

A photograph of children's hands and legs as they plant a small green seedling into the soil. The scene is outdoors, and the children are wearing casual clothing. A large green semi-circle is overlaid on the bottom half of the image, containing the title and subtitle.

U-GROW EDUCATIONAL PROGRAMME AND METHODOLOGY

COLLECTION OF EDUCATIONAL MATERIALS



Interreg
CENTRAL EUROPE



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the European Union

U-GROW Educational Programme and Methodology,
Collection of Educational Materials

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Written and edited by: Maša Meznarič Majcen and Tina Hribar

Sketches and drawings by: Tina Hribar

The content of this publication was developed with the support of
EcoSchool programme Slovenia collaborators in the CoFarm4Cities
project: Gregor Cerar, Lucija Marovt, Jasmina Mlakar, Barbara Gašperlin.

Review: Dr Martina Erjavšek, Faculty of Education, University of Ljubljana

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Foreword

This document presents **a collection of educational materials from the U-GROW educational programme**, designed to support teachers in using the school garden as a learning environment.

The materials provide **practical activities, ideas, and methodological guidance** for addressing topics such as sustainable nutrition, urban agriculture, local food production, biodiversity, and responsible food consumption through hands-on learning.

By working in the (school) garden, students can explore how food is produced, how it reaches our plates, how food waste can be reduced, and how everyday choices influence the environment.

The activities encourage **experiential learning** through observation, experimentation, and **practical work**, helping students better understand the connections between food, health, and sustainability.

This document represents a selection of materials intended for teachers working with school gardens. **The full U-GROW educational programme and methodology** are available on the **CoFarm4Cities project website**.

GREGOR CERAR, NATIONAL COORDINATOR OF THE ECO-SCHOOL PROGRAMME
SLOVENIA

Theoretical Introduction: Understanding the Foundations of Sustainability

THIS SECTION BRINGS TOGETHER EDUCATIONAL MATERIALS DESIGNED TO HELP TEACHERS INTRODUCE KEY SUSTAINABILITY CONCEPTS TO STUDENTS IN A SIMPLE, ENGAGING, AND AGE-APPROPRIATE WAY.

The concepts of sustainability, sustainable development, urban agriculture, locally produced food, and food self-sufficiency form an important foundation of the U-GROW educational programme. They run throughout the programme's methodology, modules, and supporting materials, including the Guide Urban School Garden.

The section first presents definitions of these key concepts adapted to different educational stages, making them accessible to students of various ages. These are followed by activities and learning materials that help students better understand and internalise the ideas through discussion, observation, and practical activities.

The materials are intended as a resource for teachers and can be used in different learning contexts – for example during lessons in science, geography, or home economics, as well as during activities in the school garden. Teachers may use the materials as provided or adapt them according to the age of students, the subject taught, or the available time and space.

The definitions are based on the Education for Sustainable Development (ESD) framework, the European GreenComp framework, materials developed within the CoFarm4Cities project, and the experience and best practices of the Eco-Schools programme.



1.1

Sustainability

GENERAL DEFINITION (GreenComp):

Sustainability means prioritising the needs of all living beings and the planet by ensuring that human activity does not exceed the Earth's limited ecological capacity.

BY AGE GROUPS:

1. Ages 6–8:



Sustainability means taking care of nature so that people, animals, and plants can live well in the future too. This includes not wasting food, turning off the lights when we don't need them, and walking instead of driving whenever possible.

2. Ages 9–11:



Sustainability means using natural resources such as water, food, and energy wisely so they remain available for future generations. It means eating locally grown food, sorting waste, saving electricity, and caring for plants and animals – because we all share the same planet.

3. Ages 12–14:



Sustainability is a way of living that allows people to meet their needs without harming the environment or society, while ensuring that future generations can do the same. It means not consuming more resources than the planet can regenerate. Sustainability is based on three pillars: environmental (ecological balance), social (justice and equality), and economic (long-term economic viability and responsible consumption). It involves making responsible choices about how we use resources, what we eat, how we consume, and how we care for our communities.



Sustainable Development

GENERAL DEFINITION:

Sustainable development means growth and progress that meet the needs of the present generation without compromising the ability of future generations to meet their own needs. It means caring for the environment, society, and the economy at the same time, while seeking a balance between development and the preservation of resources.

LEARNING MATERIALS:

Material 1: Sustainable or Not?

Students aged 6–8 sort illustrated cards showing environmentally friendly and harmful actions. Students aged 9–11 and those aged 12–14 discuss the situations on the cards and connect them to examples of sustainable and unsustainable behaviour.

Material 2: Sustainability Quiz

Students answer questions about sustainable behaviour. The quiz can be completed individually or in groups, and teachers can also organize in-class or inter-class competitions.



Sustainable or Not?

ACTIVITY IDEAS:

- Each student receives a card. They decide whether it represents a sustainable or unsustainable action and explain their reasoning. What are the consequences of this action for people and the environment?
- Working in groups, students sort the images into two categories: Sustainable and Unsustainable. They justify their choices.
- Students suggest a more sustainable alternative for each unsustainable action.



Sustainable or Not?



Name: _____

Date: _____

Sustainability Quiz



Circle the letter next to the correct answer.

