

CURRICULUM

Through Upcycling to the Design of Eco Cities



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TUDEC – Through Upcycling to the Design of Eco Cities

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Module 6

CITY FOR ALL SENSES

“

I think ultimately, bringing more nature back into the city is a way to deal with urban sprawl and things like that.

If the cities feel a little more natural, people like to live there more rather than moving out and dividing up another piece of land that shouldn't be touched.

(Stone Gossard)

”

6. INTRODUCTION

Nature is a magical creation that surrounds us wherever we go. From tall trees that provide shelter and shade to birds singing melodious songs, nature is a gift we often take for granted, we do not think about the fact that we could lose it. However, in recent years, people have begun to pay more attention and become aware of the importance of nature in our lives. That is why it is very important to connect with nature, that is, to teach students from an early age about its importance.

Spending time in nature reduces stress and anxiety and improves our mood and our cognitive abilities. Nature can also inspire us to be creative, spark our imaginations, and inspire the creation of works of art, literature, and music.

The purpose of this module is to bring nature closer to the students, to our schools, homes, and cities. Students should explore nature by studying biodiversity, and ecosystems from the smallest microbes, plants, birds, insects, and animals. They should also know their role in pollination and natural pest control. They should realise that they are an important part of the food chain and essential to ecosystems. With different activities, students get to know nature better: They learn where our food comes from, what the parts of a plant are, how products of nature are used and processed, and how to make their own eco-sustainable garden. But they should also get to know about the loss of habitats, the destruction of forests, and the severe changes in weather and temperature caused by human-made climate change.

While spending more time outdoors, students can explore nature through observation and experimentation and experience it with all their senses through the rustling of leaves, pebbles, branches, feathers, seeds, etc. They should also gain extensive sensory experiences, including all their senses: smell, sight, hearing, feeling, observation and touch. However, it is equally important to teach them to be patient with nature and learn how to preserve nature and the environment, and what measures need to be taken to ensure that the wonders of nature are preserved for future generations.



Credit: Freepik.com



6.1 DELICIOUS FOOD: GROWING FOOD IN THE CITY

Growing food increases green areas in the city, and gives more people access to healthy and high-quality food. Eating home-grown organic food is the key to a long and healthy life. We are increasingly aware of the development of serious diseases and increased mortality from the constant consumption of unhealthy food, as well as vegetables and fruits poisoned by polluted air and water. Planting and growing food in the city improves the air quality and stimulates the local economy. Each of us can be an example in the local community. Both adults and children can be involved -- students together with their teachers by creating Eco Gardens (organic school gardens), using

recycling materials in school yards, halls and classrooms. Seedlings with various fruits and vegetables can be planted in the yards and on the roofs of the buildings, on the balconies, and in the yards. Local businesses will help the community economy by purchasing products from local producers. Various activities will increase the students' awareness to turn to nature from an early age. Humans and nature can and should be the best allies for a high quality of life. In addition to recycling and planting trees for clean air, eating healthy homemade food is also important for a long and healthy life (Link to Further Explorations #1 + #2).

CONNECTED TOPICS IN CURRICULUM



SUBJECT: Science lessons / STEM

- Life cycle of native plants
- Pollination (importance of insects, impact on humans and nutrition)
- Mutual relations between animals and plants
- Soil habitat and soil conditions
- Abiotic factors (light intensity, temperature, humidity, atmospheric pressure, soil structure, water availability, air, pollution, altitude)
- Nature observations
- Weather observation and interpretation of weather forecast
- Measures to protect natural resources
- Human activities for the protection of the environment

SUBJECT: Gardening

- Cultivation of fruits, vegetables, herbs
- Construction and use of a greenhouse



6.2 POLLINATION PARADISE

Planting flowers of different shapes, sizes and colours in gardens, yards, and parks makes it easier for pollinators to locate their next meal. A variety of flowering plants ensures a reliable food supply. To increase the diversity and number of bees and other insects in cities, they need access to suitable habitats and nesting sites found in open soil, dead wood and wall cavities. Everyone can contribute to bringing pollinators back to cities. Good education and increased eco-awareness mean consciously planting flowers, seedlings and plants that attract bees and other pollinators. Old tree trimmings can easily be turned into flower plant pots, and we can re-use tin cans and glass jars, so they're more than just waste. With various activities, the teachers will educate and motivate their students and raise awareness of the importance of pollinators in the cities. The students are guided and become aware of the role that each of us receives from the moment of our birth, which is to be a caring, careful and responsible human being on planet Earth. This implies the conservation of natural resources, recycling, and forestation. It means also raising awareness of what we can do to help pollination and natural control of pests, reducing air pollution, and buying food grown on unpolluted soil and without pesticides (Link to Further Explorations #10 + #11).

