive Development/ Numeracy	Counting objects related to Yamuna	Students count objects related to Yamuna/river (e.g., stones, fish, boats) using physical or pictorial representations, and solve simple addition/subtraction problems (e.g., if 3 fish join 2 fish how many are there?)	C-8.6 Performs addition and subtraction of 2-digit numbers fluently using flexible strategies of composition and decomposition

<i>Domain/Subject/ Area</i>	<i>Activity</i>	<i>Description</i>	<i>NCFFS Competencies</i>
Cognitive Development/ Know Your Surrounding (EVS)	Yamuna Exploration Walk (Virtual/Real)	Students observe Yamuna or watch a video to identify features (e.g., water flow, plants, animals) and discuss about it.	C7.1 Observes and understands different categories of objects and relationships between them
Aesthetic & Cultural Development/ Art & Craft	Drawing/painting/ clay art	Students draw, paint various objects/ things/flora & fauna related with Yamuna, and create models of river flow etc. with clay art	C-12.3 Innovates and works imaginatively to express a range of ideas and emotions through the arts
Physical Development/ Physical Activity	Yamuna flow game	Student mimic Yamuna/river movements (e.g., flowing, swirling, jumping over rocks) in a group game, promoting physical activity and coordination along with building vocabulary	C-3.4 Shows strength and endurance in carrying, walking, and running

Suggestive Readings

Gruenewald, D.A. (2003). The best of both worlds: A critical pedagogy of place. *Educational researcher*, 32(4), 3–12.

Sobel, D. (2004). Place-based education: Connecting classrooms and communities. *Education for meaning and social justice*, 17(3), 63–64.

Freire, P. (1970). *Pedagogy of the Oppressed*.

The teacher toolkit-K-12 Internet Resource centre access at Discover Fresh Spring Resources with K12IRC.org! – K-12 Internet Resource Center.

Rivers of the World Education Pack-British Council access at Rivers of the World education pack | British Council.

Resurgence Education Pack for Schools access at Resurgence • Education Pack the Herds-Let the wilderness in access at THE HERDS • Education.

Journey of the river Arun access at river-arun-education-pack-final-word-version-August- 2015.pdf

World Wide Fun for Nature access at WWF_RiverStory_Educator_Pack.pdf

Harmony Project-Teaching pack: Local rivers – Lower KS2 access at Harmony-Rivers-Teaching-Pack-Digital-Spreads.pdf

Canal & River Trust-access at Canal & River Trust learning bundles | Canal & River Trust ver and under the waves of The great southern reef-Teachers Guide access at https://www.pruefrancis.com/wp-content/uploads/2023/05/Over-and-under-the-waves-of-the-Great-Southern-Reef_Teachers-Guide-1.pdf

Your big river journey Teacher's guide- access at https://www.nwtexhibits.ca/bigriver/pdf/Teacher%20Guide_Big%20River%20Journey_Final.pdf

World rivers teacher guide access at https://www.coreknowledge.org/wp-content/uploads/2017/03/CKHG_G3_U1_WorldRivers_TG.pdf

The River Game: Connecting Children and Youth to River through Edutainment access at The River Game: Connecting Children and Youth to River through Edutainment | IUCN Saving India's rivers: Ecology, civil society, religion, and legal personhood access at Saving India's rivers: Ecology, civil society, religion, and

legal personhood – Science Direct Internalization of River Culture Literacy Based on Ecological Citizenship at Adiwiyata School access at (PDF) Internalization of River Culture Literacy Based on Ecological Citizenship at Adiwiyata School

Over 1.3 Lakh School Students Associated with Yamuna Cleaning Campaign in Last Two Years: Delhi Jal Board access at Over 1.3 Lakh School Students Associated with Yamuna Cleaning Campaign in Last Two Years: Delhi Jal Board | News

Public participation and awareness programme under Yamuna Action Plan Phase I – school segment access at 2001EE62.doc

Clean YAMUNA Project - MINISTRY OF ENVIRONMENT & FOREST access at Clean Yamuna – Society for Child Development

Yamuna: A river or a drain access at https://www.devalt.org/newsletter/mar00/of_10.htm Brief on the Yamuna: WHAT AILS THE YAMUNA? Access at Brief on the Yamuna: WHAT AILS THE YAMUNA?

