Let's Clear the Air on Air!

Online Seminar for Teachers of GSP Network on Air Pollution and its Health Impact on children

29-30 April 2020

Announcements

***Gobar Times* is now online! Go to downtoearth.org.in**

You can submit essays on topics such as food, water, waste, pollution, forests and so on to editor@gobartimes.org

You can also share fictional write-ups like poems and short stories, related to the above topics

The word limit is 650-700 words for stories, essays, etc

If you are sharing images, please share high resolution (2 MB and above)pictures with brief captions

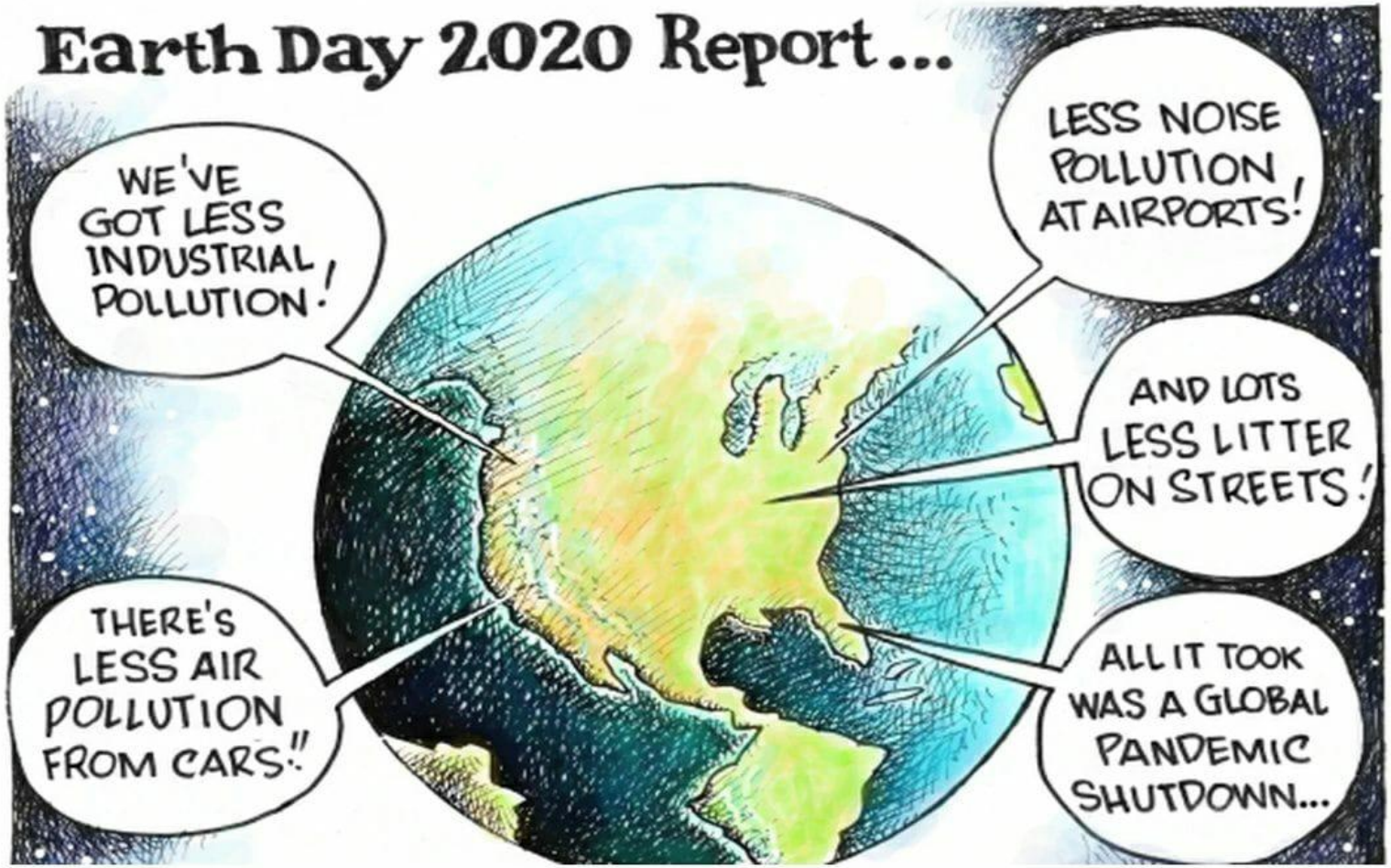
If images are related to an event, make sure you share details like the names of those in the picture, date and venue of the event, designation (in case of teachers and officials) and class (in case of students).

Avoid summary of events held in the school. Instead, you can share your individual learnings from the event

We encourage our friends to write about their experiences. For example, how have you experienced air pollution and how has it impacted you? Or you can write about one regional dish that is prepared in your house and what is the story behind it. Do share the recipe too!

GSP Online courses

Activity Handbook



DAVE GRANLUND/POLITICALCARTOONS.COM

Earth Day 2020 report

Lesson Learnt?

….this is not the way we want to clean our air or our water — however desperately we need this to happen……we did, momentarily, get this sense and smell of what clean air, clean rivers and exuberant nature means. **And we must value it.** We must remember this time as the way we want it to be, when our lungs can inhale and exhale without the stress of toxins.

