Design with Nature

Workshops

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Design with Nature - Design with LEGO!

In this guidebook we describe two workshops that have been designed to reach audiences of any age, with a particular focus on children age 6-12.

Concepts of ecological building and planning will be explored in an interactive, hands-on way. The ambition for the Eco-City workshops is to encourage children to solve environmental design problems through play, experimentation and collaboration.

The aims for these learning-through-play workshops are twofold: to introduce children to concepts of environmental science and to promote skill development. Guided by mentors, children and families will work on creating solutions to environmental problems, extracted from the environmental design concepts explained in the exhibition.

The workshops are designed to develop community capacity and skills for a wide range of ages and levels of understanding.
For young children, the aim of the workshops will be to support what researchers have identified as the 5 key skills for holistic development: (1)

- **Emotional skills -** Understand, manage and express emotions by building self-awareness and handling impulses, as well as staying motivated and confident in the face of difficulties.

- **Cognitive skills -**Concentration, problem solving and flexible thinking by learning to tackle complex tasks and building effective strategies to identify solutions.

- **Physical skills-** Being physically active, understanding movement and space through practicing sensory-motor skills, developing spatial understanding and nurturing an active and healthy body.

- **Social skills -**Collaborate, communicate and understand other people's perspectives through sharing ideas, negotiating rules and building empathy.

- **Creative skills-** Coming up with ideas, expressing them and transforming them into reality by creating associations, symbolising and representing ideas and providing meaningful experiences for others.

Workshop #1

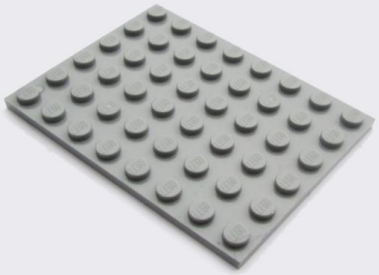
Design with Nature – Design with LEGO!

In this activity children will play with a pre-packaged kit to design a small dwelling set in a landscape. This can be done with a small group, individuals, or provided as a take-home exercise. Instructions and materials for this playful workshop are included in the Children's Activity Book.

Key lesson: understanding landscape is essential PRIOR to designing roads and buildings.

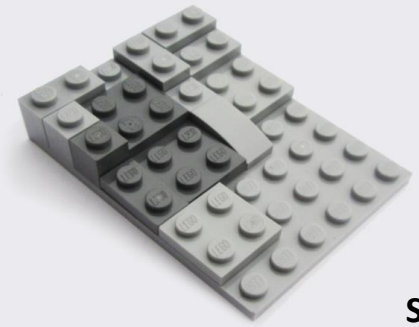
The concepts of landscape analysis will be reinforced by providing a guided 5-step process. First, the underlying geologic structure is imagined, followed by water systems, then surfaces (rocks, sand, soil) and the plant. The last step are the human-constructed elements (Roads, buildings and gardens).

Workshop #1

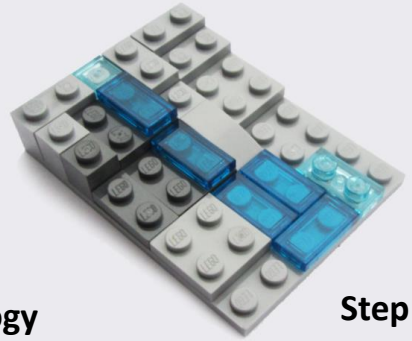


Design with Nature – Design with LEGO!

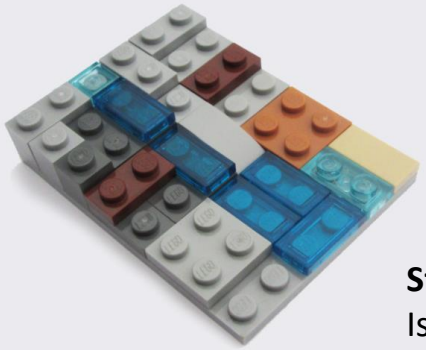
Would you prefer a cabin in the woods, a beach house, a farmhouse or something different?



