



earth speakr

in science learning

Earth Speakr is an artwork started by Olafur Eliasson. It invites kids to speak up for the planet and adults to listen up.

Follow the QR code to download the app and take part in the artwork!

For more information, please visit: www.earthspeakr.art

Schools and museums are bringing Earth Speakr into their programming to amplify kids' voices.

Share your experience with

#earthspeakr

#earthspeakrinclassrooms

#earthspeakrinmuseums



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What is Earth Speakr?

Earth Speakr is a collective artwork that invites kids to be artists. What Earth Speakr will become depends on the Earth Speakrs – their creativity and imagination. The artwork is made up of their thoughts and visions, concerns and hopes. What they create can be playful and whimsical, serious, or poetic. There is no right or wrong, and it is easy for everyone to take part. Earth Speakr invites kids to speak their hearts and minds and participate in shaping our world and the planet, today and in the future.

Life on Earth is a coexistence of people, animals, plants, and ecosystems. We must acknowledge this coexistence and then take the right actions to nurture it. In today's debates over climate policy, it is crucial that the voices of the next generation are heard loud and clear, since it is they who will live in the future that we are currently shaping. My artwork Earth Speakr invites kids to speak up for the climate, whether with concern or hope. With the Earth Speakr app, they can express themselves through anything of their choice in their local environments. The artwork brings together their voices and amplifies what they have to say. We – adults, decision-makers, and politicians – need to hear the kids' creative messages and take them seriously.

– Olafur Eliasson, artist

Like many of Eliasson's artworks, Earth Speakr addresses how we experience the world. It invites kids to reflect on what they see and *how* they see – what they feel and think – and opens for shared experiences across physical and cultural borders.

How can science classrooms & science museums get involved?

Integrate Earth Speakr into your existing programming!

Use the Earth Speakr toolkits as guides to bring the artwork into your programming in fun, adaptable ways – indoors and outdoors! With Earth Speakr you can engage your local community in a dialogue about the future of our planet in a unique way across borders. Adding Earth Speakr to your events can complement discussions on art, the climate, environment, social action, and the UN Sustainable Development Goals, by giving kids a platform to create new content and share their ideas. Amplify kids' voices and learn from their unique perspectives.

We welcome your creative interpretations! Example activities from all toolkits can be combined or adapted as inspiration to fit your needs. Families can use the toolkits too.

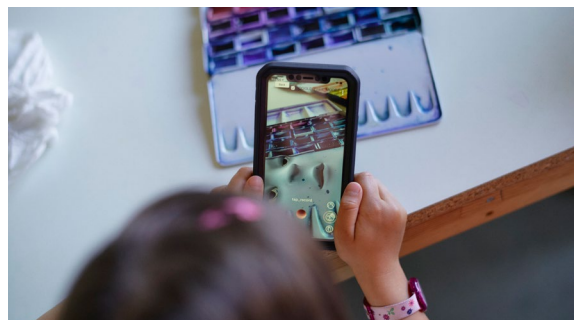
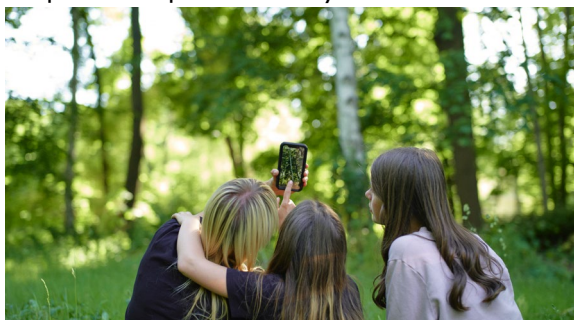


Photo: Lars Borges, 2020

Look out for the  symbol for activities well suited for online/at-home/distance learning.

Earth Speakr uses Augmented Reality (AR) and includes a free app – available on [App Store](#) and [Google Play](#) – and an interactive website in 25 languages. The toolkits – for classrooms, libraries, and museums – are free-for-download on the webpage's 'Get involved' section. Visit the webpage in your language for updates: www.earthsspeakr.art/en/get-involved

Who created this toolkit?

This toolkit has been created by Studio Olafur Eliasson in partnership with cognitive scientist Pireeni Sundaralingam as a resource to integrate the artwork Earth Speakr in a science class or science museum setting.

Earth Speakr in Science Learning

Activities designed to use key teaching principles to deepen children's understanding of several foundational processes in science and climate change literacy.