Climate Crisis

- Cannot lose sight of the bigger issue
- Our actions have major consequences
- Cannot afford to unlearn
- What can be done?
  - Underscores the need for **Environment Education**

GSP Audit 2019: Air Findings

- Of the 1704 schools that submitted the audit, 79 per cent schools do not own or use vehicles.
- In 41 per cent schools, more than half of the population uses sustainable motorised vehicles
- In 44 per cent schools, more than half of the population uses non-polluting transport
- 24 per cent schools only use SMV and NPT
- 18 per cent schools burn waste

GSP Audit in the Classroom

TASK: HOW ECO-FRIENDLY ARE THE VEHICLES IN YOUR SCHOOL?

S. no.	Item	Lesson plan
1.	Topic	Know about the fuel!!
2.	Class	8
3.	Subject	Science
4.	No. of students	30
5.	Duration	35 minutes
6.	Learning indicators	Discussion on types of fuels and fuel efficiency
7.	Learning objectives	**Students will be able to:** a. Differentiate between the exhaustible and inexhaustible fuels b. Discuss the properties and refining of the fuels c. Explore the uses of the fuels d. Understand the global impact of clean and unclean energy uses
8.	Method used	● Storytelling can be used by teacher to tell the history of the various fuels ● Group discussion can be conducted to explore more possible uses of the fuels ● Videos of extraction of the fuel can be shown
9.	Teaching learning material	Video, flashcards (for story), newspaper cuttings on the recent news related to consumption of fuels and their misuse
10.	Classroom teaching	● **Chapter 5**: 'Coal and petroleum' ● **Class 8**, Science
11.	GSP Audit exercise	**Task 3**: How eco-friendly are your school vehicles? » Specify the type/s of fuel used by your school vehicles?
12.	Other material required	Blackboard, chalk, flashcards and newspaper cuttings

TASK: HOW GOOD IS THE AIR YOU BREATHE IN YOUR SCHOOL?

S. no.	Item	Lesson plan
1.	Topic	Air around us
2.	Class	6
3.	Subject	Science
4.	No. of students	30
5	Duration	35 minutes
6.	Learning indicators	● Observation of the evidences on presence of air ● Discussion and experience sharing on components of air ● Questioning the quality of air around
7.	Learning objectives	**Students will be able to:** a. Identify the composition of air around you b. Differentiate between clean and polluted air c. Analyse the particulate matter in air that causes respiratory problems
8	Method used	● Experiments with empty bottles to show air is present. ● Group discussions about why traffic policeman wear masks while directing traffic
9.	Teaching learning material	● **Video:** *Composition of air* ● **Textbook**
10.	Classroom teaching	● **Chapter 15:** Air around us ● **Class 6,** Science
11.	GSP Audit exercise	**Task 5:** How good is the air you breathe in your school? » **Question 5:** How many students suffer from respiratory problems? » **Question 6:** Does the school laboratory have air quality monitoring equipment?
12.	Other material required	Glass container, glass bottle, water, projector, blackboard and chalk