CONNECTED TOPICS IN CURRICULUM



SUBJECT: Science lessons / STEM

- Life cycle of native plants
- Pollination (importance of insects, impact on humans and nutrition)
- Mutual relations between animals and plants
- Nature observations
- Measures to protect natural resources
- Human activities for the protection of the environment

SUBJECT: Gardening

- Cultivation of fruits, vegetables, herbs

SUBJECT: Music

- Songs about nature, insects and bugs
-

6.3 SOUND VS. NOISE

Noise is harmful to the health of all living beings. How to make the city a quieter place to live in? In cities and urban areas, trees not only have various aesthetic advantages, but they also improve the quality of the air. Trees purify the air, create coolness and host birds and insects. They are homes, and habitats for various birds, insects and other types of animals. The planned planting of trees and plants is significant in reducing noise levels in urban areas, around main streets and in the places where we stay. Apart from planting trees and plants, awareness should be raised to use public transport and bicycles more frequently. Growing plants also connects community members. Educating children and adults about the consequences of noise and its negative effects on people and animals will contribute to positive results in reducing noise damage. Children will develop sustainable thinking and a vision for the future (Link to Further Explorations #3 - #6).

CONNECTED TOPICS IN CURRICULUM



SUBJECT: Science lessons / STEM

- Relationships between ecological, social and economic systems
- Health and well-being (importance of silence and relaxation)
- Human activities for the protection of the environment
- Media education (creation of media products: recording of and working with sounds)

SUBJECT: Arts - Creative expression and appreciation

- Transforming sounds and tones into images

SUBJECT: Music

- Creating noises and sounds, sounding out themes
 - Contrast of loud and quiet
-



Credit: Freepik.com

6.4 WICKED WEED

Biodiversity is the variety of life. It is essential for people's physical and mental health and well-being, economic prosperity, security, food security and human life and society in general. Biodiversity enables us to live healthy and happy lives. It provides us with various food and materials and contributes to the economy. Without a diversity of pollinators, plants, and good nutritious soil, our supermarkets would have far fewer products. The loss of biodiversity destabilises the ecosystems and the entire balance in nature, affecting people and their quality of life. Raising people's awareness to understand what a loss of biodiversity means for them, especially for their children's health, can be a very effective encouragement to change their habits. Children should understand the importance of biological diversity from an early age, and they will realise this in their closest environment, in schools and homes. By restoring ecosystems, protecting the natural habitats of animals, plants and insects, rational consumption of natural resources, saving and purifying water, leading a sustainable lifestyle, and taking care of our energy, food and water consumption. We will increase the resilience of communities towards their vulnerability to environmental disasters, climate change and pollution and thus reduce the burden on nature.

CONNECTED TOPICS IN CURRICULUM



SUBJECT: Science lessons / STEM

- Life cycle of native plants
- Knowledge about native plants
- Crops and weeds: Which plants have a "benefit" and for whom?
- Ecosystems and their importance
- Nature observations
- Measures to protect natural resources
- Human activities for the protection of the environment

SUBJECT: Languages

- Narrating and describing (using appropriate vocabulary and using present and past tense verbs, describing people, characters, plants, animals, natural phenomena and landscapes, expressing thoughts and feelings)
- Working with written texts: comprehension and reproduction of meaning (use of texts about these topics)

6.5 INTERACTING WITH NATURE

Connecting with nature positively impacts our health, social life and our communities. It encourages adults and children to have an active lifestyle. We reduce the amount of waste by reusing products or producing new products from recycled material. In this way, the pollution in the city is gradually reduced, which is a global problem today. Every teacher is a role model for every student. The activities in the sub-theme are easy to implement with younger students. Through implementing these activities, the students' creativity, ability to solve problems, practical learning through play, and awareness of the importance of a clean environment will be developed from a young age. Through shared experiences between teachers and students, the other entities in the educational institutions are involved in implementing activities for a cleaner city. By increasing awareness among children from a young age, the environment is preserved, and the quality of life in urban areas increases, which enables the revival of nature in the city. Humans will build a city that would be the ideal home for all beings.