River Cities Network-Shifting societal and material relations of Yamuna in Delhi, India access at Shifting societal and material relations of Yamuna in Delhi, India | River Cities Network (RCN).

River Glossary for Children

1. Alluvium

Meaning: Fine soil, sand, and silt carried and deposited by rivers, especially on floodplains.

Fun Fact: Alluvial soils are some of the most fertile in the world and are perfect for farming!

2. Bank

Meaning: The sides of a river, which hold the river water in its path.

Fun Fact: Riverbanks are often home to many animals like otters, kingfishers, and frogs.

3. Bed

Meaning: The bottom of a river where water flows over.

Fun Fact: River beds can be rocky, sandy, or muddy depending on the river's speed and age!

4. Braided River

Meaning: A river that splits into many small channels separated by small islands of sediment.

Fun Fact: Braided rivers usually form in places where there's a lot of loose sand and gravel.

5. Brook

Meaning: A very small stream or minor river, often found in the countryside.

Fun Fact: Brooks often feed into larger rivers and are important habitats for fish like trout.

6. Cascade

Meaning: A small waterfall or a series of small waterfalls along a river.

Fun Fact: Cascading water can naturally polish stones smooth over time!

7. Catchment Area

Meaning: The area from which rainfall and streams collect into a river system.

Fun Fact: The Amazon River has the largest catchment area in the world!

8. Channel

Meaning: The path that a river or stream follows as it flows.

Fun Fact: Man-made channels are called canals.

9. Confluence

Meaning: The point where two or more than two rivers meet and join together.

Fun Fact: The world's largest river confluence is where the Amazon and Rio Negro meet, creating a dramatic "meeting of the waters."

10. Current

Meaning: The continuous, directed movement of water in a river.

Fun Fact: River currents are stronger in narrow sections and slower in wide, deep parts.

11. Delta

Meaning: A landform made of sediment, created where a river flows into an ocean, sea, or lake.

Fun Fact: The Nile Delta is one of the largest and most famous deltas on Earth!

12. Discharge

Meaning: The amount of water that flows through a river channel over a period of time.

Fun Fact: The Amazon River has the highest discharge rate of any river!

13. Downstream

Meaning: The direction the river flows, moving towards its mouth.

Fun Fact: Floating leaves always drift downstream unless caught in an eddy.

14. Eddy

Meaning: A circular movement of water, usually formed behind an obstacle in the river.

Fun Fact: Fish often hide in eddies to conserve energy against strong currents.

15. Estuary

Meaning: The wide, tidal mouth of a river where it meets the sea.

Fun Fact: Estuaries are rich ecosystems, home to both saltwater and freshwater animals!

16. Floodplain

Meaning: The flat area of land next to a river that gets flooded when the river overflows.

Fun Fact: Floodplains are natural filters that clean water by trapping sediments and pollutants.

17. **Ford**

Meaning: A shallow place in a river where people or vehicles can cross.

Fun Fact: Ancient trade routes often formed around river fords.

18. **Gorge**

Meaning: A deep, narrow valley with steep sides, often formed by river erosion.

Fun Fact: The Grand Canyon was carved by the Colorado River over millions of years!

19. **Headwaters**

Meaning: The source or beginning of a river, usually in highland or mountainous areas.

Fun Fact: Many rivers start as small trickles from melting snow or underground springs.

20. **Hydraulic Action**

Meaning: The process where the force of moving water erodes riverbanks and beds.

Fun Fact: Hydraulic action can create caves and arches along river valleys over time!

21. **Inlet**

Meaning: A small arm of a river, lake, or sea leading inland.

Fun Fact: Inlets often shelter boats because they are less rough than open water.