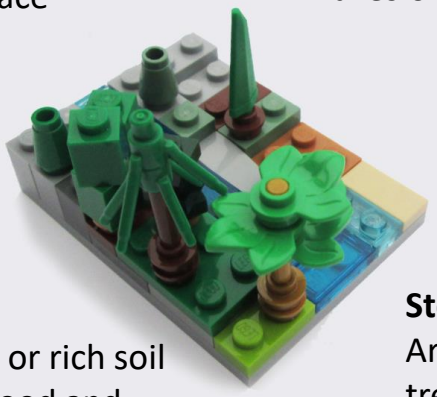
Step 1. Geology
Build the rock layers under the surface



Step 2. Water systems
Design the creeks, rivers, lakes or seas

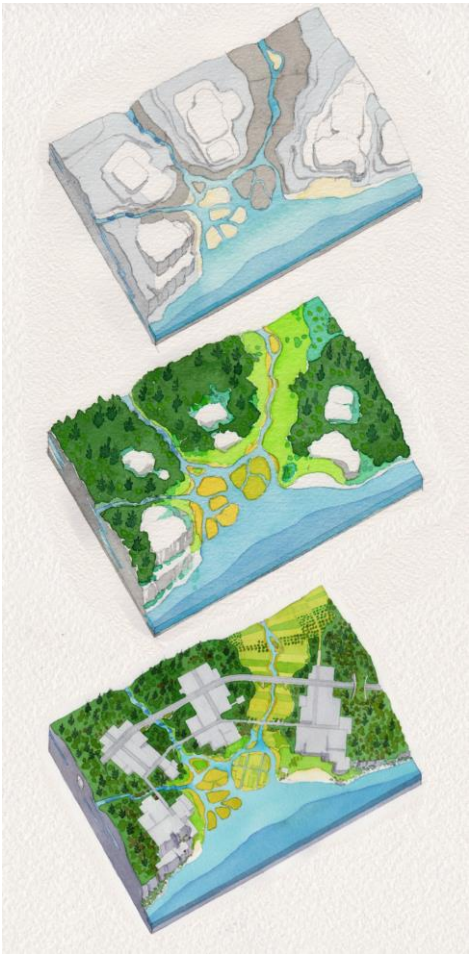


Step 3. Soil
Is there sand or rich soil for growing food and plants?



Step 4. Plants
Are there forests, trees or plants growing in the landscape?

Step 5. Roads, buildings and gardens
Plan the best the locations for your structures to fit with the natural landscape



Workshop #1

This exercise reinforces the ecological approach for planning, whether on a very small site or planning an entire city or region. The process for designing a cottage is similar to the approach taken to design the Eco-City

Some landscapes are shown to inspire builders, but we encourage people to share their scenes by sending a photo.

Workshop #2

Design with Nature – Design with LEGO!

This comprehensive 2-hour workshop has been designed for family-sized groups, or class-sized groups of any age. Beginning with a tour of the Eco-City exhibition, participants learn about the features and principles of ecological urbanism through an interactive game using a deck of picture cards that show features from the model.

Participants will then be shown a set of six scenarios built in LEGO that demonstrate some features of good urban design, but also have common problems and challenges for urban designers. These themes relate to key themes in the exhibition, and revolve around habitat preservation, the interaction between wildlife and urban infrastructure, and urban living that is integrated with nature.

In the second half of the workshop, builders are divided into tables of 4-8, and each table will select one of the scenarios. Each group will work on problem solving that relates to the theme described. Children may work on their own individual ideas and play freely, or work together to make changes to the scenario models.

Sharing Solutions: After the participants have completed their building experiments, the concepts and ideas discussed at each table will be shared in a plenary format with all attendees. Mentors and leaders will guide discussion about the ideas that are proposed at the workshop, introducing other solutions for design problems.

The next section the scenarios and key lessons in more detail.

Scenario 1: Farm Landscape

This scenario shows a farm setting with various crops, an orchard, and a barn with animals. The scene provides an opportunity to discuss the importance of locally grown healthy food and produce, caretaking of animals, and the role of local agriculture in urban and rural economies

It provides an opportunity for builders to improve the functioning of a farm landscape by considering where grazing animals should be located, the type of crops grown on the farm, ways to protect the creek from pollution and erosion, and places to build habitat for wildlife.

Scenario 1: Farm Landscape

Discussion points:

- The barn is built on bedrock (or gravel), leaving the rich and more fertile soil for growing good, as described in McHarg's description of locating the "optimum building site" before construction. Note that various types of crops grown on the farm are responsive to different soil types, creating a diverse farm rather than a monoculture of a single type of food. Flowers belong on farms too – pollinating insects like bees can boost crop yield.

