Build THE Change

supported by
The LEGO Foundation

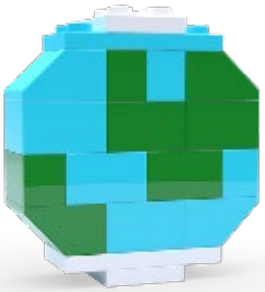
Biodiversity and Climate Change

Course Pack for Educators

Let's go! →

In partnership with earthwatch EUROPE

A note to educators from the LEGO Group



Hi there,

In this document you'll find everything you need to run **Biodiversity and Climate Change**, a Build the Change course from the LEGO Group and Earthwatch Europe. There are materials for five 45-minute Learning Through Play sessions plus a "Showcase Day" show-and-tell event to share the creations and ideas from your young learners.

In this course, your students will explore how climate change impacts our Earth's biodiversity, through the lens of a range of animals from exotic (polar bears and tigers) to familiar (bees) and their habitats.

At the LEGO Group, we are committed to becoming global leaders in Learning through Play. This means equipping the builders of tomorrow with the knowledge and skills they need to become engaged and successful 21st century citizens—skills including creativity, design thinking, communication + collaboration, and the confidence to know that their voices and opinions matter.

The course is organized around the latest scientific understanding of climate change and threats to biodiversity and is informed by our expert content partner Earthwatch Europe.

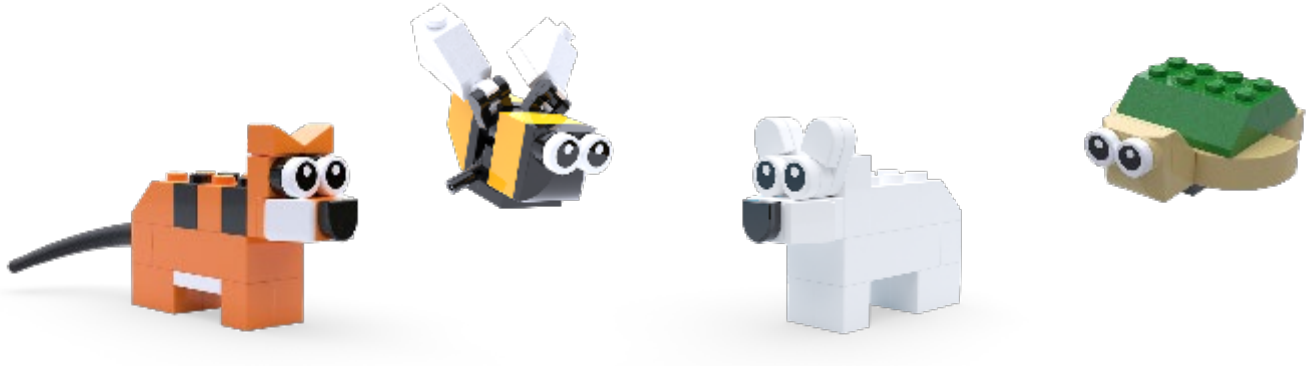
Note that the course directly impacts several areas identified in the UN's Sustainable Development Goals — the framework being used by schools around the world.

Learning through play is at the heart of every session, with playful hands-on activities exploring the course's topics. They are designed to work with any creative materials you have available. LEGO® bricks are not required but can be used if you have some lying around ☺.

Thank you,

The LEGO Group
In partnership with
Earthwatch Europe

Let's get started! →



Biodiversity & Climate Change

What's in the Course Pack?

1. Lesson plans

...and classroom presentations for **five 45-minute sessions**, plus a special "**Showcase Day**" event to let learners share the ideas they've created during the course.

2. Printable materials

Worksheets with some details about habitats around the world, **animal fact cards**, and **description cards** to display alongside children's awesome creations.

3. Uploading your learners' ideas

Photos and descriptions of the creative ideas from the sessions can be uploaded to public galleries on LEGO.com for the whole world to see.

4. More materials for educators

- Fact sheets on climate change and biodiversity from our partner Earthwatch Europe.
- Tips for tailoring the sessions for curricular areas (and alignment with the UN's sustainable development goals) or age / ability.
- Facilitation tips and tricks for getting the best ideas out of kids.
- Tips for creating custom sessions with locally-relevant content and/or special guests like experts + decision makers.

5. More about us

- Our expert subject matter partner: Earthwatch Europe.
- The LEGO Group and the LEGO Foundation on our commitment to Learning through Play and sustainability.
- More about the LEGO Group's global Build the Change program.

Build the Change lesson plans

In the following section, you'll find suggested plans for a number of Build the Change sessions, each of which is about **45 minutes long.** Together these sessions add up to the *Biodiversity and Climate Change* classroom course.

Click on the links for each session's lesson plan.

Key Skills
Creative problem solving & design thinking
Speaking & listening
Teamwork & collaboration
Project-based learning
STEM/STEAM
Citizenship

1. Introductory Session

1: What is Climate Change?

2. Stories of Change / Case Study Sessions

2A: Polar Bears and Climate Change

2B: Bees and Climate Change

2C: Bengal Tigers and Climate Change

2D: Sea Turtles and Climate Change

Custom PPT template – Make your own local case study

3. Sharing your group's ideas

Showcase Day Event

Uploading ideas to our online gallery

Feel free to extend, combine, and space out these sessions to produce the timings + course length that fits your learning environment and course needs.

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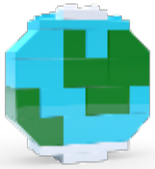

Introductory session

What is Climate Change?