Key teaching principles:

- inquiry-based learning, supporting observation, creative problem-solving, and critical thinking
- physically active, exploration-based learning
- social, interactive engagement
- engaging with local environment while connecting to global issues



Key processes for science and climate change thinking:



SCALE: encouraging kids to think flexibly and understand the relationship between different orders of magnitude



FUTURES LITERACY: supporting UNESCO's mission to develop skills to anticipate the future, increase confidence in thinking and planning for uncertain environments, and innovate diverse, creative solutions for diverse futures



SYSTEMS THINKING: understanding the connections between ecosystems, including CO2 emission effects on the environment and general issues of cause and effect

Development of additional skills:

- empathy
- resilience
- confidence and curiosity in engaging with the natural world
- confidence and curiosity in engaging with civic and community issues

Symbols for activity type:



outdoor



indoor



distance learning



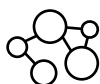
school-based
educators



museum-based
educators

Activities and Games

Bee bingo



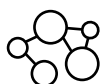
Nearly all flowering plants need to share pollen in order to create seeds and reproduce. While some plants rely on the wind to carry their pollen, many plants rely on insects or even bats to do this work. Many of the fruit and vegetables that humans eat come from plants that can ONLY be pollinated by bees: without the help of bees, these plants would be unable to produce these food crops, or even seeds for future farming.

Goal: be the first to record Earth Speakr messages for one complete row (vertical, horizontal, or diagonal) on the bingo card.

Game rules:

1. Find a fruit or vegetable – nearby, or in a book or drawing – that matches with one of the squares on the bingo card. For the centre square, find a bee.
2. Record a message with Earth Speakr expressing how that object feels about bees.
3. Repeat steps 1 & 2 until you have recorded messages for a complete row on the bingo card. When playing in a group, the first to complete a row wins!

Object - Action Bingo



In this bingo version, each square on the bingo card names an object and an action.

Goal: be the first to record messages for one complete row (either vertical, horizontal, or diagonal) on the bingo card.

Game rules:

1. Choose a square from the bingo card.
2. Hunt around in the real world to find the OBJECT named in your chosen square.
3. Think of an idea that fits the target ACTION in your square:
 - For example, if your square is labelled 'plastic water bottle' (object) and 'invent' (action), imagine a way we could reinvent how bottles are used in the future, such as, 'Collect them together to build roofs!'
 - For example, if your square is labelled 'plastic water bottle' (object) and 'hope' (action), imagine a hope you have for the future, such as, 'By the time I am an adult, I hope nobody uses plastic bottles!'
4. Record your idea as a message on Earth Speakr.

Download object-action bingo cards themed for Future Cities, Oceans, Pollution, and a blank template here: www.earthsspeakr.art/en/get-involved

If you create your own bingo card, record its messages, and let us know!

Find game boards and additional resources (in English) here: www.earthsspeakr.art/en/get-involved



Ecosystem tag



Life on earth is deeply interconnected. Each organism on the planet interacts with other living things and non-living things, such as air, water, and soil.

Goal: identify how a series of 5 items can be connected within an ecosystem

Game rules:

Variation A:

Using Earth Speakr, record messages for each item/life-form in this chain as it expresses why it needs the next item/life-form in the chain.

Variation B:

Play as a game and the first player to complete all 5 items wins!

Variation C:

Play as a 'group challenge' where one player records a message for one item, explaining how it is connected to another item in the chain; the next player then has to find this second item and record a message for it, and so on, until the chain is complete.

Alternative: use these games to explore cycles such as the Carbon Cycle, or the Energy cycle.

Plastic challenge



Plastics are one of the worst causes of pollution on our planet:

- the average plastic toothbrush will take 500 years to decompose
- 8 million tonnes of plastic enter the ocean every year
- plastic trash washing up in the Arctic includes things thrown into the sea as far away as Florida, USA or Barcelona, Spain.

In 2019, greenhouse gas emissions from producing plastics equalled the pollution output of nearly 200 coal-fired power plants with a 500-megawatt capacity.

Game rules:

1. Find something plastic in your home.
2. Use Earth Speakr to give a voice to this object and either:
 - share your ideas for an alternative to using this plastic object.
 - share your ideas on how this object could have been made from a (sustainable) material
3. Collect together as many plastic items as possible and make them into a sculpture. How many things did you find? Use Earth Speakr to give the sculpture a voice!

Scavenger hunt



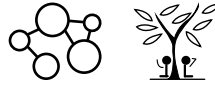
Goal: be the first to find one object in each size category

Game rules:

1. There are 5 size categories of objects in this game: i.e., 1 mm, 1 cm, 10 cm, 50 cm, 1 m
2. For each of these categories, find 1 object that is a pollutant and give it a voice, using Earth Speakr. What alternative material could have been used? What might this be like in the future?