22. **Lagoon**

Meaning: A shallow body of water separated from a larger sea by sandbars or reefs, sometimes formed by river sediment.

Fun Fact: Lagoons are important nurseries for many fish species.

23. **Levee**

Meaning: A natural or artificial wall that prevents a river from flooding the land.

Fun Fact: Ancient civilizations built levees as early as 3,000 BC!

24. **Marsh**

Meaning: A wetland area often formed near rivers, filled with grasses and water-loving plants.

Fun Fact: Marshes act like sponges, absorbing floodwaters.

25. **Meander**

Meaning: A winding curve or bend in a river.

Fun Fact: Rivers naturally meander more as they get older and slower!

26. **Mouth**

Meaning: The place where a river flows into a larger body of water like an ocean or sea.

Fun Fact: Some rivers split into many smaller channels (distributaries) before reaching their mouth.

27. **Oxbow Lake**

Meaning: A U-shaped lake formed when a wide meander is cut off from the river.

Fun Fact: Oxbow lakes are common in slow, meandering rivers.

28. **Pool**

Meaning: A deep, still part of a river where water moves slowly.

Fun Fact: Pools often form behind fallen logs or large rocks.

29. **Rapids**

Meaning: Fast-flowing and turbulent sections of a river, usually over rocks.

Fun Fact: Rapids are graded by difficulty for whitewater rafting!

30. **Reach**

Meaning: A stretch or section of a river between two points.

Fun Fact: Scientists study river reaches to understand water flow and health.

31. **Reservoir**

Meaning: A large man-made lake created by damming a river.

Fun Fact: Reservoirs store drinking water and can also generate hydroelectric power.

32. **Riffle**

Meaning: A shallow part of a stream or river with rapid currents and surface agitation.

Fun Fact: Riffles are rich in oxygen, making them perfect habitats for many aquatic insects!

33. **Riparian**

Meaning: Relating to or situated on the banks of a river.

Fun Fact: Riparian zones are vital for wildlife, offering food and shelter.

34. Riverbed

Meaning: The ground over which a river flows.

Fun Fact: Riverbeds constantly change shape as rivers deposit and erode materials.

35. Runoff

Meaning: Water from rain or melted snow that flows over land into rivers.

Fun Fact: Runoff can carry nutrients but also pollutants into rivers.

36. Salt Marsh

Meaning: A coastal wetland flooded by saltwater, often near river estuaries.

Fun Fact: Salt marshes protect coastlines from storm surges!

37. Sediment

Meaning: Particles of soil, sand, and minerals carried by river water.

Fun Fact: Over time, sediment builds up to create fertile lands like deltas.

38. Shoal

Meaning: A shallow place in a river formed by sand or gravel deposits.

Fun Fact: Shoals can change river navigation routes!

39. Silt

Meaning: Very fine soil particles carried by water and deposited in riverbeds.

Fun Fact: The Nile River's annual silt deposits made Egypt's ancient agriculture flourish.

40. Slough

Meaning: A swampy or slow-flowing section of a river.

Fun Fact: Sloughs are important for water filtration and wildlife habitats.

41. Source

Meaning: The beginning point of a river, often in mountains or hills.

Fun Fact: Some rivers, like the Nile, have multiple sources!

42. Sound

Meaning: A low, continuous noise made by flowing water.

Fun Fact: Scientists study the sound of rivers to monitor ecosystem health.

