

# Grades 7 and 8 Science / Geography Lesson

## Notes for teachers

- This lesson is a follow up to the assembly, therefore some content is repeated and intended to be used as a recap for your students (as appropriate).
- See the slides' notes section for **additional information and guidance**
- To register your **student's voice**, visit: <https://www.blueair.com/in/freedomtobreathe.html>
- Send us all your **school entries** to [paryavaranmitra@ceeindia.org](mailto:paryavaranmitra@ceeindia.org) by 15<sup>th</sup> October 2021. (e.g. poems, stories, drawings, letters etc.). Remember to anonymise this for safeguarding and GDPR reasons

The Freedom to breathe campaign teaching resources have been developed by educational professionals and will achieve three key learning outcomes.

**Students will:**

1. Understand the state of air quality in their city, and how it compares to other cities.
2. Understand the health impacts of air quality on their physical health, mental health and their ability to learn.
3. Understand how they can claim their right to clean air by understanding what the UN Convention on the Rights of the Child is. It is focused on their rights to the best possible health, clean water and a clean environment (article 24), but does not include the explicit 'right to clean air.'

**Curriculum links:** this primarily links to the EVS, Science, Social Science, along with links to Languages and Art & Craft aimed at grades 5 to 8.



# Grades 7 and 8 Science / Geography Lesson

## Notes for teachers

### Freedom to breathe:

Campaign aims to gather the support of 20,000 children from four target cities (starting with Beijing, Delhi, London, Los Angeles) - in support of a call to the UN to acknowledge Children's Right to Clean Air.

**Take the children's calls to the UN (that's you!)** - everyone involved will be invited to attend a virtual event in November, to hear the response from the UN.

### How it works:

- Introduce students to the campaign and tell them that session is about the campaign
- Students will learn about the state of air quality, the benefits of cleaner air to children's health and development, and the United Nations Convention on the Rights of the Child, noting the absence of the explicit "right to clean air" (article 24).
- After session, invite students to participate in exciting follow up activities.

### What you'll need to do after:

- Submit work done by students as part of activities – selected entries will be shared with the UN and make your calls louder!





**Freedom to breathe**


## Lets begin.....

To get most out of the session today, be ready with...

- A pen/pencil and some scrap paper to hand
- Listen carefully to the session
- Respond to questions using scrap paper or chat feature
- Understand follow up activities to work in team and at individual level
- Don't hesitate to ask questions and to share your ideas



Brief students about the session, purpose and duration



What are the  
things we  
need to live a  
**happy and  
healthy life?**

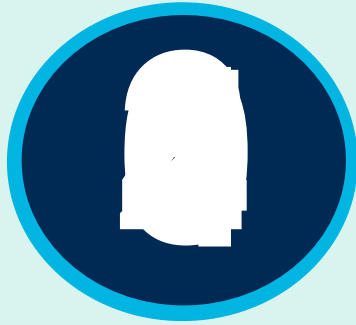
**PAUSE POINT**

 Freedom to breathe

For each question, there is 30 seconds time allotted with timer included on the slides. Ask students to put their responses in 30 seconds on scrap paper and show it or use chat function available in online platform.

# 30 seconds

 Freedom to breathe



 Freedom to breathe

**Food**

**Clean Water**

**Sleep**

**Warmth**

**Shelter**

**Fun!**

**Exercise**

**What are the things we need to live a happy and healthy life?**

**PAUSE POINT**

**Freedom to breathe**

Mention few points emerged from the responses from students.



# How about clean air?



You may have got lots of ideas from students. Now discuss with students..... but how about clean air? We need to breathe to stay alive! We're constantly breathing, even in our sleep. Clean air is critical to life and essential for our health and development. Unfortunately the air we breathe can be polluted, both indoors and outdoors.

# What do you know about air pollution?



 Freedom to breathe

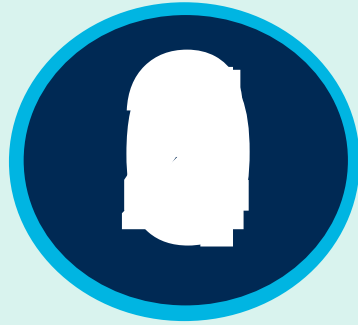
**PAUSE POINT**

Ask students now, what do they know about air pollution? What things might make it polluted?

Ask students to put their responses on scrap paper and show it or use chat function available in online platform.