Find game boards and additional resources (in English) here: www.earthsspeakr.art/en/get-involved

Oak trees & chimneys





When too much carbon dioxide accumulates in the atmosphere, it gathers like a blanket around our planet, trapping heat and increasing temperatures on Earth – an effect known as Global Warming. Human activities (such as burning fossil fuels) can contribute to the increase of CO₂, but other activities (such as planting trees) can help reduce CO₂.

Goal: move square by square, and be the first to get to the 'Zero CO₂' square!

Game rules:

1. All players start on square 49 at the top of the board, i.e. with 49 tonnes of CO₂ and move forward towards zero tonnes of CO₂.
2. Players start their turn by rolling the die. The number on the die shows you how many tonnes of CO₂ emissions you can reduce and how many squares closer to zero you can move.
3. In order to move, make a message with Earth Speakr that describes an object or action whose emissions relate to the amount of CO₂ on your die roll. For example, if you roll 4, think about or research what creates or saves 4 tonnes of CO₂. Look at the Table of CO₂ Emission Points (in English) for examples of objects and activities associated with different amounts of CO₂ emissions.

4. If you land on a square marked with an  |  symbol, roll the die again:

- If you get an even number (2, 4, 6), it's a tree. Trees reduce CO₂ in the atmosphere by using it to photosynthesize and by storing carbon. Move forward the number of squares as you reduce your CO₂.
- If you get an odd number (1, 3, 5), that square will be a chimney. Chimneys usually burn fossil fuels and release CO₂ into the atmosphere. Go backwards that number of squares.

5. If you land on a square marked with an  imagine a new way that we could reduce CO₂ in the atmosphere. Make something up and share it with the Earth Speakr app! If you can, move forward 10 squares towards Zero CO₂ emissions.

Find game boards and additional resources (in English) here: www.earthspeakr.art/en/get-involved





Create your own Loud Speakr


Loud Speakrs are collections of messages that are shared with the world on the Earth Speakr map. They are positioned at a specific geographical location to be experienced in Augmented Reality (AR) in real life. A Loud Speakr can be easily created on the Earth Speakr website to highlight Earth Speakr messages and encourage more people to listen too.

Kids and adults who have the app can see Loud Speakrs on their map and in AR. Loud Speakrs can also be viewed on the website, without traveling to their physical location. A local Loud Speakr can serve as inspiration to kids participating in the artwork for the first time.

Explore messages by filtering for those on the webpage within specific Earth Speakr Communities – Animals, City, Recycle, Invent, Water, Plastic, Pollution, Plants. Make a selection to form a Loud Speakr. Why choose these? Can you make a connection between the topic you choose and the location you choose to place your Loud Speakr? Does it give many perspectives on one topic? How can many perspectives co-exist within one group?



Host your event or workshop online

Look out for the  symbol for activities particularly well suited for online/at-home/distance learning.

Kids can tune in (also with their families), and a workshop leader can introduce Earth Speakrs' many sides online. Activity leaders can encourage kids to explore and engage with environmental topics in their immediate environments – indoors and outdoors – placing messages on objects relating to packaging and recycling, water usage, or food items and waste, for example. By sharing Earth Speakr messages across platforms it's easy to get the discussion going. If kids want, they can download their own Speakrs and send original video files to an activity leader to compile together.

At the end of a workshop, kids can post and tag their messages with a combination of Community tags inspired by your event. Messages can then be found on the interactive map using the filter function and turned into a Loud Speakr that visually demonstrates group participation. Share your Loud Speakr with participants, friends, family, or even with politicians and decision-makers in your area!



Create your own Earth Speakr activity

Be inventive! Feel free to incorporate Earth Speakr into your existing programming to highlight how kids can speak up for the planet. If you have a new idea, we'd love to hear about it!

Use the provided poster template to make a custom event poster to direct kids and families to your event and to download the app: www.earthsspeakr.art/en/get-involved

To share your further ideas, email getinvolved@earthsspeakr.art with '#earthsspeakrinclassrooms' or '#earthsspeakrilmuseums' in the subject line.



Photo: Lars Borges, 2020

Join a growing network

We would love to hear and see Earth Speakr in action. Post pictures on social media with **#earthsspeakrinclassrooms** or **#earthsspeakrilmuseums**.