43. **Spring**
Meaning: A natural flow of groundwater that emerges at the surface and often feeds into rivers.
Fun Fact: Springs are the starting points of many famous rivers!
44. **Stream**
Meaning: A small, narrow river.
Fun Fact: Streams can join together to form bigger rivers.
45. **Surge**
Meaning: A sudden, strong increase in water flow in a river.
Fun Fact: Surges can happen during flash floods after heavy rains.
46. **Swamp**
Meaning: A wetland area with trees, usually formed near slow-moving rivers.
Fun Fact: The largest swamp in the U.S. is the Atchafalaya Basin, created by the Mississippi River.
47. **Tributary**
Meaning: A smaller river or stream that flows into a larger one.
Fun Fact: The Missouri River is the longest tributary of the Mississippi River.
48. **Upstream**
Meaning: Against the flow of the river, towards its source.
Fun Fact: Salmon swim upstream to lay their eggs!
49. **Waterfall**
Meaning: A place where river water drops sharply over a cliff or rock ledge.
Fun Fact: Angel Falls in Venezuela is the tallest waterfall in the world!
50. **Whirlpool**
Meaning: A powerful circular current of water in a river.
Fun Fact: Whirlpools can form naturally near waterfalls and fast-moving currents.

Without rivers and waterbodies, our language would lose all these lovely words. Imagine not having “babbling brooks,” “meandering rivers,” or “gurgling streams” in stories and poems!

References

- Anderson, E. P., Jackson, S., Tharme, R. E., Douglas, M., Flotemersch, J. E., Zwarteveen, M., ... & Arthington, A. H. (2019). Understanding rivers and their social relations: A critical step to advance environmental water management. *Wiley Interdisciplinary Reviews: Water*, 6(6), e1381.
- Babu, C. R., Gosain, A. K., & Gopal, B. (2013). Restoration and conservation of river Yamuna. Final Report: Submitted to the National Green Tribunal by Expert committee.
- Basu Roy, S. (2013). Population and natural resources: A case study of Yamuna water pollution.
- Baviskar, A. (2011). What the eye does not see: The Yamuna in the imagination of Delhi. *Economic and Political Weekly*, 46(50), 45-53.
- Bhatt, B. J., Awaz, F., & Nissa, U. K. (2016). Study of fish fauna, species diversity and relative abundance of fishes in river Yamuna of western Doon Uttarakhand. *International Journal of Fisheries and Aquatic Studies*, 4(4), 347-350.
- Capra, F. (1985). Criteria of systems thinking. *Futures*, 17(5), 475-478.
- challenge of transboundary governance. *Journal of Human Rights Practice*, 10(3), 406-422.
- Demartoto, A., Zunariyah, S., & Ramdhon, A. (2025). River school: An attempt of reproducing community's green lifestyle culture in Kampung Code Yogyakarta, Indonesia. In *E3S Web of Conferences* (Vol. 605, p. 03026). EDP Sciences.
- Dunbar, R. R. (2021). *Riverology: Promoting Stewardship of Rivers Through Youth Participation in Science and Art* (Master's thesis, Old Dominion University).
- Gautam, N. (2015). Reflection on Culture of the Jaunsari Tribe in Uttarakhand. *Asian Man (The)-An International Journal*, 9(2), 228-231.
- Gruenewald, D. A. (2003). The best of both worlds: A critical pedagogy of place. *Educational researcher*, 32(4), 3-12.
- Haberman, D. (2023). *River of love in an age of pollution: The Yamuna river of northern India*. Univ of California Press.
- Kalpakian, J. (2017). *Identity, conflict and cooperation in international river systems*. Routledge.