# 30 seconds

 Freedom to breathe

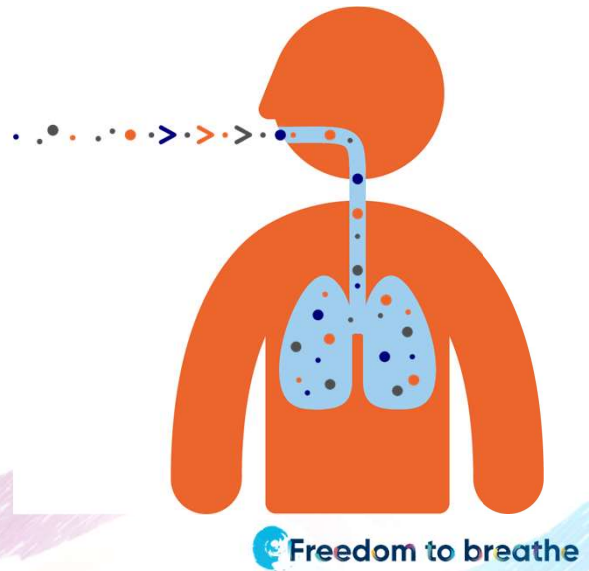


 Freedom to breathe

Air pollution is in the air that we breathe in.

The particles and gases enter our bodies and can damage our health and physical and mental development.

Air pollution can be indoors and outdoors.



Clean air is important as we need to breathe in order to survive! Even in our sleep we are breathing. Sadly sometimes we may breathe in polluted air.

Read slide

Air pollution and the particles that we breathe in are often very small and most of the time, you can't see them at all. They are quite often smaller than a single piece/strand of your hair!



Any amount of air pollution can be damaging to our health and physical and mental development, but the more that you are exposed to, the bigger the risk and the larger the impact it can have.

 Freedom to breathe

Read slide

Air pollution is often very small and most of the time, you can't see it at all. It's smaller than a single piece/strand of your hair!

## Can you guess where air pollution comes from?

Try to finish the sentences:

- **Indoor** air pollution is caused by things like....
- **Outdoor** air pollution is caused by things like....



**PAUSE POINT**

Ask students to put their responses on scrap paper and show it or use chat function available in online platform.

# 30 seconds

 Freedom to breathe





 Freedom to breathe

## Indoor air pollution is caused by...

Cooking - gases and particles are released when food is cooked.



Chemicals in cleaning products, craft materials, or personal care products (eg body sprays) that are released into the air. These harmful gases are called volatile organic compounds (VOC)



Release of smoke from things that are burnt in the home e.g. cigarettes and incense sticks.



Dust, mould and bacteria.



 Freedom to breathe

Indoor air is often more polluted than outdoor air. Indoor air pollution can be on average 2-5 times more polluted than outdoor air, due to the wide range of indoor pollutants and limited air flow.

For more information on impact of indoor and outdoor air pollution

<https://www.downtoearth.org.in/news/air-pollution-killing-620000-indians-every-year-global-burden-of-disease-report--40316>

<https://science.thewire.in/health/air-pollution-infant-deaths-2019-study/>

## Outdoor air pollution is caused by ...

**Vehicles** such as cars, vans, trains, ships, planes release nitrogen dioxide & carbon monoxide & particulate matter into the air.



**Factories** and **power plants** that generate energy/electricity by burning fossil fuels, release harmful gases and particulate matter.



**Agricultural practices** like stubble burning emits fine particulate matter (PM2.5). Fertilisers & pesticides (chemicals) can cause pollution.



**Burning of waste, plastic, painted or treated wood** release toxic chemicals in the air

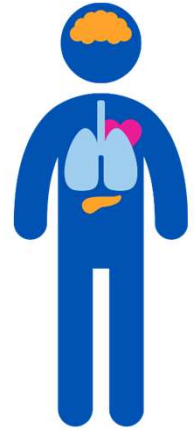


 Freedom to breathe

**1. Do you think air pollution affects us?**

**2. Why? Why not?**

**3. If yes, how do you think it affects us?**



 Freedom to breathe

**PAUSE POINT**

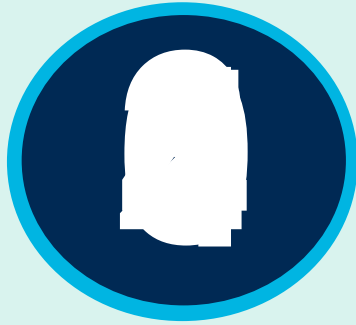
How does it affect us? What ideas do you have? - Encourage students to raise hand and get few students to share their thoughts. You can also ask students to put their thoughts in chat box.