To feature your Earth Speakr activity on the website's event calendar, please fill out a short form on the webpage's 'Get involved' section: www.surveymonkey.de/r/EarthSpeakrEvent

General guidelines for integrating Earth Speakr into your programming

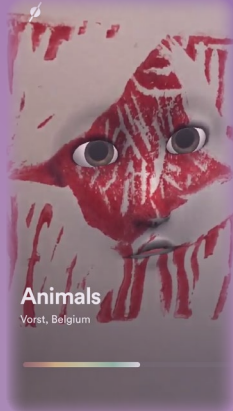
Keep Earth Speakr fun!

Let kids lead!

Promote kid-led participation and let kids identify issues of concern themselves. Adults can work to facilitate rather than lead discussion. Fuel kids curiosity on the environment, support the discussion on sustainability, and encourage collaboration. There are no right or wrong answers!

Age groups

Consider activities to match age. Activities can be formed for individual work/exploration or tailored to pairs or groups. For kids under 12, smaller groups (up to 10 children) work best.



Technical set-up

Earth Speakr can be introduced ahead of an activity inviting kids to download the app at home and try it out with their family. Knowledge of what Earth Speakr is ahead of the activity could help in the experience, but discovering the artwork together is also fun.



Photo: Lars Borges, 2020

Using shared equipment

To collectively experience the digital elements of the artwork you will need:

An interactive board, or a projected screen, or computer(s), tablet(s) *with internet access* to use the interactive website: www.earthspeakr.art/en

To experience the app features, you will need:

At least one smartphone with the Earth Speakr app pre-installed. To determine which smartphones can be used, see compatibility specifications here: www.earthspeakr.art/en/download-app/

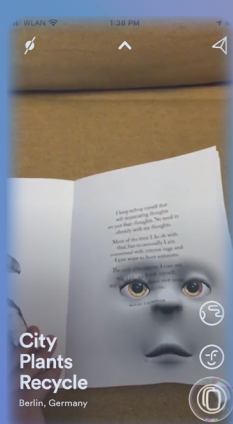
It is important to note that messages of children under age 16 cannot be published without **parental** or **guardian consent**, which is granted through the built-in features in the app the first time a message is finalised and published on the map. Those using a single device for multiple children are liable for any content made on that device's account and therefore must receive parental consent for all users in advance.

For this reason, the Earth Speakr app is best used when kids have their own account on an individual device. Kids will need to have their user email and password handy to sign in on another device. Without an account, kids can still participate by listening to Speakrs on the app and website and creating Loud Speakrs on the website.

Please observe appropriate COVID-19 precautions for your area. For shared equipment, please note that most smartphone and tablet products can be cleaned with a disinfectant or 70% percent isopropyl wipe. Check compatibility with device manufacturers.

Using individual equipment

For students that might have their own smartphone, it is possible to hold activities where all participants use individual devices. Remind students to bring their own device with the Earth Speakr app already installed and parental consent given. Only kids who have received parental consent in advance will be able to publish messages.



Is the Earth Speakr app/website accessible for people with disabilities?

Earth Speakr is at its heart participatory. If you have a disability, teaming up with someone can be a way to participate in all aspects of the artwork – recording and capturing messages, experiencing existing messages, and sharing these with others. The app is compatible with both iOS and android built-in accessibility features, and the website was developed according to the [W3C Web Accessibility Standards](#).

Please share any activities with us that you feel are particularly well suited to increase accessibility. We'd love to feature them in updates of this toolkit.

How are kids protected when using the app?

Earth Speakr has been designed to welcome kids' unique creativity while concealing any identifying traits to protect their identity and privacy. When creating a message, the app collects an audio file and a video that is made up of animated eye and mouth movements; it does not record any information on a kid's physical appearance. A message is only made public on the website and app if it is confirmed as finished. Any kid who makes a message retains ownership of their artwork. They are co-creating the artwork.

The artwork is fully compliant with GDPR. Read the full legal policies in place [here](#).

The [Community Guidelines](#) also outline that no identifying information be shared. If a message does not follow the Community Guidelines it can be reported by anyone for removal.

For other FAQs and How-to guides about the artwork, please see: www.earthsspeakr.art/en/faqs



Photo: Lars Borges, 2020

Plastic. Recycle.

Vallon-Pontet/Aix, France

Plastic.

Aakirkeby, Denmark

© Olafur Eliasson,
Earth Speakr, 2020

Earth Speakr is created by Olafur Eliasson with his studio, kids, creative partners, and a group of researchers and experts, and is funded by the Federal Foreign Office on the occasion of the German Presidency of the Council of the European Union 2020 and realised in cooperation with the Goethe-Institut.

Olafur Eliasson (b. 1967) is a visual artist working with sculpture, painting, photography, film, installation, and digital media. His studio is based in Berlin.

www.olafureliasson.net
soe.tv

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