CONNECTED TOPICS IN CURRICULUM



SUBJECT: Science

- Habits of native birds throughout the year
- Habits of selected native animal species
- Habitat meadow and its importance for animals and humans
- Forest habitat and its importance for animals and people
- Health and well-being (importance of movement and relaxation)
- Nature observations
- Measures to protect natural resources
- Human activities for the protection of the environment

SUBJECT: Arts - Creative expression and appreciation

- Artistic production of works from recycled material
- contribution of art and other forms of cultural expression to understanding and changing the world by expressing own ideas, experiences and emotions (individual or collective)

SUBJECT: Languages

- Narrating and describing (using appropriate vocabulary and using present and past tense verbs, describing people, characters, plants, animals, natural phenomena and landscapes, expressing thoughts and feelings)

SUBJECT: various (Science, Ethics, Physical education, team building)

- Excursions: Exploration of environments, movement in nature, observation of nature and urban life

FURTHER EXPLORATION

This resource provides schools with tips how to start a school garden and explains what benefits this brings:
How to start a School Garden: Your Complete Guide. Earth-easy Guides & Articles. (n.d.).

<https://learn.eartheasy.com/guides/how-to-start-a-school-garden-your-complete-guide/>



Explore how to start a productive, organic vegetable garden in your school or pre-school:

Vegetable gardening in schools and pre-schools. A Place of Learning. (n.d.).

<https://www.aplaceoflearning.co.nz/courses/vegetable-gardening-in-schools-and-pre-schools/>

Noise pollution can cause health problems for people and wildlife, both on land and in the sea. Find more information here:

Noise pollution. Education. (n.d.).

<https://education.nationalgeographic.org/resource/noise-pollution/>

Find more info on noise pollution here:

Encyclopædia Britannica, inc. (2023, September 5). Noise pollution. Encyclopædia Britannica.

<https://www.britannica.com/science/noise-pollution>

This educational article can be used by teachers in the educational process, teaching children that they can contribute to reducing noise pollution with their behaviour:

How to reduce noise pollution in homes. UK Construction Online. (n.d.).

<https://www.ukconstructionmedia.co.uk/press-releases/how-to-reduce-noise-pollution-in-homes/>

At a scientific level, sound and noise are technically the same - they are vibrations in the air (or in water) that we pick up with our ears. The bigger the waves are (their amplitude), the stronger the vibrations are, and the louder the sound is. However, sound is something that we hear in general. The visual presentation of the scale of noise pollution will make it easier to remember the data. Getting to know the positive and negative effects of pollution will contribute to a clear distinction between what is useful and what is not:

Sound vs. noise | let's talk science. (n.d.).

<https://letstalkscience.ca/educational-resources/stem-explained/sound-vs-noise>

The article „Why We Need to Reduce Noise Levels in Cities“ offers useful information for the teacher and the opportunity not only to explain to students/children the concept of “noise pollution” and to tell them how noise pollution affects our health, but also to encourage them to think about finding creative solutions:

Matthews, K. (n.d.). Why we need to reduce noise levels in cities. Planetizen Blogs.

<https://www.planetizen.com/blogs/96881-why-we-need-reduce-noise-levels-cities>

What are the Differences Between Sound and Noise? Find infos here:

Hatko Sound Barrier. (2021, January 28). What are the differences between sound and noise?

<https://www.hatkosoundbarrier.com/what-are-the-differences-between-sound-and-noise/>

Find infos about nocturnal pollinators here:

These 6 nocturnal pollinators work the night shift to better the planet. Brightly. (n.d.).

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Find a collection of DIY-ideas to attract pollinators to yards and parks:

Bramen, L. (2020, February 28). DIY: Creating a Pollinator Paradise. The Nature Conservancy.