Additional information:

Polluted air is the number one environmental risk to humans. It affects all bodily functions / organs and therefore it affects physical and mental development and health. Children's bodies are more susceptible to this as they are still growing. Breathing in clean air is vital to help children live long healthy lives and realise their full potential.

# 30 seconds

 Freedom to breathe

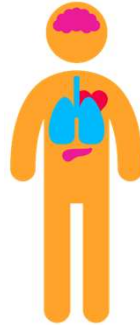


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## How does air pollution affect us?



Air pollution can damage your **lungs** and impact your breathing.



Exposure to air pollution can affect your **brain** and therefore your ability to learn and your mental health.



Breathing in air pollution can impact your **heart** and cause future heart problems.

 Freedom to breathe

**PAUSE POINT**

How does it affect us? What ideas do you have?

Additional information:

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## New Delhi

- Daily levels of toxic air in Delhi schools, which are often close to roads, are more than 10 times worse than acceptable standards.
- About half of the 4.4 million children who live in Delhi have serious lung damage.
- Recent lung tests conducted on 5,718 students in Delhi show that 43.5% suffer from “poor or restrictive lungs”.



 Freedom to breathe

Additional links / information for teachers:

<https://gizmodo.com/indias-air-pollution-is-so-bad-its-causing-lung-damage-1707775668>

<https://www.orfonline.org/research/air-pollution-delhi-filling-policy-gaps/>

<https://yaleglobalhealthreview.com/2017/05/14/delhis-air-pollution-and-its-effects-on-childrens-health/>



## What do you notice about PM 2.5 levels around the world? Why does this matter?



### Beijing, China

42.1  $\mu\text{g}/\text{m}^3$



### Delhi, India

98.6  $\mu\text{g}/\text{m}^3$



### London, UK

11.4  $\mu\text{g}/\text{m}^3$



### Los Angeles, USA

12.7  $\mu\text{g}/\text{m}^3$

$\mu\text{g}/\text{m}^3$  = micrograms per one cubic meter of air

The safe limit is 10  $\mu\text{g}/\text{m}^3$ .



Additional links / information for teachers:

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<https://www.orfonline.org/research/air-pollution-delhi-filling-policy-gaps/>

<https://yaleglobalhealthreview.com/2017/05/14/delhis-air-pollution-and-its-effects-on-childrens-health/>

In 2019, **Delhi's** average PM 2.5 concentration for the year 2019 was 98.6  $\mu\text{g}/\text{m}^3$  (micrograms per cubic

meter). This recorded level is not just the highest for any capital city in India, but for any capital city in the world. The World Health Organisation's target is  $10\mu\text{g}/\text{m}^3$ .

In **London**,  $11.4\mu\text{g}/\text{m}^3$ .

Other cities (Beijing, Delhi, LA) also have high levels of air pollution:

**In Los Angeles, USA,  $12.7\mu\text{g}/\text{m}^3$**

1/10 children are diagnosed with asthma.

**In Beijing, China,  $42.1\mu\text{g}/\text{m}^3$**

A 2009 study found that 6.3% of urban children were diagnosed with asthma and

7.2% wheezing symptoms.  
Schools have also been ordered  
to keep children indoors to  
avoid high levels of air  
pollution.

## Slide 25

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**HB7**

need to change the ppt notes on this slide so it's delhi focused?

Hannah Battram, 16/06/2021

## The particles in the air are called particulate matter (PM)

The air carries some **tiny tiny tiny tiny** particles, so we can't always see them!