A session to kick off the Build the Change course, with an introduction to the concept of climate change and its impact on biodiversity -- and the need for creative solutions—as learners build and animal, create its habitat, then remove elements of that habitat to simulate the impacts of climate change.

Link to Session Presentation PDF

Link to Printable Speaker's Notes for the presentation

Section	Content	Materials	Timing 45min+
Opening	Welcome to this Build the Change course, part of the LEGO Group's program for children all around the world to create and share their ideas for the future. This session focuses on building up basic concepts around climate change and its impact on animals and habitats. It can be followed up with our case studies focusing more on particular species and groups of organisms around the world.	**Session presentation PDF** (used throughout the session)	1 min
Video: Are you Ready to Build the Change?	A short video introducing the core principles of the LEGO Group's Build the Change program to kids – that their creative human brains are what's needed to tackle big real-world problems, and that their voices matter. There are 2 videos available – feel free to choose the one that works best for your group. "Are you ready to Build the Change? (1 min)" is designed for kids 8+, and "Build the Change with Leo & Linda (2.5 min.) " is intended to speak to younger children.	**Online video** (link on slide in presentation)	2 min
Topic Introduction	A slide introducing the topic of the session – Biodiversity and climate change.		2min
Group poll	A "show of hands" group poll with questions about the class's feelings and sense of agency around environmental problems – linking to the online poll lets the class see how their result compares with other classrooms around the world and reflect on any similarities/differences.	**Online poll** (link on slide in presentation)	3 min
Awesome Words	Two vocabulary words – *Greenhouse Gas* and *Biodiversity* - that will be used in the session.		3 min
Video: What is Climate Change?	A 2.5 minute explainer video explaining what climate change is and how it impacts life on Earth - and how using our creative human brains could help us take on this pressing challenge.	**Online video** (link on slide in presentation	3 min
Awesome Words	Two more vocabulary words to discuss – *Species and Habitat*.		3 min
Time to create	Hands on creative activity: children make an animal (this could be a drawing, sculpture, model, etc.) and then the things it needs for food, water, and shelter – its habitat. Once they've done this, the instructor informs them that climate change is affecting their habitat, and they begin removing things to simulate these impacts as they reflect on what's happening.	**Creative materials**	20 min
Time to share	A chance for the class to share their thoughts, ideas and creations.		5 min
End of session quiz	Quiz questions to check the class's understanding of the session's content.	**Quiz on slides**	3 min

Presentation **Group discussion** **Hands-on** **Poll (Online)** **Quiz**

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Stories of Change A

Polar Bears and Climate Change

A case study session where children explore climate change impacts on particular creatures and their habitats, hear about examples of creative ways humans are trying to help, then devise their own solutions for tackling these real-world challenges.

Link to Session Presentation PDF

Link to Printable Speaker's Notes for the presentation

Section	Content	Materials	Timing 45min+
Topic Introduction	This is a "Stories of Change" session highlighting the challenges facing polar bears and their Arctic habitats because of climate change and inviting children to come up with their own solutions to help protect them.	**Session presentation PDF** (used throughout the session)	2 min
Video: What is Climate Change? (optional)	*The same 2.5 minute video used in the introductory session – show it to refresh students' memories or if you're running this as a standalone session.*	***Online video** (link on slide in presentation)*	*3 min*
Awesome words	Opportunity to run through a few relevant vocabulary words: *Arctic*, *Prey*, and *Predator*.		3 min
Group poll	Follow a link to poll questions where children can immediately see how their opinions compare to other classes around the world.	**Online poll** (link on slide in presentation)	2 min
Video: *Polar Bears & Climate Change*	Play the video highlighting the impacts of climate change on these creatures, offering some starter thoughts on helping protect them, and inviting children to think about their own ideas.	**Online video** (link on slide in presentation)	2 min
Time to reflect	A chance for children to reflect as a group on what they've seen so far.		3 min
Time to create	Hands on creative activity: children draw, build, or otherwise create their ideas for protecting polar bears from the impacts of climate change.	**Creative materials** Printable idea description cards PDF (optional)	15-20 min
Time to share	Ask the class to share what they have created.	**Writing materials** *(optional)*	10 min
Group poll: Follow up	The same question from earlier – reflect on whether the group's thoughts have changed?	**Online poll** (link on slide in presentation)	2 min
End of session quiz	Quiz questions to check the class's understanding of the session's content.	**Quiz on slides**	3 min

Presentation **Group discussion** **Hands-on** **Poll (Online)** **Quiz**

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Stories of Change B

Bees and Climate Change

A case study session where children explore climate change impacts on particular creatures and their habitats, hear about examples of creative ways humans are trying to help, then devise their own solutions for tackling these real-world challenges.