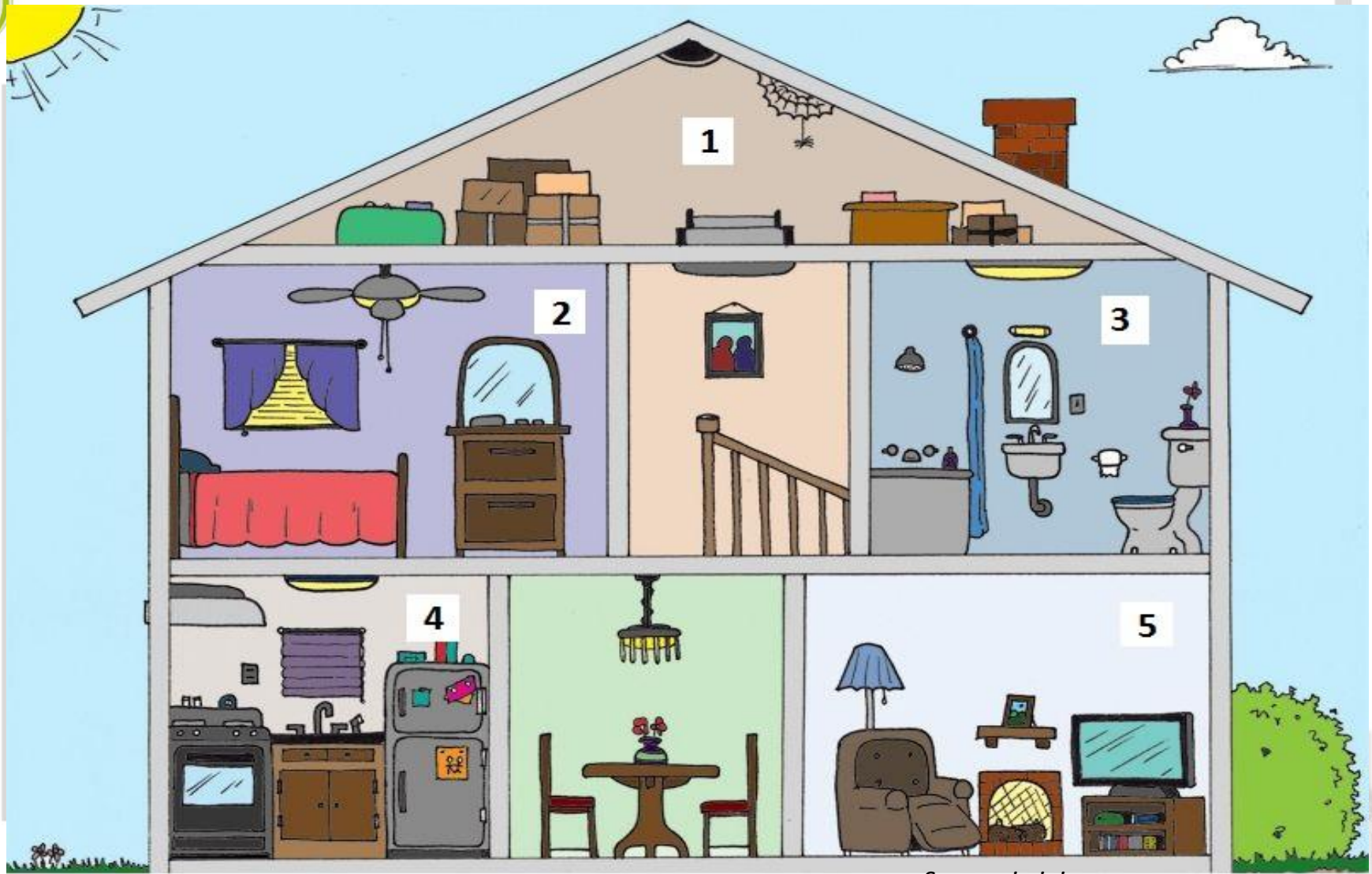
S. no.	Item	Lesson plan
1.	Topic	Air—the breath of life
2.	Class	9
3.	Subject	Science (Biology)
4.	No. of students	40
5.	Duration	35 minutes
6.	Learning indicators	Discussion on reasons for air pollution and questioning the use of vehicles
7.	Learning objectives	**Students will be able to:** a. Understand the concept of air pollution b. Discuss how pollution occurs c. Understand corrective measures to be taken to control pollution such as Pollution under Control (PUC) Certificate, etc. d. Understand the role of vehicle maintenance in controlling air pollution
8.	Method used	• Group discussion on the relation of air pollution with the choice of mode of transport • Google search for knowing pollution levels of a city.
9.	Teaching learning material	Video, newspaper/magazine cuttings, articles, PUC certificate, Central Pollution Control Board website (to know about Air Quality Index—AQI)
10.	Classroom teaching	• **Chapter 14**: 'Natural resources' • **Class 9,** Science (Biology)
11.	GSP Audit exercise	**Task 3**: How eco-friendly are your school vehicles? » Provide details of school-owned motorized vehicles
12.	Other material required	Projector, blackboard, chalk, computer and Internet (or smart phone with Internet)

Indoor Air Pollution

- Indoor air pollution (IAP) is as harmful as ambient air pollution… and maybe more in some cases
- In a year, 2.6 million premature deaths are caused by IAP.
- Inefficient burning of fuels like firewood is one of the prime reasons, but there are many more!

Indoor Air Pollution

What's hiding in our homes?



Indoor Air Pollution: Steps to Follow

- **Identify** the sources of indoor air pollution in each numbered area of the house
- **List** the areas point wise along with the pollutants present (in points)
  Example: *3. Bathroom: Aerosol spray (deodorants)*
- **Share** your responses by 11 AM, 30 April 2020 on support@greenschoolsprogramme.org

Indoor Air Pollution: Sources

1. **Storeroom/Attic:** VOCs (volatile organic compounds/gases) from paints, mold, dust; biological pollutants (mites, dust, bacteria)
2. **Bedroom:** VOCs from furniture; mattress dust; aerosols in insect repellents; asbestos and formaldehyde in building material
3. **Bathroom:** Bacteria and mold from humidity; VOCs from cleaning products; aerosol sprays; water leakages

Indoor Air Pollution: Sources

4. Kitchen: Particulate matter (PM) from stoves and chimneys; VOCs from disinfectants; burning of fuels; gas emissions like CO, CO_2, formaldehyde

5. Living Room: Carpet and curtain dust; emissions from paint and furniture; fireplace emissions; tobacco smoke; VOCs like acetone, benzene, formaldehyde from air fresheners; biological pollutants; cooling/heating system

What can we do about IAP?