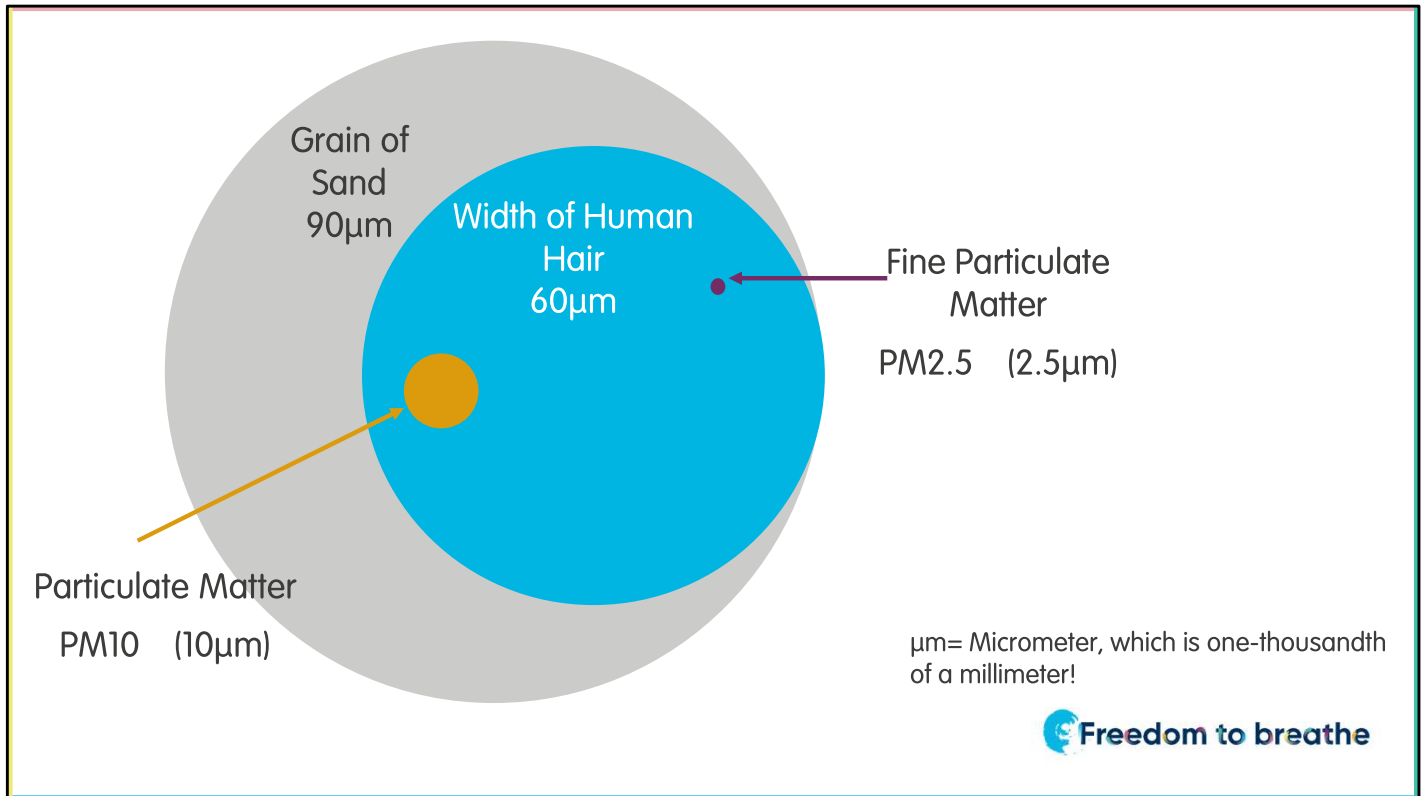
Some particles, known as **PM10**, are **10 times smaller** than a grain of sand!!

Even smaller are **PM2.5**, which are **40 times smaller** than a grain of sand!

**PM = Particulate Matter**



Draw attention to air pollution often being invisible



Micrometre, one-thousandth of a millimetre!

Nose hairs and lungs act as our natural filters/particle traps - but the smallest sneak through to our blood stream – again reiterate air pollution isn't always visible

# Particles all around us?

## Examples of PM10

Sea Salt  
Pollen  
Heavier dust  
Mould  
Bacteria



These are quite irritating! They can cause hay fever, sneezing and coughing.

## Examples of PM2.5

Soot  
Cat allergens  
Viruses  
House dust mite  
Tobacco smoke

These can seriously damage our health and development

 Freedom to breathe

Particles can be indoors and outdoors

SOOT is a black powder that comes from burning things and collects in chimneys.

**We can all help to make sure the air around us is cleaner.**

**What could you do?**

Hint: think about things you've done over the last week (e.g. at home/school, your journeys, your activities):

- Could you have done anything differently?
- Are you already doing something to help?



**PAUSE POINT**

We can all play a role to make sure we have cleaner air!

Think back to what you have done in the past week. What could you have done differently to make the air around you cleaner? Is there something you are already doing that you could share with the class to help other children too?