Link to Session Presentation PDF

Link to Printable Speaker's Notes for the presentation

Section	Content	Materials	Timing 45min+
Topic Introduction	This is a "Stories of Change" session highlighting the challenges facing bees (and other insect pollinators) and their habitats because of climate change and inviting children to come up with their own solutions to help protect them.	**Session presentation PDF** (used throughout the session)	2 min
Video: What is Climate Change? (optional)	*The same 2.5 minute video used in the introductory session focusing on climate change + its impact on biodiversity – show it to refresh students' memories or if you're running this as a standalone session.*	***Online video** (link on slide in presentation)*	*3 min*
Awesome words	Opportunity to run through a few relevant vocabulary words: *Pollen, Pollinate,* and Nectar.		3 min
Group poll	Follow a link to poll questions where children can immediately see how their opinions compare to other classes around the world.	**Online poll** (link on slide in presentation)	2 min
Video: Bees & Climate Change	Play the video highlighting the impacts of climate change on these creatures, offering some starter thoughts on helping protect them, and inviting children to think about their own ideas.	**Online video** (link on slide in presentation)	2 min
Time to reflect	A chance for children to reflect as a group on what they've seen so far.		3 min
Time to create	Hands on creative activity: children draw, build, or otherwise create their ideas for protecting bees and other pollinators from the impacts of climate change.	**Creative materials** Printable idea description cards PDF (optional)	15-20 min
Time to share	Ask the class to share what they have created.	**Writing materials** *(optional)*	10 min
Group poll: Follow up	The same question from earlier – reflect on whether the group's thoughts have changed?	**Online poll** (link on slide in presentation)	2 min
End of session quiz	Quiz questions to check the class's understanding of the session's content.	**Quiz on slides**	3 min

Presentation **Group discussion** **Hands-on** **Poll (Online)** **Quiz**

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Stories of Change C

Bengal Tigers and Climate Change

A case study session where children explore climate change impacts on particular creatures and their habitats, hear about examples of creative ways humans are trying to help, then devise their own solutions for tackling these real-world challenges.

Link to Session Presentation PDF

Link to Printable Speaker's Notes for the presentation

Section	Content	Materials	Timing 45min+
Topic Introduction	This is a "Stories of Change" session highlighting the challenges facing Bengal tigers in the Sundarban mangrove forests of coastal India and Bangladesh because of climate change and inviting children to come up with their own solutions to help protect them.	**Session presentation PDF** (used throughout the session)	2 min
Video: What is Climate Change? (optional)	*The same 2.5 minute video used in the introductory session focusing on climate change + its impact on biodiversity – show it to refresh students' memories or if you're running this as a standalone session.*	*Online video (link on slide in presentation)*	*3 min*
Awesome words	Opportunity to run through a few relevant vocabulary words: *Sea level rise*, *Prey*, and *Predator*.		3 min
Group poll	Follow a link to poll questions where children can immediately see how their opinions compare to other classes around the world.	**Online poll** (link on slide in presentation)	2 min
Video: Bengal Tigers & Climate Change	Play the video highlighting the impacts of climate change on these creatures, offering some starter thoughts on helping protect them, and inviting children to think about their own ideas.	**Online video** (link on slide in presentation)	2 min
Time to reflect	A chance for children to reflect as a group on what they've seen so far.		3 min
Time to create	Hands on creative activity: children draw, build, or otherwise create their ideas for protecting tigers from the impacts of climate change.	**Creative materials** Printable idea description cards PDF (optional)	15-20 min
Time to share	Ask the class to share what they have created.	**Writing materials** *(optional)*	10 min
Group poll: Follow up	The same question from earlier – reflect on whether the group's thoughts have changed?	**Online poll** (link on slide in presentation)	2 min
End of session quiz	Quiz questions to check the class's understanding of the session's content.	**Quiz on slides**	3 min

Presentation **Group discussion** **Hands-on** **Poll (Online)** **Quiz**

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Stories of Change D

Sea Turtles and Climate Change

A case study session where children explore climate change impacts on particular creatures and their habitats, hear about examples of creative ways humans are trying to help, then devise their own solutions for tackling these real-world challenges.

Link to Session Presentation PDF

Link to Printable Speaker's Notes for the presentation

Section	Content	Materials	Timing 45min+
Topic Introduction	This is a "Stories of Change" session highlighting the challenges facing sea turtles in coastal habitats because of climate change and inviting children to come up with their own solutions to help protect them.	**Session presentation PDF** (used throughout the session)	2 min
Video: What is Climate Change? (optional)	*The same 2.5 minute video used in the introductory session focusing on climate change + its impact on biodiversity – show it to refresh students' memories or if you're running this as a standalone session.*	***Online video** (link on slide in presentation)*	*3 min*
Awesome words	Opportunity to run through a few relevant vocabulary words: *Sea level rise*, *Reptile*, and *Refuge*.		3 min
Group poll	Follow a link to poll questions where children can immediately see how their opinions compare to other classes around the world.	**Online poll** (link on slide in presentation)	2 min
Video: *Sea Turtles & Climate Change*	Play the video highlighting the impacts of climate change on these creatures, offering some starter thoughts on helping protect them, and inviting children to think about their own ideas.	**Online video** (link on slide in presentation)	2 min
Time to reflect	A chance for children to reflect as a group on what they've seen so far.		3 min
Time to create	Hands on creative activity: children draw, build, or otherwise create their ideas for protecting sea turtles from the impacts of climate change.	**Creative materials** Printable idea description cards PDF (optional)	15-20 min
Time to share	Ask the class to share what they have created.	**Writing materials** *(optional)*	10 min
Group poll: Follow up	The same question from earlier – reflect on whether the group's thoughts have changed?	**Online poll** (link on slide in presentation)	2 min
End of session quiz	Quiz questions to check the class's understanding of the session's content.	**Quiz on slides** **Printable course journal** (optional)	3 min

Presentation **Group discussion** **Hands-on** **Poll (Online)** **Quiz**

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Custom Case Study

The impact of climate change on a local animal or plant?

The generic Build the Change session below can be tailored to get your learners engaged with a locally relevant issue they care deeply about.

Remember, LEGO bricks aren't necessary; You can use any creative materials available.

Link to Editable Template PPT to create a custom presentation

NOTE: Speaker's notes in the PPT slides.