- Maintaining proper ventilation inside the house
- Indoor air plants like money plant, snake plant, aloe vera, areca palm
- Use of cleaner fuels
- Hygiene: Keeping cleaning products tightly packed; manage waste properly and covering waste
- Regularly assessing water and gas leakages

Environmental Education: IAP

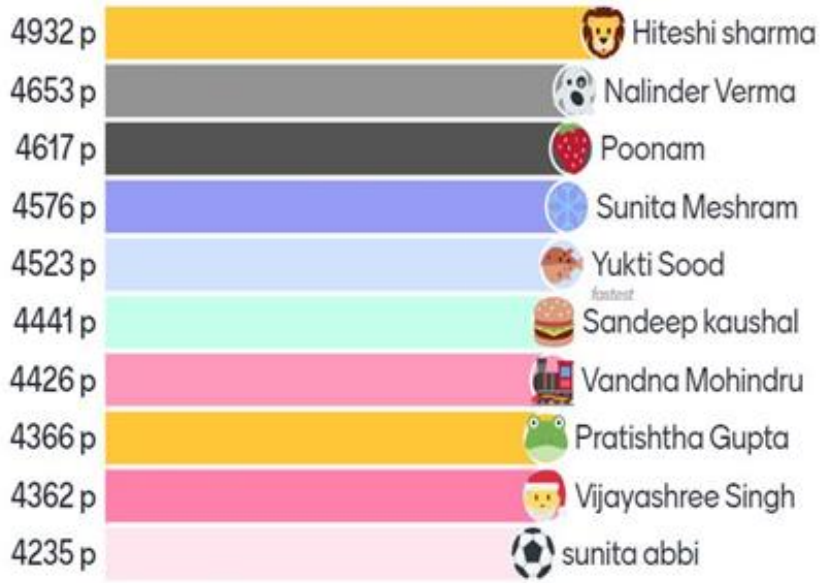
- Linking textbook content to real-life experiences: A lesson on particulate matter for Grade 6 can be linked with sources of it outdoors and indoors
- Encouraging region-specific ways to curb air pollution
- Home-made sensors and air purifiers as projects

In-House Air Purifier

- An air purifier made by DRV DAV Centenary Public School, Phillaur, Punjab
- Made from waste car air filter mould, electric fan and filter paper

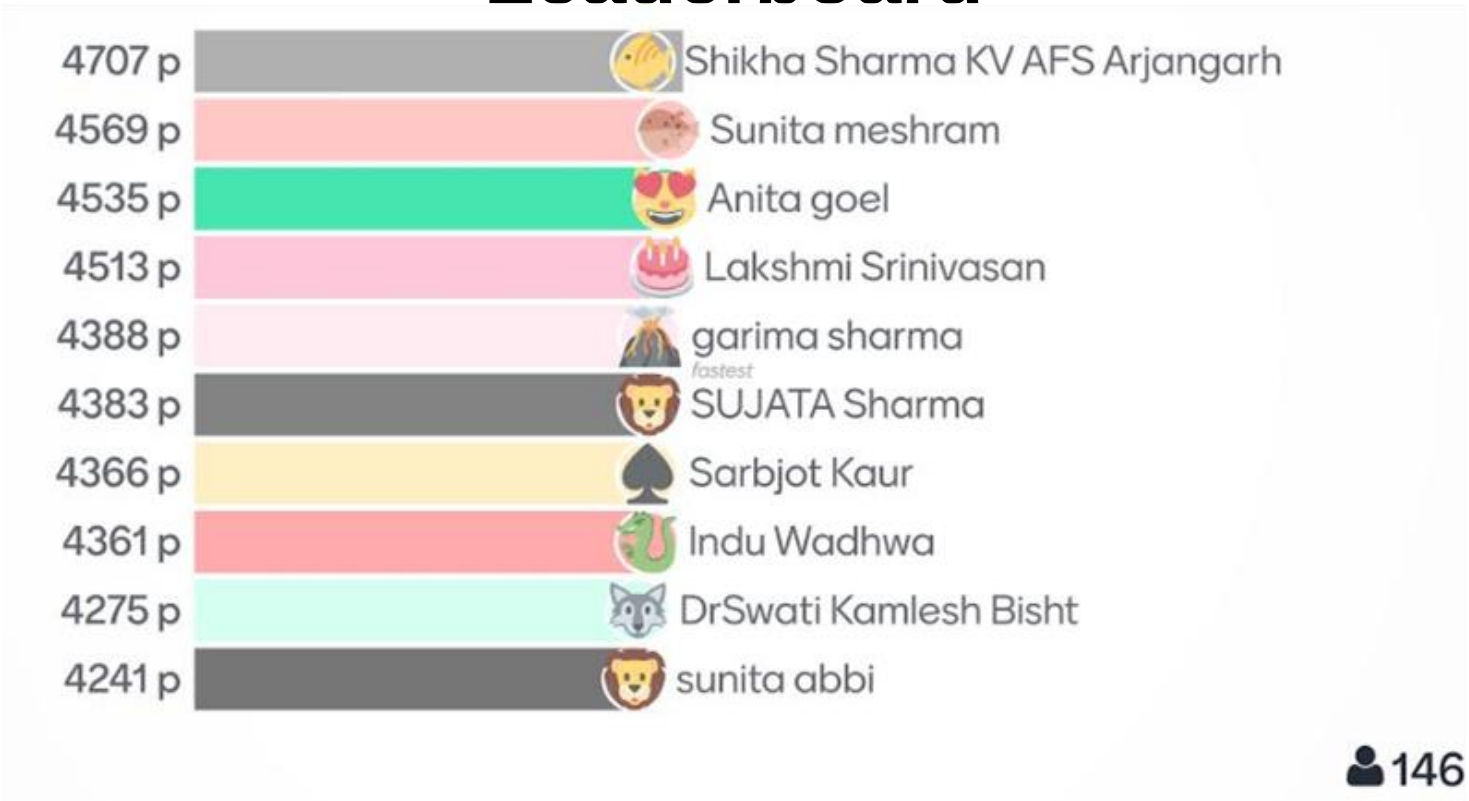
Quiz based on Down to Earth Video Stopmotion: Use and Regulation of Diesel Vehicles