Maybe you could have walked, or cycled, or even used a scooter instead of taking a car?

Maybe take public transport instead of a car?

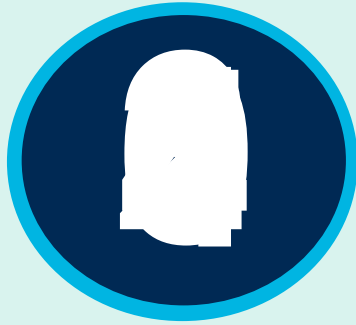
Maybe stop idling?

Open windows when cooking to let fresh air in, and close windows when there are lots of cars outside?



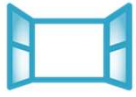
# 30 seconds

 Freedom to breathe



 Freedom to breathe

## At home



- Keep your windows open to let the fresh air in – especially when cooking or cleaning



- Switch to environment friendly or low VOC generating household cleaning and personal care products



- Talk to friends and family to create awareness on how some of our actions (like burning things, smoking) can affect indoor air quality



Here are a few examples – remember that the air we breathe is all around us – indoors and outdoors

## When travelling to places



- Walk, cycle, scoot or take public transport whenever you can instead of using your car



- Car pool with your friends



- Don't idle – ask your parents/adults to turn off their engines when the car isn't moving



Here are a few examples – remember that the air we breathe is all around us – indoors and outdoors

What can you do to make sure we have cleaner air?

What can we do to make sure we have cleaner air?

What can everybody do to make sure we have cleaner air?

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Remember, everyone can play a role in making sure we have cleaner air around us.

Have a think about what you can do, what we can do and what everybody can do – and bring your ideas to our lesson on this!

## Activity 1: What solutions do you choose?

**You are going to have creative problem solving activity to help you find out more about different types of solutions that exist around the world!**

- What is the most effective way of making sure your city has cleaner air?
- Which action(s) will you prioritise? Why?



**What are the best actions? Why?**  
**Which solution(s) can you influence? How?**



**For teachers reference only: You can share one or two of following examples to help students understand what type of actions they need to come up with**

**Legislation (laws) and advice, e.g.:**

- Government
- United Nations

**Financial benefits and penalties, e.g.:**

- Charges to travel on certain roads (penalties)
- Fines for businesses who are high polluters (penalties)
- Giving people money towards more sustainable transport such as bicycles (benefits)

**Changes to infrastructure, e.g.:**

- Cycle lanes
- Better ventilation systems in buildings
- Improving public transport
- Digital solutions to help people travel more sustainably
- Schools and businesses making it easy and safe for people to travel sustainably (e.g. bike parks)
- Schools working with the local body to have school streets

### **Innovations in transport, e.g.:**

- Electric and low emission vehicles
- New alternative low polluting transport systems

### **Behaviour change, e.g.:**

- Walking, cycling, scooting to school or work
- Practicing yoga or other form of exercises
- Growing trees
- Eating more fruits and vegetables

### **Campaigning, e.g.:**

- Raising awareness with others
- Signing a petition
- Asking leaders in schools, businesses and the local community to come together to help tackle air pollution
- Calling on the organisations like the UN to make changes that will benefit all



## Deliberating Solution

- Each one of us could be change maker who could contribute in improving air quality of you city.
- Any one topic is allotted to each one of you from previous slide. You could work together in team with same topics.
- Discuss your topic to identify various steps/actions that will be best for your city.
- Your group could decide, how you want to present your thoughts – presentation, debate, skit, etc.
- Persuade your class by explaining why you think this is the best action for a city to take.
- Listen closely to others and their ideas, they might persuade you!