Section	Content	Materials	Timing 45min+
Before the session	Teacher fills in the custom case study PPT to present a local issue which represents a challenge to be solved. • Is there a local animal or plant species threatened by the effects of climate change? • Is there a local habitat (like forest, grasslands, etc.) which is threatened by the effects of climate change? • Are you affected locally by changes in weather, like heat, floods, droughts, etc.? • Are you affected by sea level rise? • Are local crops at risk? • *Optional: share one or more habitat fact sheets with children before the session (Rainforests / The Poles / Outdoors / Oceans)*		
Topic Introduction	Welcome the children back and let them know today you will be looking at something local to you. Choose some Awesome Words to also ensure children have the vocabulary needed to understand your example.	**Customised PPT presentation,** created in advance.	2 min
Video: ***What is Climate Change?*** *(optional)*	*The same 2.5 minute video used in the introductory session focusing on climate change + its impact on biodiversity – show it to refresh students' memories or if you're running this as a standalone session.*	Link on slide	*3 min*
Awesome words	Opportunity to run through a few relevant vocabulary words.	**3-5 "Awesome Words,"** created in advance.	3 min
Group poll	**Relevant polling question,** created in advance, for traditional show-of-hands poll		2 min
Local Case Study	Take the children through a ~5 minute presentation you have created on a local species and the challenges it is facing.	**Slides etc** prepared in advance.	2 min
Time to reflect	A chance for children to reflect as a group on what they've seen so far.		3 min
Time to create	Children are tasked with creating something that can help solve the local problem/challenge. Children can work individually or in groups with any creative material or medium that is available.	**Creative materials** Printable idea description cards PDF (optional)	15-20 min
Time to share	Ask the class to share what they have created.	**Writing materials** *(optional)*	10 min
Group poll: Follow up	The same polling question from earlier – how does the class feel *now?*	**Repeat of same polling question.**	2 min
End of session quiz	Quiz questions to check the class's understanding of the session's content.	**3 quiz questions,** created in advance.	3 min

Presentation **Group discussion** **Hands-on** **Poll (Online)** **Quiz**

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Printable Materials

Animal Fact Cards

Basic information on a range of animals impacted by climate change around the world, to get kids thinking beyond the case study examples.

- Download Printable PDF
- Download PPT template
  to create cards for local species etc.

Habitat Worksheets

Child-friendly background materials created with Earthwatch Europe to get kids thinking and talking about habitats before the session.

- Oceans - Download Printable PDF
- Green Spaces - Download Printable PDF
- Rainforests - Download Printable PDF
- The Poles - Download Printable PDF

Idea Cards

To place next to learners' creations for when they are being displayed, for example during Showcase Day.

- Download Printable PDF

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Showcase Day Event

We would highly encourage every class that takes part in the Build the Change Educator program to carve out time after the core course to celebrate and showcase the children's awesome ideas since one of the key aims of Build the Change is to amplify children's voices.

The session has maximum impact when guests are invited from the local community, in person or online, who are in some way involved with making decisions at any scale that impact people and planet.

Link to Session Presentation PDF

Link to Printable Speaker's Notes for the presentation

Section	Content	Materials	Timing (1hr + +)
Opening	Introduce the children to what is happening for the session and that you have a very special guest here to hear about their ideas (if you've invited one).	**Showcase Day PDF presentation**	5 min
Guest introduction	Give time to the guest(s) to introduce themselves and take questions from the children.		15 min
Showcase time	Time for the children to showcase their ideas in whichever format best suits your class. It might be a presentation per group. It might be an expo/exhibition style walk around with the guest.		45 min+
Sum up and next steps	Recap on what you have covered and achieved over the course. Massive high fives!!!!		5 min

Local Guest for Showcase Day

Feel free to use our letter/email template to send to local decision makers, inviting them to Showcase Day to hear the students' ideas.

Examples of the kinds of people and groups you might reach out to include:

- Local town officials or community leaders
- Local mayor
- Environmental groups
- Sustainability-focused businesses
- School directors/principals/heads
- Heads of relevant topics at the school
- Environmental scientists, engineers, designers, and other experts

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Uploading the Ideas

Biodiversity and Climate Change

Don't forget to upload your kids' creations to our **Biodiversity + Climate Change ideas gallery** on LEGO.com!

Just scan the QR code below with a phone camera to get started or use this URL:

https://www.lego.com/sustainability/buildthechange/challenges/biodiversity-challenge/upload

Once they're moderated, the ideas will appear here:

https://www.lego.com/sustainability/buildthechange/challenges/biodiversity-challenge/gallery

Scanning the "Uploader" QR code with your phone camera will bring up a webpage where you can photograph your children's builds, add a short description and upload them to our galleries on LEGO.com.

NOTE: You'll need to create and/or sign in with a LEGO ID Account so we can contact you with any queries about your submission

Biodiversity and Climate Change:
Ideas for protecting animals and their habitats from climate change's impacts.

While we can't wait to see what your learners come up with, please be aware that images may be rejected by our moderation system, especially if they contain personally identifying information, e.g.

- Faces and/or people in the image
- Information about the creator beyond first name and age – e.g. last names, names of schools or geographic areas, etc.
- Email addresses, phone numbers, etc.

Images may also be rejected if they are rotated, blurry, or contain inappropriate content.

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Factsheet for Educators: Climate Change

Basic background to help prepare you for leading the session and answering children's questions.

Climate change is "a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates" (from NASA, https://climate.nasa.gov/resources/globalwarming-vs-climate-change/).