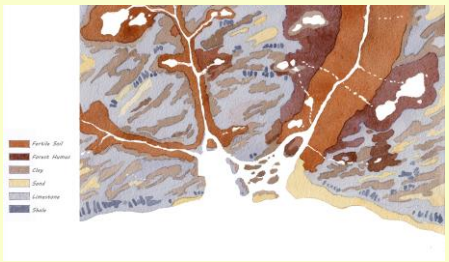
- Manure from farm animals can pollute streams. Instead, animal waste and compost can be used as a resource on the farm. If collected it can be used as organic fertilizer for crops.

- Growing crops requires fertilizer and sometimes pesticides and herbicides that can be washed into streams and wells. Reducing use of harmful substances is key; organic farms use fewer chemicals, although the addition of fertilizers such as phosphates is still necessary. Water can be protected by planting riparian buffer strips along watercourses to filter and absorb pollutants. The plants also help prevent erosion and soil loss during floods.

- Farms are places of industry and food production, but they can also be places for recreation and learning. Farms and urban food gardens can be places to enjoy nurturing animals and plants.

- .The closer farms are to our cities, the less trucking is required to bring products to local markets. And plenty of food markets within walking distance means that people have access to healthy food

Earth



Water

Nature and Society

Scenario 2: Hospital Redesign

This scenario depicts an urban hospital. The scene provides an opportunity to discuss the importance of access to nature in human health and well-being.

It provides a setting for builders to remove and rethink a poorly designed structure and imagine one that is designed to work with the healing aspects of nature: physical access to gardens and paths, balconies and roof gardens, and views of natural features.

Scenario 1: Hospital Redesign

Discussion points:

- All buildings should be designed to increase the places where humans can interact with nature, but hospitals have a particular role.
- Access to paths and outdoor spaces allow patients and hospital workers to walk and exercise which can help with recovery and staying healthy. Connecting hospitals to urban trail systems can help medical teams integrate restorative physical therapy, such as the “walk and talk” program for cancer patients at the Vejle Hospital
- Consider window locations - even patients who are confined to beds have been shown to recover more quickly and seem to feel less pain if they have views of nature.
- “Biophilia” is our innate desire to connect with forms of life, including plants and animals, and nature is soothing to people. How can we design healing gardens to promote emotional healing? Consider all senses (touch, smell, taste, sound, sight) and how they support relaxation and joy.
- How can people with mobility problems connect with nature in other city places? Consider options such as rooftop gardens, balconies, public elevators and accessible gardens that can be reached with a wheelchair.

Nature and Society

Scenario 2: Wildlife Crossing

This scenario depicts a road in the countryside that is challenging for animals to cross in order to migrate and move through their habitat. The setting is unsafe for animals and also for drivers.

The scene provides an opportunity to discuss concepts of connectivity, animal migration, and linking habitats to make corridors for mammals, bird, reptiles and amphibians. Builders can consider design solutions such as bridges, fences, and tunnels to create safe passages for different types of animals, and other ways we can build roads to support wildlife.

Scenario 3: Animal Crossings

Discussion points:

- Roads, train tracks, and other infrastructure in urban areas and in the countryside should be designed with consideration for the needs of wildlife. Urban animals and rural animals need different “highways” of their own.
- Wildlife on the roads create problems for people traveling in cars– collisions with especially large animals like deer can be very dangerous.
- Mapping and analysis shows what migration routes are important for animals, at a number of different scales. Small reptiles like salamanders might move around very little, while others travel vast distances.
- We can improve highway verges with plantings that support insects and birds
- Tunnels can be built so that the roads go underneath and the landscape is not disturbed above. Or roads can go over bridges, leaving animals free to move underneath. Structures like animal bridges and special fencing can be designed when migration patterns are understood.
- Animals travel to forage for food, find water, but also to mate. Plant colonies also travel through roots and seeds

Life

Scenario 4: Urban Meadow Creation

This scene shows an urban apartment or office building with street trees and a neatly mown grass lawn. There is little beauty for the people, and no food, water or shelter for animals.

This setting suggests the creation of places in cities for birds and insects and mammals to find food and shelter. Lawn alternatives like meadows and woodlands support biodiversity, and builders can also consider places such as balconies, roof gardens and terraces to create small gardens that are better spaces for people and wildlife.