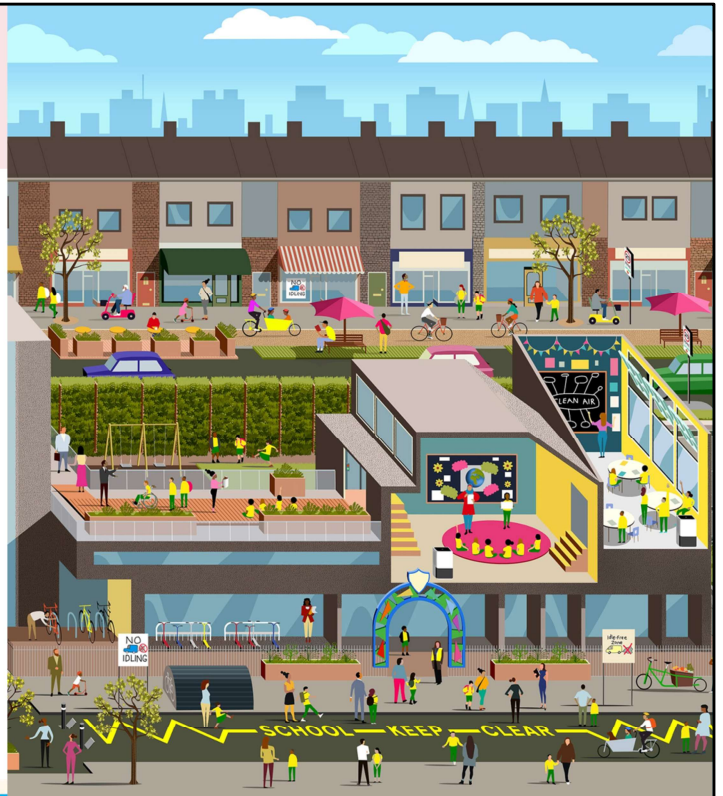
Allot topics to students and give them time for working in groups. Give around 2-3 days time for group work and then a session could be arranged inviting each team to present their ideas.

### The aim of the activity is to

- Help students realise that a multitude of approaches would be most effective to make sure their city has cleaner air.
- Recognise that whilst they might not be able to implement all the actions, they can influence others and gain support from decision makers to create a city with cleaner air
- Help young people feel empowered to be agents of change

## Activity 2 – My Vision

Create a vision  
of your Clean Air  
School/  
Neighbourhood



Tell students that they will now draw and design your clean air school/clean air neighbourhood vision. Encourage students to use different formats for presenting their vision.

As schools are closed from lon time, you can help students to recall overall structure and different sections in the school – mention about parking area, green space, ventilation etc. Similarly ask students to think about their home and neighbourhood. Tell them that they need to consider spaces like gardens, playing area, roads, streets, pavement, waste collection/dumping space,

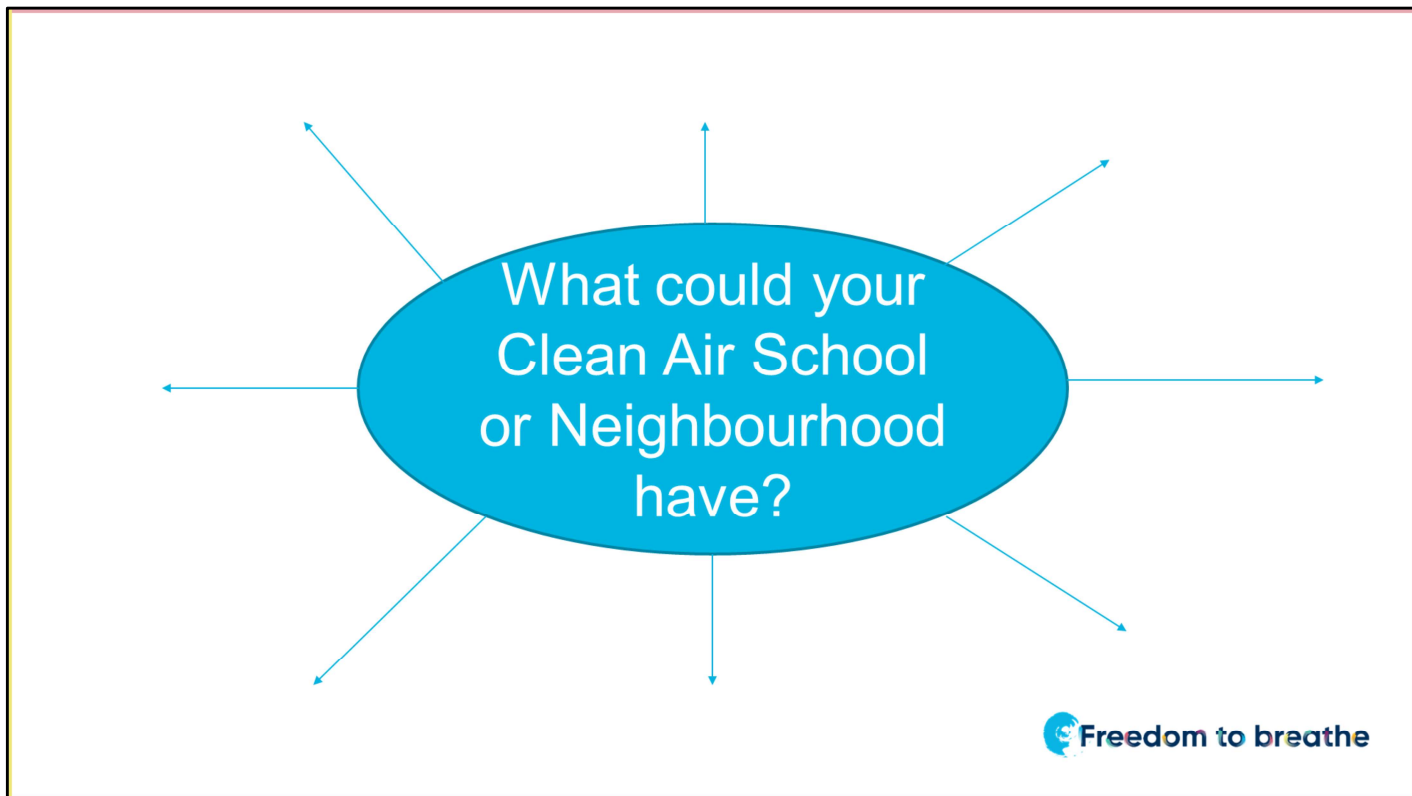
## What do we want?