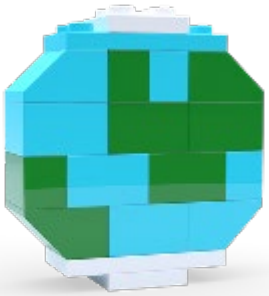
Climate change includes both human-driven **global warming** and natural warming, and the results of that warming as explained below.

Global warming is the process of our planet heating up due to human impact.

- This is due to excessive build up of greenhouse gases in our atmosphere like water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3).

Scientists are concerned that some human activity – like burning fossil fuels – contributes to an excessive build-up of greenhouse gases.

- At normal levels, these gases all contribute to the **greenhouse effect**, trapping the Sun's heat inside Earth's atmosphere to keep us safe from the sub-zero climate of outer space. But with the rising levels of these gases, the Earth's atmosphere is heating up as too much heat is trapped.



Some effects of climate change include...

Extreme weather and temperatures.

- Longer, more intense heat waves.
- Hotter and colder extremes more common as the atmosphere shifts out of balance.
- Natural disasters like crop failures, droughts, and wildfires more common around the world.

Rising seas.

- Melting glaciers + polar ice caps cause sea level rise.
- Thermal expansion of seawater from global warming also drives this rise in sea levels.
- Human + animal habitats under threat as rising sea reclaims the land.

Threats to natural and human habitats as ecosystems are knocked out of balance.

- Organisms like reptiles, amphibians, plants and bees who depend on specific temperatures and timing of seasons to survive are under threat.
- Arctic and Antarctic habitats disappearing as ice melts, threatening native species like polar bears.
- Animals like Great White sharks migrate to new areas as water temperatures change.
- Plant habitats unbalanced, including making areas too hot to sustain traditional food crops.

Awesome climate change words used in the sessions:

Impact	A strong effect – something that has the power to change something else.
Greenhouse gas	These are gases in the Earth's atmosphere that stop heat from escaping into space.
Polar	This simply means the North and South pole.
Arctic	This is the area, or region, around the North Pole.
Antarctic	This is the area, or region, of the South Pole or Antarctica
Sea level	This is the average level of oceans around the world.
Sea level rise	The climate-change driven effect of sea levels rising higher than in the past, submerging low-lying coastal areas.

Factsheet for Educators: Biodiversity

Basic background to help prepare you for leading the session and answering children's questions.

The term **Biodiversity** refers to the wide range of species of plants, animals, fungi, and bacteria that live on planet Earth.

To survive, all these creatures need a **habitat** suited to their needs in terms of temperature, water, and food.

When one species' population is thrown out of balance, it affects all the others – if the plants or animals which a species eats disappear, for example, or if the loss of a species' predators leads to overpopulation and the outbreak of disease.

This includes our own species, *Homo Sapiens*. As part of the Earth's web of life, we rely on a wide range of species: from food crops to pollinators like bees to a range of plants and animals which act as carbon sinks to keep us and our habitat happy and healthy. The degree of biodiversity – the number of diverse species that there are – is a good indicator of an environment's "health."

Species whose existence is threatened are **endangered**. If the threat to them continues, in time their populations will dwindle and disappear and they will become **extinct**.

Of 150,000 species assessed by the IUCN Red List of Threatened Species more than 42,000 species (28%) globally are threatened with extinction, many of these due to the effects of climate change.

Climate change increases risks to fundamental aspects of ecosystems. Climate change models used by scientists vary depending on the data they use, but there is consensus that increasing global temperatures will continue to negatively affect biodiversity. For example, the IPCC predict that a 5°C (9°F) increase in global mean surface air temperatures (GSAT) could threaten 60% of all species with extinction.

Humans can make a difference by working together to combat and reduce the effects of climate change on these species and their habitats.

One way governments are doing this is through the UN Framework Convention on Climate Change, originally signed by 154 countries in Rio de Janeiro in 1992.

The treaty established responsibilities for nations to pass laws and take action to mitigate the effects of climate change, including targets around emissions of greenhouse gases. These targets were further defined in the 1997 Kyoto Protocol and the 2015 Paris Agreement.

As of 2023, they seek to limit the total average global temperature rise to 1.5°C (2.7°F) above pre-industrial levels.

This may not sound like a lot, but a difference of just half a degree Celsius could mean 50% fewer species losing half their geographic range, 50% fewer people experiencing water scarcity, and 10 million fewer people losing their homes to sea level rise.

Member countries meet every year at COP, the UN's climate change conference, to examine progress towards that goal.

Factsheet for Educators: Biodiversity

Awesome Biodiversity words included in the sessions

Habitat A habitat is simply the place where living things live, providing shelter, food and water to the things that call it home.

Species A species is a particular type of organism, like a Blue Whale, a Pigeon, or a pineapple plant.

Biodiversity The number or variety of species living in an area.

Predator An animal that hunts another for food.

Prey An animal that is hunted for food by another animal.

Pollen Pollen is what makes plants create seeds – to do this it must travel from male plants to female plants.

Pollinate When a pollen grains reach a female flower, pollination happens and seeds start to form.

Nectar A sugary liquid produced in the flower of the plant.

Reptile A cold blooded animal that has scales or hard plates on its skin.

Refuge A refuge is somewhere that keeps something safe from harm, like nesting sea turtles.