<https://www.nature.org/en-us/magazine/magazine-articles/pollinator-paradise/>

Information about flowers that attract pollinators:

Searle, B. (2022, May 28). Plants for pollinators – 10 of the best for a blooming garden. home-sandgardens.com. <https://www.homesandgardens.com/gardens/plants-for-pollinators>

VISIONARY BOX



Every year, the Municipality of Karposh in Skopje, organises a competition for the best decorated Eco-Schoolyard in the Municipality of Karposh and raises the awareness of students, parents and teachers about the importance of the environment. This motivates students, teachers and parents, and everyone works together as a team on the project. The cash prize is an additional incentive to participate. Prize money is used to purchase additional materials and improve the yard. Throughout the year, the students take care of the yard and the seedlings that have been planted, but they also spend more time in nature, as lessons are held in the outdoor classroom.

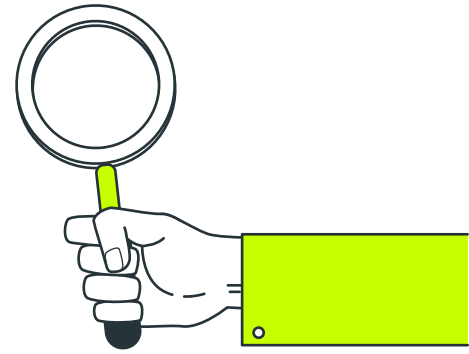
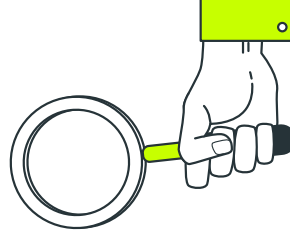


CONNECTED ACTIVITIES

- 6.1 My school garden
- 6.2 My school garden for children with disabilities
- 6.3 Rainwater collecting bin
- 6.4 Rainwater collecting bin for children with disabilities
- 6.5 Recycled paper packages with seeds
- 6.6 Pollination station
- 6.7 Sensory garden
- 6.8 Creating a pollinator puppet
- 6.9 I'm making a butterfly feeder
- 6.10 I'm making a butterfly feeder for children with disabilities
- 6.11 Making a hummingbird and a flower in a combined technique
- 6.12 Making a hummingbird and a flower in a combined technique for children with disabilities
- 6.13 Music and plants
- 6.14 Music and plants for children with disabilities
- 6.15 E-book with sounds from the environment
- 6.16 Analyzing sounds
- 6.17 I discover sounds and make instruments from recycled material
- 6.18 I discover sounds and make instruments from recycled material for children with disabilities
- 6.19 Creation of "Weeds Exhibition"
- 6.20 I am learning the parts of the plant.
- 6.21 I am learning the parts of the plant for children with disabilities
- 6.22 Researching the effects of weed on plants
- 6.23 Nature scavenger hunt
- 6.24 Nature scavenger hunt for children with disabilities
- 6.25 Researching the effects of soil pollution on plants
- 6.26 Greenhouse gases - creating candy models (gummy or jelly candy)



SOURCES



MODULE 1: Sharing the City

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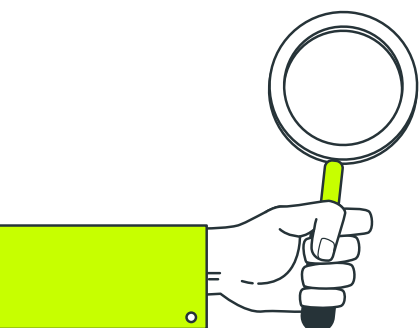
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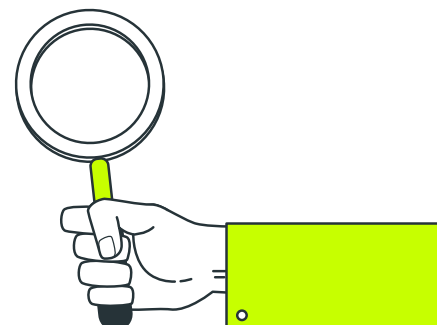
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MODULE 6: City for all Senses

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