A world where every school/neighbourhood is a clean air school/neighbourhood.

The student voice has the power to create real change.



 Freedom to breathe



Ask students to think about some of the ideas which emerged from their discussions

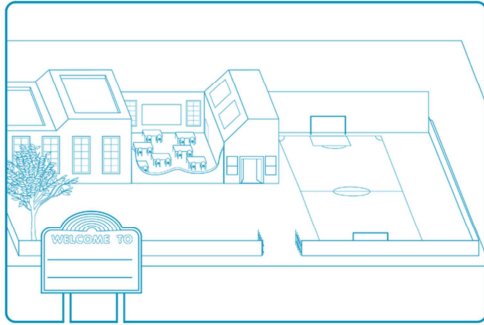
- How can you encourage others to think about how they travel?
- What can you do to support people if they are using different ways of travelling?
- Don't forget about indoor air pollution! What could you do to help avoid this in classrooms? Think about some things you might use (arts and crafts materials, adults who use cleaning products etc). Also, what can you do to improve air circulation? (e.g. opening windows that are away from roads with heavy traffic)
- How can you raise awareness about air pollution in your school and local community? What might your Clean Air events involve?

## These questions might help you come up with more ideas for your Clean Air School/ Neighbourhood

- What can you do to support people to use different methods of travelling?
- Don't forget about indoor air pollution! What could you do to help avoid this in classrooms, or at home? What could you do to improve air circulation?
- How can you raise awareness about air pollution in your school and local community? What might your Clean Air events involve?

## Your task: to design your dream Clean Air School/ Neighbourhood

- Use the ideas emerged through discussion.
- Label your ideas and use colour!
- If you prefer you can draw your own too.



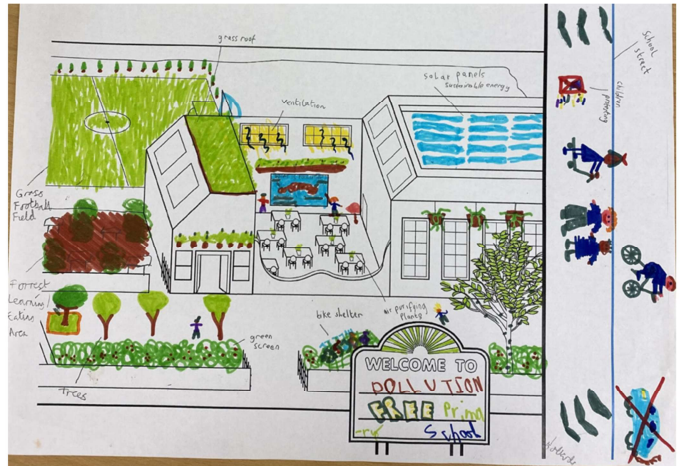
 Freedom to breathe

Neighbourhood sketch by Ritu Gulati (2020). *Frontiers of Architectural Research*. Vol 9, Issue 1. Pages 20 -33. Science direct

## What could you do with your clean air school/ neighbourhood vision?

### Here are a few ideas:

- Prepare and share your designs with teacher, parents and others.
- Present them at assembly or school event– let others know why clean air and your ideas are so important.
- Display them on a notice board of your school – help others learn more about clean air.



