

LESSONS FROM NATURE



BRIEF

2

Brief 2:

Lessons from Nature

How might we learn from the natural world to reimagine learning environments that better respond to the needs of both people and the planet?

Background

- The design of our built environment - the towns, streets and buildings where we live and learn - has an effect on the planet and future generations. Poor planning and a lack of consideration for materials, space, light and energy are contributing to the climate crisis and damaging our **natural ecosystems** and our own wellbeing.
- How can we ensure young people spend their school years in environments that enhance their wellbeing and learning whilst also responding to the needs of our planet? The natural world itself might offer solutions in the shape of bio-inspired designs.
- **Biomimicry** involves looking to the natural world for inspiration to solve design problems. By mimicking the shapes, materials and structures found in nature we can develop new products, materials and architecture to solve human design challenges.
- Biomimicry goes beyond simply creating things that look like something in nature. Instead it looks to nature for clues on how our designs can contribute to a healthier planet. Biomimicry inspires us to move away from a linear, 'take-make-waste' model of design. How might we learn from nature's **circular** processes to design in ways that reduce or eliminate waste and pollution, keep products and materials in use, and regenerate natural systems?
- There are lots of inspirational examples of designers learning from nature:
 - **The Gherkin (London) takes its sustainable solution for ventilation from the structure of the Venus basket flower for air to flow more smoothly compared to traditional office towers.**
 - **Sunflowers have inspired new 'thermobiometals' that can track and respond to the sun to enhance clean solar energy.**
 - **The 'honeycomb' inspired cladding of The Hive Public Library (Worcester) helps insulate the building and uses sustainable copper alloy – the building was designed by an RSA Royal Designer for Industry (RDI), Peter Clegg.**

What needs to change?

- The **climate crisis** is putting stress on our planet, and many people are losing hope in finding solutions to the challenges faced by our **natural ecosystems**. Young people in particular have demonstrated how concerned they are about the human impact on the environment and their future.
- The design of the spaces where we learn represents a challenge. They often make poor use

of space and light, use energy in an inefficient way, and encourage the use of unsustainable materials such as plastics.

- Using biomimicry, how could improving elements of our learning environments and developing more sustainable resources make our schools, colleges or nurseries more impactful by improving pupils' and teachers' engagement and wellbeing, while also supporting the natural world.

How to approach the brief

When tackling this brief, you might want to focus on:

- The design of areas such as classrooms or communal spaces:
 - How can elements such as space, light and acoustics be improved through biomimicry to support learning?
 - How can we improve the design of individual objects or items of furniture to support pupils to gather, interact and build relationships?
- The connection of schools to their immediate environment:
 - How might outside spaces be used to support learning or other outcomes?
 - What elements of climate change are schools vulnerable to e.g. flooding and how can biomimicry help us find solutions?
- The sustainability of materials and resources within schools
 - Taking inspiration from nature, what alternatives to concrete, plastics and other environmentally harmful materials could be used?
 - How might we enhance schools' clean energy usage from the designs found in nature?
 - Think about how to adapt elements of existing buildings rather than redesigning from scratch. Be mindful of how much building and construction contributes to carbon emissions.

Here are some examples of proposals that could meet this design brief:

- A classroom clock inspired by the way trees record time to inspire students to think and act long term
- Windows that mimic the lotus plants' self-cleaning surface to cut down on water waste and improve classroom lighting
- An outside learning space inspired by the circular construction of birds' nests that fosters inclusive interaction

Further Resources

- [Biomimicry Institute Toolbox](#)
- [AskNature: a comprehensive catalogue of nature's solutions to human design challenges](#)
- [Ellen MacArthur Foundation biomimicry lesson resources](#)
- 'The world is poorly designed but copying nature helps' video (6 mins)
- [Janine Benyus TED Talk 2009 'Biomimicry in action' video \(17mins\)](#)
- [Laggerberg School \(Sweden\) uses biomimicry to solve poor ventilation](#)
- [Better Space for Learning Report](#)