Leaderboard



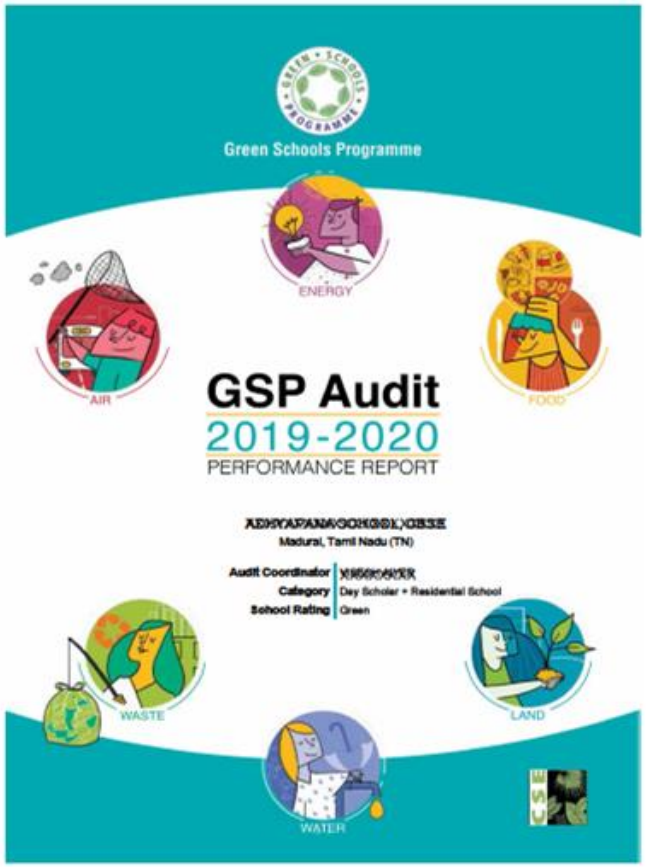
Quiz based on the presentation on Mobility Practices and Trends

Leaderboard

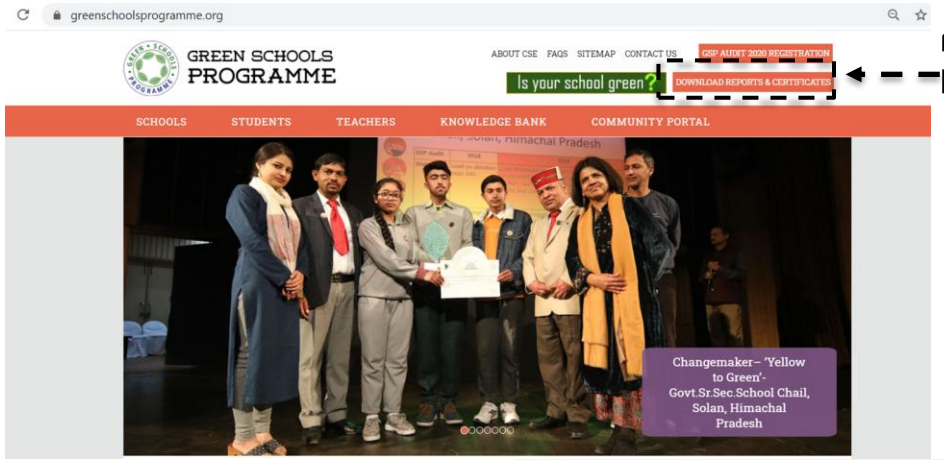


GSP Performance Report 2019
Key points

- Based on the data submitted by schools
- Includes feedback and recommendations on crucial points
- Gives direction to schools to be green and improve the practices in the next year
- Simple structure