Y5/6 Double G (SDGs) and Rights Respecting Committee members - Haimo Primary School, Eltham



Students to start thinking about ways they can amplify their own voice using the designs they have created as a tangible example – enabling and empowering them to see that they can have agency and have a powerful voice

You can share your students' work with us at [paryavaranmitra@ceeindia.org](mailto:paryavaranmitra@ceeindia.org)

Please ensure any work shared does not contain images of people and students are only identified by their first name / age e.g. Luke, age 7, London or primary school student, age 10, London.

**Together, we can work  
towards having cleaner air.**

Let's think about how else we  
can do that...





## What is a right?

Rights are important things which we **need** to live a happy and healthy life.

We talked about some of these earlier...



**PAUSE POINT**

'Rights are important things which we need to live a happy and healthy life'  
We may want certain things in life, but we definitely need some things to live a happy and healthy life. Unfortunately children around the world may not have the same things we do.

**What are the things we need to live a happy and healthy life?**

- Clean Air**
- Food**
- Clean Water**
- Warmth**
- Shelter**
- Fun!**
- Sleep**
- Exercise**

**PAUSE POINT**

Freedom to breathe

Reminder - this was our list and you might have thought of a few more too!

# Needs and wants

What is the difference?

Need:

Something we must have to live a happy and healthy life

Want:

Something we like but we don't need

 Freedom to breathe

We said that there are things we want and need – but what is the difference?

# Need or want?

What is the difference?

Mobile Phone  
Clean water  
Netflix  
Chocolate  
Hospitals  
Education

Clean Air?



**PAUSE POINT**

students vote whether each of these is a need or want e.g. hands up for a need and hands on table for a want (or similar voting mechanism)



The United  
Nations  
Convention on  
the  
Rights of the  
Child (UNCRC)

The UN are a big and important organisation who

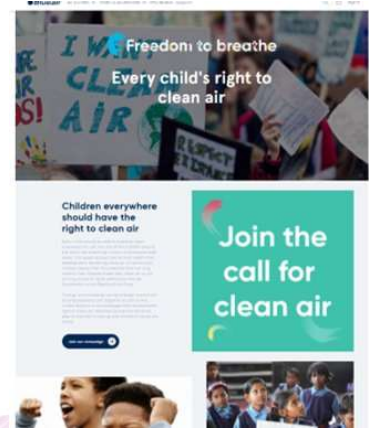
The UN says that children should have access to hospitals, clean water, healthy food, a good and clean environment and education.

But they do not clearly say that clean air is a right!



## The UNCRC does not explicitly state Clean Air should be a right.

- Do you think it should?
- Raise your hand if you agree.
- Your voice will be shared along with other children from Delhi, London, Beijing and Los Angeles to tell right people know you think clean air should be a clear right.



Visit: [www.blueair.com/in/freedomtobreathe](http://www.blueair.com/in/freedomtobreathe)

Follow us on Twitter: @Join\_Ftb #Freedomtobreathe



Ask students to raise their hands if they think there should be call to action for clean air being a right.

## What happens next?

- 20,000 children calling for the Right to Clean Air all over the world – starting in Beijing, Delhi, London & Los Angeles!
- Event in November bringing together the children's voices to the UN.
- Your ideas are really important – express yourself creatively using any of the methods:
  - Stories, poems, letters, songs, dance
  - Artwork – paintings, posters
  - Videos or photography (of actions and places, not people)



You may tell students a deadline for submission for entries. Please ensure any work shared does not contain images of people and students are only identified by their first name / age e.g. Luke, age 7, London or primary school student, age 10, Delhi. Send us all your school entries on [paryavaranmitra@ceeindia.org](mailto:paryavaranmitra@ceeindia.org) by 15<sup>th</sup> October 2021.



The logo features a blue globe icon on the left, partially overlapping the text. The text "Freedom to breathe" is written in a white, sans-serif font. Each letter of the text has a multi-colored, rainbow-like gradient effect, with colors transitioning from purple to blue, green, yellow, and red. The entire logo is centered on a dark blue rectangular background.

**Freedom to breathe**