Scenario 4: From Lawns to Meadows

Discussion points:

- Grassy areas are wonderful in cities but most places have too much lawn and not enough biodiversity. How much grass is ideal – how much is too much?
- Alternatives to lawns include orchards, naturalized woodland settings, open meadow plantings with long grasses that do not need to be mown very often, or community garden spaces where residents can grow food – or a combination.
- Living in close proximity to natural landscapes is good for wildlife but also for people – there are benefits from daily contact with nature. "Biophilia" is a concept that suggests that people have an innate need to bond with living plants and animals
- Rooftops, balconies and window boxes present opportunities for supporting wildlife (birdbaths and feeders, flowers, vegetables gardens) but are also places for people to enjoy the outdoors. Consider designing "sun pockets" and "shady havens", and picnic tables for relaxing outdoors.
- Other alternatives for rooftops include both accessible roofs for the use of the people, and inaccessible roofs that are more ecologically supportive (green roofs, solar panels).

Life

Nature and Society

Scenario 4: Stream Remediation

This scenario shows some compact townhouses adjacent to a road with small front gardens and a large parking lot. It provides a chance to talk about natural systems and how landscapes are impacted by too many cars.

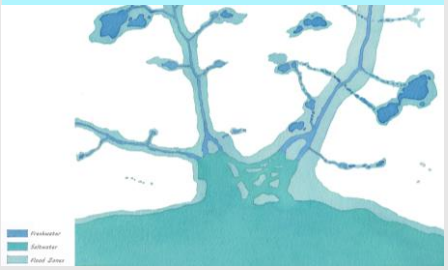
The scene gives builders a chance to “daylight” a buried stream, create a rich habitat for the residents and the wildlife who life here. While inventing new landscapes for the people to enjoy, builders can consider ways to design cities that have less paving, fewer cars, and more natural landscapes.

Scenario 5: Daylighting a Creek

Discussion points:

- These homes are modest in size and create a small community of neighbours. They have solar panels that generate clean electricity. But there is only a very small patch for gardens, and for the residents to interact with nature.
- What natural water courses run through cities? Many of them are buried beneath buildings, roads and parking although in many places they are “Daylighting” creeks and streams. This has occurred in Vejle, Billund and Aarhus.
- Water and the plants that grow along creeks provide habitat for a variety of small animals and insects. Streams contribute to a food chain for animals. Consider frogs, turtles, fish, but also what they feed on (insects, worms) and the animals that feed on them (birds, racoons, skunks)
- Creeks are travelling routes for animals, and culverts interrupt their ability to migrate. Consider the water and also the buffer plantings that offer shelter and protection from road pollutants.
- What can we do instead of having so much parking? Ideas such as car sharing, public transit, bicycling, and more walking paths can reduce the number of cars we need. Fewer cars means better air quality, lowered carbon emissions, and more exercise for people.
- People might have fun in a shared natural garden what activities could take place?

Water



Air

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Scenario 6: Beach Landscape

This scenario depicts a day at the beach with people playing and relaxing at the shore. While some people are enjoying healthy recreation (swimming, playing sports, getting some sunshine, relaxing with food and friendship) others are damaging the fragile ecosystem.

The scene provides an opportunity to discuss the role that sand dunes play in protecting the landscape from storms while providing habitat for shoreline birds and animals. Children can improve the beach scene by improving natural plantings, locating the playing in the right spot, and putting cars and vehicles in a place that won't damage nature.

Scenario 6: Beach Landscape

Discussion points:

- The beach provides a lovely setting to enjoy the natural beauty of the sea and the shore, enjoy the fresh air, clean water and sunshine. The healthy dunes support plant growth and wildlife, and the established planted dunes also protect the shore landscape from storms and winds from the sea.
- The sand dunes show a range of growing conditions – the first sandy plants that are established are followed by the creation of soil pockets that evolve into more fertile areas that support trees and shrubs. A variety of plants grow in different types of soil. Shorebirds, mammals, reptiles and other animals find shelter, nest, and find food in the dunes.
- Dune buggies and dirt bikes might be fun, but they are noisy and cause air pollution, and they are damaging the sand dunes. What are other ways to access the beach? If they must drive, people could park away from the most fragile area.
- Although bicycles are more environmentally friendly, they shouldn't be used in the fragile dunes, and people need to be careful and walk only on boardwalks so they don't trample the fragile plants and damage animal habitat.
- The sandy beach at the water's edge is sturdy– it is hardy and a great place to play (bike, park boats, play games, and set up picnic spots).

Earth

Air

Life

Nature and Society