Additional resources online

Climate Change and Biodiversity

Adult-Oriented

Building your knowledge of environmental challenges:

- Climate Change | United Nations
- Home – Climate Change: Vital Signs of the Planet (nasa.gov)
- Climate change news, articles and features | New Scientist
- Biodiversity and climate change | WWF
- IUCN Red List of Threatened Species
- Planetary boundaries - Stockholm Resilience Centre

Building your knowledge of actions and solutions:

- Climate Solutions | United Nations
- COP28 UAE | United Nations Climate Change Conference (UNFCCC)
- What is a circular economy? | Ellen MacArthur Foundation
- Nature: How connecting with nature benefits our mental health | Mental Health Foundation

Talking to young people about the climate crisis:

- Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey - The Lancet Planetary Health
- Eco-anxiety: how to cope at a time of climate crisis | Natural History Museum (nhm.ac.uk)

Child-Oriented

- Home | NASA Climate Kids
- What is climate change: facts for kids | National Geographic Kids
- Biodiversity (nationalgeographic.org)
- Biodiversity for Kids: OLogy | AMNH
- Climate Education For Everyone | The World's Largest Lesson (globalgoals.org)
- Earthwatch Education

Fitting into Curricula

The Build the Change team recognize fully that you, the educator, are the expert on what is relevant for your class in the context of your local curriculum. We also know how important it is that activities you choose have an outcome that builds towards your national curriculum objectives.

While curricula vary from country to country and state to state, this Build the Change course offers a number of **cross-cutting skills and knowledge areas** that form part of many national and regional curricula for the **7-12 year old age range**:

Skills	Knowledge
Creative problem solving & design thinking	Life Science/Biodiversity/Biology
Speaking & listening	Environmental Science/Habitats & Ecology
Teamwork & Collaboration	Earth Science/Geography/Climate Change
Project-based learning	Spoken Language/Vocabulary
STEM/STEAM	
Citizenship	

Skill Areas

Creative problem solving & design thinking

At the LEGO Group we see creativity as one of the core skills needed to start children on a journey of lifelong learning, and Build the Change sessions are designed to develop this – each session begins with a brief initial immersion in a real-world topic followed quickly by hands-on creation and sharing of original ideas.

Examining the world around them through a range of lenses and perspectives, children are tasked with generating ideas that will make a positive impact on the environment and their society. They are encouraged to take their ideas and make them a reality, connecting the dots between great ideas and impact using creativity. The aim is to build confidence and understanding that their voices matter as part of their global and local society.

The sessions encourage children to explore the world around them and the causes and effects of the issues the planet faces, thinking critically on how we might address them. Using a learning through play approach, and by setting up a space where children feel safe to test and iterate, problem solving as a skill is nurtured and has a heavy presence throughout.

The courses give students a platform on which to experiment with and prototype their ideas, helping them build an understanding of how real-world problems can be addressed. The design thinking flow also helps students draw the links between multiple disciplines and creativity. Technological aspects of the course also nurture the ability to move seamlessly between analogue and digital tools.

Speaking & Listening

The lessons are designed to give children opportunities to develop their speaking, listening & comprehension skills as they create, present, and discuss ideas. Chances to present and share well-structured reflections and narratives on their creations to the broader group are built into the "Time to Reflect" moments within the sessions.

Much of the content is scenario- and situation-based, giving opportunities to communicate big, visionary and future-facing ideas, and allowing space to develop articulation skills.

"Exit ticket" quiz questions at the end of each session give the educator an immediate assessment on understanding in the group.

Fitting into Curricula

Teamwork & Collaboration

Build the Change is designed to give the educator freedom on whether children work individually or as groups, or both at different points in the sessions. The activities encourage children to work together, to listen to others' ideas and to find solutions and work together to present them to others. There are opportunities to delegate specific roles to members of each group or to open it up to a team discussion and empower the children to decide.

Citizenship

A key objective of Build the Change is to build advocacy, civic engagement and self-efficacy in the children who take part. Children should leave the sessions feeling their ideas are valued and have the power to inspire, influence and impact the planet and everything on it.

The discussion session specifically gives students the opportunity to think and speak critically on environmental and social issues and to look at facts and evidence when forming their opinions.

Knowledge areas:

Science

This course encourages children to explore the natural world using a learning through play approach and touches upon elements of life sciences, physical sciences and environmental sciences.

This course investigates the specific concepts of climate change and global warming, and the impacts on animal species both around the world and more locally – the concept of cause and effect.

Students will learn about the interdependencies that exist between natural cycles such as food chains and pollination, about different species groups, about habitats and the resources they hold, and the challenges specific species and habitats are facing.

Students will understand that the Earth's resources are finite and need protecting wherever possible.

- Key interdependencies: pollination; food chains.
- Key habitats: arctic, ocean, coast, mangrove, green spaces & urban gardens.
- Key organisms: polar bear, bees & other insects, sea turtles, Bengal tigers.
- Additional supplementary animals listed on printable animal cards.
- Instructors encouraged to develop their own case studies focused on local species.

Geography

The course content spans the globe and its many habitats so students will be exposed to different geographies, landscapes, climates and systems.

- Key areas of the globe: North pole, India, Bangladesh. Opportunities to explore more local areas available.
- The Earth's climate, in terms of climate change, global warming, and human & animal habitats.

Language

In addition to outcomes described under the speaking and listening skills sections above, language skills are developed through the acquisition of new vocabulary, adapting language to different contexts, and imaginative writing.

The materials are available in English, Spanish, Danish, and Chinese so also have the potential for use as part of foreign language practice.

Fitting into Curricula

The Sustainable Development Goals

The United Nation's Sustainable Development Goals (SDGs) are used by an increasing number of schools as a recognized framework to address and speak about real-world people and planet challenges. The SDGs help create a common language across not only governments and policy makers but also education authorities and the broader public. We have listed the main touchpoints that the course has across the 17 goals firstly focusing on the three core goals followed by those which are discussed in the course but not necessarily impacted directly.