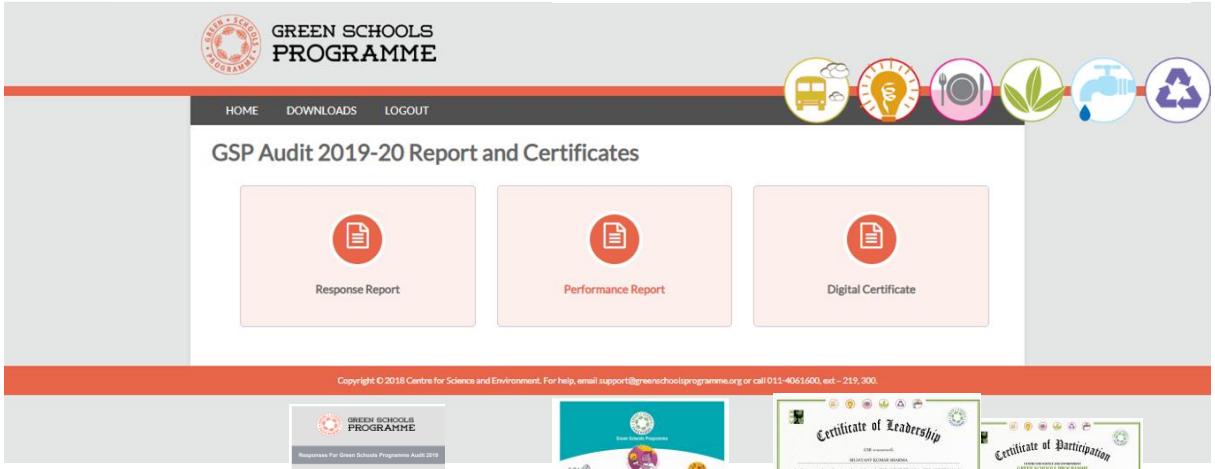


For schools in GSP network



DOWNLOAD REPORTS AND CERTIFICATES

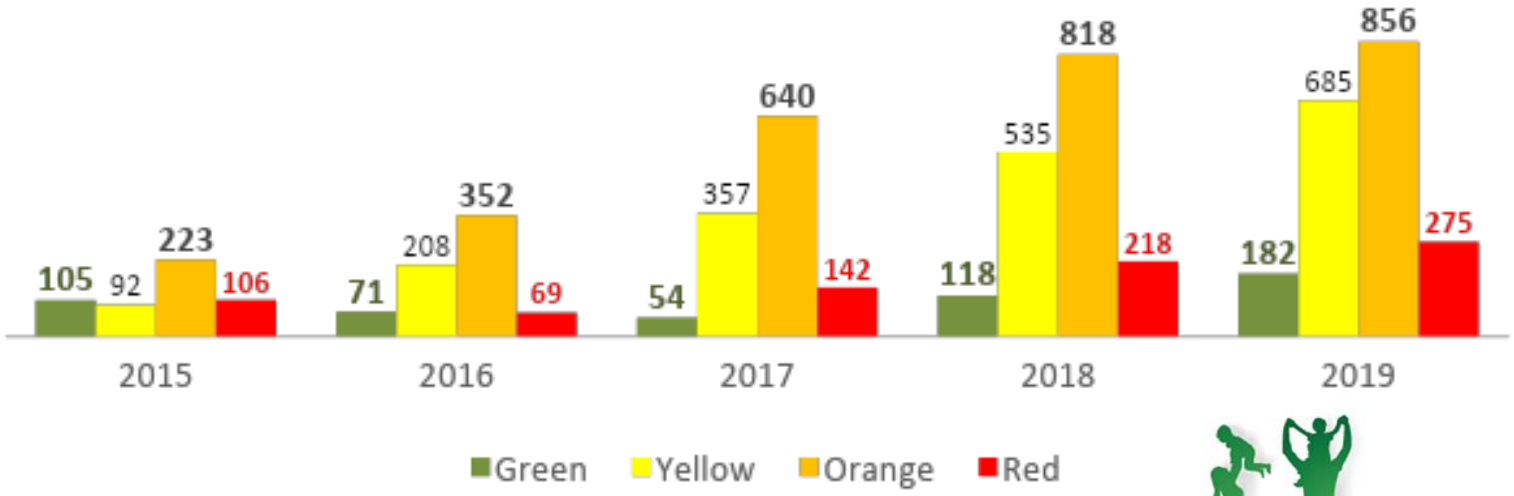
- School Dashboard
- Downloads
  - Response Report
  - Performance Report
  - Digital Certificate for staff and students



GSP Snapshot – Category wise

Category	2015	2016	2017	2018	2019
Green (70% and above)	**105**	**71**	**54**	**118**	**182**
Yellow (50%-69.9%)	**92**	**208**	**357**	**535**	**685**
Orange (35%-49.9%)	**223**	**352**	**640**	**818**	**856**
Red (below 34.9%)	**106**	**69**	**142**	**218**	**275**
Total submissions	**526**	**700**	**1193**	**1689**	**1998**

https://www.greenschoolsprogramme.org/schools/gsp-audit/green-schools-awards/gsp-award-2019-20/is-your-school-green/



Section wise

Air

- Window-to-floor ratio
- Vehicle ownership
- Vehicle health
- Fuel use
- Commuting practices

Air pollution is responsible for close to 13 per cent of deaths in India and its burden is highest in northern states of Delhi, Punjab, Uttar Pradesh and Haryana. In fact, an average Indian will live 1.7 years longer if the country is able to clean its air.

Air pollution has adverse effects on children, specifically. It has been found that children in polluted environment grow up with smaller lungs. Sources of air pollution are many and diverse. But none are as lethal as vehicles because they are responsible for very high exposure. Vehicular emissions take place in the breathing zone of people. Experts say that those who live or work in close proximity to heavily travelled roadways are subject to high levels of exposure. No wonder that during the past few years, we have been desperately looking out for tools to assess the problem and find ways to combat the menace.

To know more about GSP's initiative on air pollution and explore the resource material, please go to the GSP website.