- Kanaujia, P. R., & Gorana, R. N. (2019). Teacher preparation for environmental education and education for sustainable development in India. *Teaching and Teacher Education: South Asian Perspectives*, 319- 336.
- Kaushik, M. (2020, January). Analysing water-related topics in science textbooks from sustainability and social justice perspectives. In *Proceedings of epiSTEME-8: International Conference to Review Research on Science, Technology and Mathematics Education* (pp. 52-60).
- Leder, S. (2018). *Transformative Pedagogic Practice. Education for Sustainable Development in Indian Geography Education on Water Conflicts Education for Sustainability*. Lee, JC-k, Maclean, R.
- Leder, S., & Leder, S. (2018). Education and Water Conflicts in Pune, India. *Transformative Pedagogic Practice: Education for Sustainable Development and Water Conflicts in Indian Geography Education*, 89-114.
- McEwen, L., Gorell Barnes, L., Phillips, K., & Biggs, I. (2020). Reweaving urban water community relations: Creative, participatory river “daylighting” and local hydrocitizenship. *Transactions of the Institute of British Geographers*, 45(4), 779-801.
- Méndez, M. J. (2018). “The river told me”: Rethinking intersectionality from the world of Berta Cáceres. *Capitalism Nature Socialism*, 29(1), 7-24.
- Misra, A. K. (2010). A river about to die: Yamuna. *Journal of water resource and protection*, 2(5), 489-500.
- Naithani, R., & Pande, I. P. (2015). Comparative analysis of the trends in river water quality parameters: A Case study of the Yamuna River. *Int. J. Sci*, 4, 1212-1221.
- NCERT (2020). *New Education Policy 2020*. Government of India.
- NCERT (2022). *National Curriculum Framework for Foundational Stage 2022*. Government of India. NCERT 92023). *National Curriculum Framework for School Education 2023*
- O’Bryan, K. (2021). Legal rights for rivers. *Ga. J. Int’l & Comp. L.*, 50, 769.
- Oestigaard, T. (2009). *Water, culture and identity: Comparing past and present traditions in the Nile Basin Region*. BRIC.
- Rai, R. K., Upadhyay, A., Ojha, C. S. P., & Singh, V. P. (2011). *The Yamuna river basin: water resources and environment* (Vol. 66). Springer Science & Business Media.
- Rao, N. V. (2020). Charming description of rivers in vadiraja’s works.

- Schiff, J. (2018). Reconciling decentralization: The human right to water, India's Yamuna river, and the challenge of transboundary governance. *Journal of Human Rights Practice*, 10(3), 406–422
- Setty, R., Iyengar, R., Witenstein, M. A., Byker, E. J., & Kidwai, H. (Eds.). (2019). *Teaching and teacher education: South Asian perspectives*. Springer Nature.
- Sharma, D., & Kansal, A. (2011). Current condition of the Yamuna River: An overview of flow, pollution load, and human use. *Yamuna River: A confluence of waters, a crisis of need*.
- Sharma, J. P. Revisiting the Darya (River) Urbanism in the Delhi Triangle. *River Cities, City Rivers*, 99-128. Singhal, S. (2024). *Uncovering the Silences: Environmental Knowledges in the Floodplains of Yamuna, Delhi, Decolonial Subversions*.
- Sharma, K. (2015). Pollution study of River Yamuna: the Delhi story. *Int J Sci Res*, 6(10), 1718-1722.
- Siddiqui, N., Faiyaz, T. A. R. I. Q. U. E., & Tari, V. S. (2022). Ganga and Yamuna Rivers: Through the Lens of the National Green Tribunal. *Nature Environment and Pollution Technology*, 21(4), 1657-1664.
- Singhal, S. (2024). *Uncovering the Silences: Environmental Knowledges in the Floodplains of Yamuna, Delhi, Decolonial Subversions*.
- Sobel, D. (2004). Place-based education: Connecting classrooms and communities. *Education for meaning and social justice*, 17(3), 63-64.
- Srivastava, A., & Prathna, T. C. (2022). Yamuna Action Plan-III: impact on water quality of river Yamuna, India. *Fine Chemical Engineering*, 1-10.
- Stewart, M. *Delhi Water Politics: Institutionalized Ways of Knowing Disenfranchised Communities*.
- Sultana, F. (2011). Water, culture, and gender: An analysis from Bangladesh. In *Water, cultural diversity, and global environmental change: Emerging trends, sustainable futures?* (pp. 237-252). Dordrecht: Springer Netherlands.
- Wang, H., & He, G. (2022). Rivers: Linking nature, life, and civilization. *River*, 1 (1): 25–36.

Rivers not only bring water to the world, but also magic to our words.



Modern Institute for Education



Centenary Block, Modern School
Barakhamba Road, New Delhi - 110001



www.yari.org.in, www.mieglobal.in



admin@mieglobal.in