Core Goals and Targets Impacted

This course aims to provide free sustainability education resources for as many children as possible, directly addressing **target 4.7**

The course aims to educate children on the importance of conserving the oceans and seas for preserving biodiversity **target 14**

The course aims promote the protection, restoration and sustainable use of the planet's terrestrial ecosystems, reversing land degradation and halting biodiversity loss **target 15**

Other Goals Discussed

The course also touches on the sustainable development goals **6, 7, 11, 12 and 13**: from the importance of finding cleaner and smarter solutions to enable humans to live side by side with nature to ways human impact can positively affect not only bird species but also climate change.

For more information on the SDGs, please visit http://sdgs.un.org/goals

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Catering to ages and ability

The presentations included with this pack were designed primarily with **7-12-year olds** in mind.

To adapt these, educators may wish to...

- Alter spoken scripts to suit younger children.
- Create more in-depth presentations for older children.
- Use the included Fact Sheets and Activity sheets, aimed at older children.

The core experience of creating one's own solution to a real-world problem, however, scales naturally to take account of age and ability – because learners are constructing their own learning experiences, most challenges work across all age groups.

A challenge like "**invent something to clean the air**" for example, will be interpreted and executed very differently depending on whether the learner is four (a flying broom) or forty (an autonomous fleet of modified multi-rotor drones fitted with the latest carbon-dioxide absorbing kit.)

Most importantly, both learners will have had a highly joyful and personal experience of learning through play as they understand and respond to the problem at the level which they are able.

The next page looks at some examples of scaling up down – that is, how tasks can be adapted for more support or to present more challenge to kids.

Examples of scaling up and down

We have tried to design the sessions to be low-entry but offering high ceilings, allowing the children to take their exploration wherever they want. The area where differences in ability will be most evident, and different styles of facilitation needed, is during the Creation Time in most of the sessions. Children are encouraged to explore individually or as a small group, with the emphasis on a child-led experience. We realize that not every child works well with this level of open-endedness and have made a few suggestions on how more support might be provided as well as how more challenge might be added for those children who require it.

Let's look at the biggest questions or tasks first:

Choose an animal that you would like to help against climate change.

Support needed

- Work with the child to make it more local and easier for them to relate to. Go through species that they would know locally and once decided, talk them through how this species might be impacted by climate change. The easiest links are usually loss of habitat or loss of food and water. Sadly, most species will be facing these adversities.

Challenge needed

- Ask the child to think about other geographies and explore species they might know too much about. Allow them time to do a little research to quench their thirst for knowledge. Their research will also hopefully give them pointers on how that species is being impacted by climate change.

Design something that will help species X against climate change.

Support needed

- This is a big open-ended question. For some, they might be intimidated and not know where to start. This is natural but hopefully by the second or third time they go through the process, they will be used to the approach.
- First, encourage them by letting them know anything is possible and there are no right or wrong answers – remove any concerns of failure.
- Secondly, get them into the mindset that they are a scientist, testing and trying things out. Or a designer making prototypes where nothing is perfect but the idea is there.
- Lastly, if they need a little more support, highlight a real-world example (from the case study videos for example) and ask them to adapt it to their area. The bee hotels from the bee case study – what would they look like in their town? The sea turtles' nests and the need to protect/raise them – which animals in their town might need help if water levels went up? How might they help them?

Challenge needed

- Given the high-ceiling nature of this task, there is a lot of room to make their designs as complex as they wish. If they finish their creations quickly, try for example tasking them with adding annotations to their creation with sticky notes, describing each component of their idea. Perhaps ask them to detail cause and effect in their creation – what happens and how does it impact their species?
- Additionally, you could ask the child to think about how they might pitch this idea to world leaders. If time allows, get them to create a sketch pitch poster. Tell them to imagine they have space on a wall in the local town hall – what would they put there to "sell" their idea?

General facilitation tips and tricks

Getting the best ideas out of young learners

General

You are educators so we are super aware that you are likely to know this already, but in the spirit of sharing, here are a few workshop facilitation techniques we use in the LEGO Group:

- Keep questions open-ended whenever possible.
- Encourage reflection.
- Ensure that the tone is kept light, hopeful and fun (it is easy to go gloomy when talking about topics like climate change.)
- If the question feels too big and general for them, try to bring it back to something they can relate to, something local perhaps.

We need your help in conveying the energy behind some of the statements that aim to empower and motivate children. Imagine it's the most important thing you've ever said to them. Then times it by a million.

In the immersion material, we have tried to give enough information about the topics without making it too prescriptive for the children. This is especially relevant when it comes to the Big Create challenge at the end – when they get to choose what species they would like to explore. While it's only natural that they might revert to the case studies they have already heard, we would love educators to encourage the students to choose a new species, something personal to them or an example from the supplementary animal fact cards.

Creative sections

We all know what it is like to be stuck on first steps when given an open-ended creative exercise: frozen, no ideas in sight, panic starting to set in.

It's normal to feel this way, but here are some tips to spark that first step into creativity overload!

- Go back over key points from earlier in the session. Do any jump out to the student? Expand on those.
- Give your own wacky ideas (the sillier the better) on what you would do. This helps relax the student and reminds them that anything is possible. It's important that the students don't feel the constraints on creativity that we often do as adults.
- If there are creative materials in front of the student, tell them to let their hands do the thinking. Get them to start putting objects together randomly. Is anything appearing? Any shapes? Does it remind them of anything? This is a great way to break that idea freeze.