Remember:

- Your school can make an impact and ensure cleaner air in the surroundings by opting for carpooling and shifting to CNG run vehicles, if CNG is available in your area (CNG is a cleaner fuel).
- Encourage most of the permanent population to use non-polluting modes of transport such as walking or cycling, or use sustainable motorized vehicles such as buses and other public transport. Students in several schools have come up with new and innovative ways to discourage the school population to use private vehicles and incentivize them to use public transport or car pool.
- Practices to achieve cleaner air will bear little result without attempts to ensure that there is circulation of fresh air. Fresh air keeps mind and body healthy, which helps students concentrate better and stay alert. The total window-floor ratio of a classroom should therefore be more than at least five per cent.

Road Worthiness Certificate

Yes

It is good that your school has Road Worthiness Certification for your vehicles. The certification implies that the vehicles are in a good operating condition and meet the acceptable standards of safe driving.

Ownership of Vehicles

School-owned vehicles

This is not an ideal situation as it is better for schools to hire buses from a transport contractor rather than to own them. Sharing buses with an operator is recommended.

Type of Fuel

The diesel consumption of the school is very high. We suggest considering the transition to cleaner sources of energy like CNG, if available in your area. The school authorities can also be encouraged to move to a more sustainable mode of transport.
It is commendable that the school does not use petrol to meet its vehicle energy requirement.
Your school doesn't use CNG as a fuel. We recommend transitioning to CNG in the future to become energy efficient.

Mode of Commuting to School

Percentage of Non-polluting modes of transport is: 82.82 %

It is good that most students and staff use non-polluting modes of transport (NPT) like cycling and walking.

Energy

- Energy Consumption
- Sources of Energy
- Use of renewable sources of energy

The impact of global warming has already reached scorching levels, and is rising rapidly. Saving energy is the first step to energy conservation. Switching off electrical gadgets when they are not in use and transitioning from bulbs to CFLs/LEDs are great ways to start. Opting for rooftop or building-integrated small-scale solar systems is an easy way to conserve electricity sustainably and cut down on your school's future electricity costs! They help minimise transmission and distribution losses, as the generated power is consumed locally. You can check out the latest schemes for solar roof top installations in institutions on https://seci.co.in/.

To know more about GSP's initiative on renewable energy (RE) and explore the resource material, please go to the GSP Website.

Remember

- Per capita per day electricity consumption should be well within the norms (46.5 MJ) and we all know that our non-renewable resources are depleting faster than they can re-generate. Switching over to renewable resources and expanding their usage is the only available option.

Sources of Energy

Non-renewable sources

Your school uses non-renewable sources of energy that could be exhausted in the near future. We recommend that you expand/ increase the renewable energy potential of the school and transition to cleaner, more efficient sources.

Energy consumption within the range

Your per person per day average energy consumption meets the norms! We hope that you continue to be as prudent with the energy consumption practices of the school.

Food

- Mid-day meals or Lunch from home
- Kind of food served/sold in school
- Distribution of packaged foods

A recent report published states that the food diversity on plate worldwide has reduced by 75 percent since the 1990s. This has cost everyone in terms of deteriorating human health and environment. In India, over 100 kinds of foods wild, cultivated and uncultivated form a part of the regular diet. Nutritional analyses of these diets show that these foods can counter malnutrition including micro-nutrient malnutrition such as Vitamin A Deficiency (VAD).

Food has been at the centre of policy debate in India for many years, as more than 35 percent of the country's children under five suffer from pacts of malnutrition including stunted growth and under-weight. Meanwhile, World Obesity Federation warns that by 2030, there will be 27 million obese children in India. Given India's dubious distinction of carrying the twin burden of under nutrition and overfeeding, we need to be extra cautious. We all are aware about the ill-effects of Ultra Processed Packaged Food (UPPF) that has high fat, sugar and salt (HFSS) content. This UPPF category is one of the most popular categories in today's food market.

Read more about food here.

Remember:

- Avoid UPPF in school canteens, and encourage children to eat healthy and traditional foods/ local foods and beverages. Sponsorship of school events by UPPF brands should be avoided. On special occasions, provide *laddoos* or other freshly-prepared foods as rewards instead of chocolates or other packaged food.
- Promote the use of paper wrappings instead of plastic to pack food, wherever possible

Does your school serve midday meals?

No

Food services like school mess or midday meal service is an important health resource for schools, especially the student community. When food is consumed daily, the food provided through the school comprises a third of a child 's total daily intake and has a significant influence on health and It is recommended that school checks the kind of food the students consume.

Does the school distribute packaged food items as rewards during schools events?

No

Ultra processed packaged food (UPPF) not only affect the health of the students adversely but also have negative environmental impacts. It is remarkable that your school does not distribute packaged food items as rewards. We hope that you sustain this practice and discourage students from eating UPPF.

Do students bring their own lunch from home?

Yes

It is good that the students bring cooked food from home. It is important that parents and teachers work together to help the students choose 'good food' for a healthy lifestyle.

Land

- Land-use – Green cover
- Biodiversity
- Use of pesticides

As per Model Building Bye-Laws, 2016, maximum ground coverage in a school building should not exceed 35 per cent. Your school grounds can provide excellent educational opportunities for creating awareness about land resources, natural world around you and the land-use pattern. The biological diversity supported by an area is a good indicator of its ecological well-being. A proper management of land resources can transform the grounds into biologically diverse outdoor classrooms and healthy open spaces.

As per the Right of Children to Free and Compulsory Education Act (RTE), 2009, a school should have an all-weathered school building with a playground, a kitchen (for cooking mid-meal), separate toilets for boys and girls, library, barrier-free access, etc.

Learn more about land use pattern and biodiversity from the knowledge bank on GSP website

Remember:

- Congestion on land (more buildings and inadequate green cover) leads to pressure on resources and hence on our environment.
- We all know that adequate supply of oxygen to the brain ensures greater power to grasp things. And for more oxygen we need more trees–our only oxygen factory!
- To keep these oxygen factories healthy, we should not use chemical pesticides to raise them. Chemical pesticides are poisonous to health and environment.

Total Green Cover

Green Cover Area in your school is 22.92%. As per the norms, at least 35 per cent of the total school area should classify as green cover. Your school does not have the required green cover. Therefore, we suggest increasing it by at least 20 per cent in the next two years.

How many species of plants and animals exist in your school?

Biodiversity is crucial in conserving nature. We recommend you to increase your floral biodiversity by ensuring at least 100 plant species within the campus.

Biodiversity is crucial in conserving nature. It is recommended to have at least 50 species of animals, including insects, birds, etc., within the campus. Please note that the animal biodiversity depends greatly on plant diversity.

Water

- Per day per capita consumption
- Sources of water
- Water conservation
  - RWH
  - Wastewater recycling
- Sanitation

The right to water is really the right to life and livelihood. Just as we cannot live without water, a country cannot survive if it is water-stressed. This resource determines our future and acts as a driving force for our economic growth. Even today, the government admits to not being able to provide safe drinking water to more than half the country's population. Poor sanitation and unsafe drinking water account for a substantial part of the disease burden in India, contributing to diarrhoea, cholera, typhoid and jaundice.

Explore water-related activities and information on GSP website

Remember:

- Children should get adequate amount of water required per day from drinking to flushing to mopping floors to everything.
- Catch rain where it falls. Today, rainwater harvesting has evolved as an appropriate measure to overcome the water scarcity as well as water logging due to excessive rains.
- Recharge groundwater. As per Central Groundwater Board (CGWB), around 39% of the analysed wells showed decline in groundwater level in various parts of the country. We must try to reduce the dependence on groundwater to stop further depletion of water table. Other measures can be harvesting more rainwater; treating and reusing waste water; and recharging groundwater.

Per Capita Water Consumption

7.65 litres per person/day (Per capita consumption is less)

Your school's per person per day consumption is less than the recommended quantity. Please refer to the table to see the recommended consumption.

School Average - CSE recommended consumption of water, per capita per day	
Type of School	Average consumption(in Litres)
Day Scholar	13-17
Day Boarding	15-25
Residential	125-135
Scholar + Boarding	14-21
Boarding + Residential	70-80
Scholar + Residential	50-76
Scholar + Boarding +Residential	51-59

Rainwater Harvesting

No

We urge you to consider rainwater harvesting for your school. It is a useful and feasible practice. Harvesting rainwater from any or all of the catchment areas (rooftop, paved and unpaved areas) is cost-effective and will enable you to recharge groundwater or resuse the stored water.

Load on Drinking Water Taps

You do not have the required number of drinking water taps in your school. Please refer to the table for the prescribed number.

Waste

- Segregation of waste
- Waste collection and generation
- Waste recycling and disposal

Do you know how much solid waste (paper, plastics, food waste etc) Delhi produces? 10,000 tonnes a day. We dump it all into landfills, which are overflowing and which pollute the environment. Moreover, there is no land available to create more landfills. We face day-to-day problems regarding waste management. Where to dispose of waste? How to dispose of waste? What to do with the waste?

Schools, by following efficient waste management practices, can play a leading role in setting examples, creating a public opinion, and ridding India of this menace.

Explore the waste related activities and information on GSP website

Remember:

- Segregation at source is the first and most important part of efficient waste management.
- Every class should have minimum of two dustbins to collect wet and dry waste separately.
- Set up a composting facility to manage the wet waste within school premises.
- Dispose of e-waste by sending it to authorised dealers.
- DO NOT burn waste in school premises.
- Send waste to designated dumping or landfill sites only.
- Have an efficient waste policy for your school.

Segregation of Solid Waste

Yes

It is remarkable that your school segregates waste at source! Inculcating this habit of waste segregation at source among students can help reform waste-related issues significantly.

Recycling of Waste

Your school does not recycle waste. We strongly recommend recycling of waste through composting (wet waste) etc. to reduce the load on lanfills. We hope that you are able to become a waste efficient school soon.

Burning of Waste

Yes

Burning of waste is one of the biggest environmental hazards. It releases toxic gases that are not only harmful for humans and animals but also have adverse effects on the environment. We request you to not burn the waste.

Waste Composting

No

Your school does not practice composting. It is recommended that you start composting in your school for efficient waste management.

THANK YOU!

For any queries, please write to

support@greenschoolsprogramme.org