Once the students are creating their ideas, spend a moment with each group or individual to ensure they are giving thoughts to the following:

- How is it positively impacting the species?
- Is it a new idea? If not, what can you add to make it even cooler and unique?
- What are the causes and effects in their idea?
- Keep them on theme. Everyone loves to build a space rocket swimming pool dinosaur machine, but is it going to help the planet? Maybe... hold that thought ;)

When it comes to sharing their creation encourage them to use a simple structure:

- Which animal did they build something for?
- What are the challenges that species is facing?
- What is their creation?
- How does it help the species?

Facilitation tips and tricks

Group work

Build the Change is perfect for working in groups, but we would recommend no more than 4 children per group. This is simply to ensure everyone gets to input and play an important role.

Depending on the students, it might be worth delegating roles.
For example, some of the roles that have worked in the past include:

- **a project manager (to lead the group)**
- **a communicator**
- **a writer (to capture the story—almost like a journalist)**
- **a designer**
- **an architect/engineer**

This list is far from exhaustive on the roles within a creative design project, so feel free to come up with completely different ones based on your students.

Speaking moments

At the LEGO Group, we love building microphones out of LEGO bricks and handing them to those whose turn it is to speak. It works wonders and adds a bit of fun.

Making it locally relevant

The LEGO Team recognizes that making parts of the course locally relevant can be extremely valuable, whether that be through local case studies within the course content or engaging with local stakeholders on the class's showcase day.

Local case study

Using the template provided in the educator pack, the educator prepares a 5-minute presentation on a local issue which represents a challenges to be solved.

Suggestions:

- Is there a local animal or plant species threated by the effects of climate change?
- Is there a local habitat (like forest, grasslands, etc..) that is threatened by the effects of climate change?
- Are you affected locally by changes in weather, like heat, floods, droughts, etc..?
- Are you affected by sea level rise?

Think about how issues like these affect animals and their habitats.

There is also opportunity to introduce new "Awesome Words" to ensure children have the vocab that might be needed for your example.

Local guest for showcase day

In the educator pack, we have provided a template letter/email that can be sent to local stakeholders, inviting them in to hear the students' ideas.

Examples of the kinds of people and groups you might reach out to include:

- Local town officials or community leaders
- Local mayor
- Environmental groups
- Sustainability-focused businesses
- School directors/principals/heads
- Heads of relevant topics at the school
- Environmental scientists, engineers, designers, and other experts

About Earthwatch Europe

Earthwatch Europe is an environmental charity with science at its heart. We want to create a world where we live in balance with nature.

We help communities to protect the nature around them. We build meaningful nature connections and give people the tools they need to fight for our planet. Working alongside communities and organisations, we build an understanding and a love of nature, and help everyone to protect the natural world. Guided by science and powered by people, we create change through connection.

People are the heart of what we do. From the classroom to the boardroom and the field to the laboratory, we bring everyone together with the shared goal to protect our planet. We work where we can have the most impact, creating knowledge and inspiring action. We fight for our fragile planet with passion and with science; with our hearts and our minds.

Through our Earthwatch Education programmes, we work with teachers and pupils to find creative ways to build and sustain connections with nature. We build teachers knowledge, confidence and motivation to lead inspiring outdoor and environmental education, building climate literacy and championing Youth Voice.

We seek to embed outdoor learning and environmental sciences in school curriculums across the UK, with a focus on enabling equitable access to green spaces and opportunities for those in underserved communities.

Stretching from school life through to green career choices and early-career scientists, we provide knowledge, resources, hands-on learning experiences and confidence to all. Together we can equip the next generation to become change makers for our planet.

The LEGO Group and Earthwatch Europe have been working in partnership for a number of years, to bring environmental science and learning through play together through the creation of inspiring teaching resources, and most recently, the incorporation of LEGO Build The Change into Earthwatch Europe's Green Earth Schools, where Youth Voice is championed to re-imagine and re-build school grounds for nature.

Links

- Earthwatch Europe
- Earthwatch Education

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The LEGO Group on learning through play and Sustainability

Our commitment to learning through play

The LEGO Group and the LEGO Foundation are committed to becoming a global force for learning through play. We aim to redefine play and reimagine learning with hands-on learning experiences like Build the Change, where children are actively engaged through a meaningful and enjoyable experience, testing and trying out things with others. Success for us is seeing more and more children around the world become creative, engaged, and life-long learners.

Educators can use Learning through Play to support student's depth of knowledge and understanding, with the application of this knowledge into practical skills and nurturing a lifelong motivation to learn new things.

On the LEGO Foundation website, you can find more information and access the LEGO Foundation knowledge base and in particular the white papers on What we mean by Learning through Play and Learning through Play at school.

Our commitment to Sustainability

We're playing our part in building a sustainable future and creating a brighter world for our children to inherit. We're joining forces with children and parents, educators, our employees, partners, charities and experts to have a lasting impact and inspire the children of today to become the builders of tomorrow.

We are proud of the journey we are on and recognize that there is much more to do and learn. We will continue to do everything we can to achieve our ambitions.

On our sustainability website you can find more information about our initiatives, ambitions and progress.

What Is Build the Change?

Build the Change is the LEGO Group's flagship sustainability education program.

Deceptively simple and effective, it has been tested with kids at events around the world for over a decade.

Immerse ➡ Create ➡ Share

Learn about a real-world planet and people challenge.

Devise your own brilliant solution.

Share it with others.

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