1. Which of these actions is sustainable?

- A) Using a reusable water bottle instead of single-use plastic.
- B) Driving a car for short distances instead of walking or cycling.
- C) Buying fast-fashion clothes because they're cheap and easily available.

2. Which fruit represents the most sustainable choice?

- A) Mango from Brazil.
- B) Apple from a local farmer.
- C) Organic mandarins from Bosnia.

3. How can we reduce packaging waste?

- A) Buy products without unnecessary plastic packaging.
- B) Put plastic bags into the recycling bin after use.
- C) Always take plastic bags from the store because they can be reused as trash bags.

4. How can we save water?

- A) Leave the tap running while brushing your teeth.
- B) Use rainwater for watering plants in the garden.
- C) Take long baths instead of quick showers.

5. Which way of washing clothes is the most sustainable?

- A) Wash clothes even if they aren't dirty, because it takes more energy to remove stains later.
- B) Fill the washing machine to full capacity, use an eco programme and eco detergents.
- C) Sort clothes by colour before washing to save energy.

6. What happens to plastic that isn't disposed of or recycled properly?

- A) It completely decomposes in a few years.
- B) It may end up in illegal dumps, rivers, or oceans and pollute the environment for hundreds of years.
- C) It's collected by waste collection workers.

7. Which food storage method is the most sustainable?

- A) Use single-use plastic bags and cling film.
- B) Buy food in plastic packaging so it stays fresh longer.
- C) Store food in glass containers or reusable boxes.

8. Which option represents the most sustainable choice for home lighting?

- A) Use LED bulbs and switch off lights when not needed.
- B) Use the cheapest bulbs since they always consume the least energy.
- C) Keep lights on all the time so energy use is balanced.

9. Which mode of transport is the most sustainable?

- A) An airplane, because it's the fastest way to travel.
- B) A bus, because many people travel together.
- C) A private car, because you can drive exactly where you want.

10. How can we most effectively reduce air pollution?

- A) Walk or cycle for short distances instead of driving.
- B) Use as many electric devices as possible, since they produce little pollution.
- C) Pick up litter and throw it in the bin when you see it on the ground.

Check your answers:

- 10. A
- 9. B
- 8. A
- 7. C
- 6. B
- 5. B
- 4. B
- 3. A
- 2. B
- 1. A

1.2

Urban Farming

GENERAL DEFINITION (Project CoFarm4Cities):

Urban farming is an activity carried out by individuals or communities, with the main purpose of improving local food self-sufficiency in urban environments.

BY AGE GROUPS:

1. Ages 6–8:



Urban farming means growing plants and producing food in cities. Examples include small city gardens, raised beds in courtyards, vegetables in pots on balconies, or even small farms in urban areas.

2. Ages 9–11:



Urban farming is the production of food in cities, sometimes including animal husbandry. It can take the form of community gardens, raised beds, rooftop gardens, or balcony vegetable gardens.

3. Ages 12–14:



Urban farming refers to activities focused on food production in cities. It includes innovative approaches such as rooftop gardens, hydroponics, community gardens, and vertical farming. Beyond providing local food, urban farming also brings broader social and environmental benefits – strengthening local communities, reducing the carbon footprint, and creating green spaces in urban environments.

LEARNING MATERIALS:

Material 1: Visit to a Local Urban Farm (Worksheet)

Students visit an urban farm, observe and record their observations, and complete a worksheet documenting what they have learned.

Material 2: Types of Urban Farms

Students match different types of urban farms with their descriptions and corresponding images.

Material 3: My Urban Farm

Students draw or design their own vision of an urban farm. The teacher encourages them to think about how their farm would contribute to sustainable living in the city.

Name: _____

Date: _____

Visit to a Local Urban Farm

Answer the following questions about today's visit to the urban farm.



1 Is this your first time visiting an urban farm?

2 What is the name of the farm you visited? Where is it located?

3 What do they grow or produce on the farm? List at least three products.

4 Where and to whom do they sell their products?

5 Do they keep any animals on the farm? Which ones? How many?

6 Why is this farm important for the city?

7 Who works on the farm?

8 What challenges do urban farmers face?

9 How do the farmers imagine their farm in 5, 10, or 20 years?

10 What is the farm's relationship with the local community?

11 How is this farm different from a traditional "rural" farm?

12 Name three things from the visit that you will remember most.

13 In your own words, explain what an urban farm is. Then list three reasons why urban farms are important for cities.

TYPES OF URBAN FARMS

Match each type of urban farm with its correct description and image.



**COMMUNITY
GARDENS**

Also known as a green roof. It improves a building's insulation and helps reduce heat.



**SCHOOL
GARDEN**

Areas with individual plots rented by residents for personal food production.



**ROOFTOP
GARDEN**

Plants are grown vertically in multiple layers inside buildings or in controlled environments.



**VERTICAL
FARM**

A garden located on school grounds, used for hands-on learning.



HYDROPONIC FARM

Growing plants on balconies or terraces in containers or pots.



AQUAPONIC FARM

A city-based farm that combines plant cultivation and animal husbandry.



BALCONY GARDEN

Plants are grown in water enriched with nutrients – without using soil.



(URBAN) FARM

A farm where plants are grown with the help of fish; fish waste provides nutrients for the plants.



URBAN ORCHARD

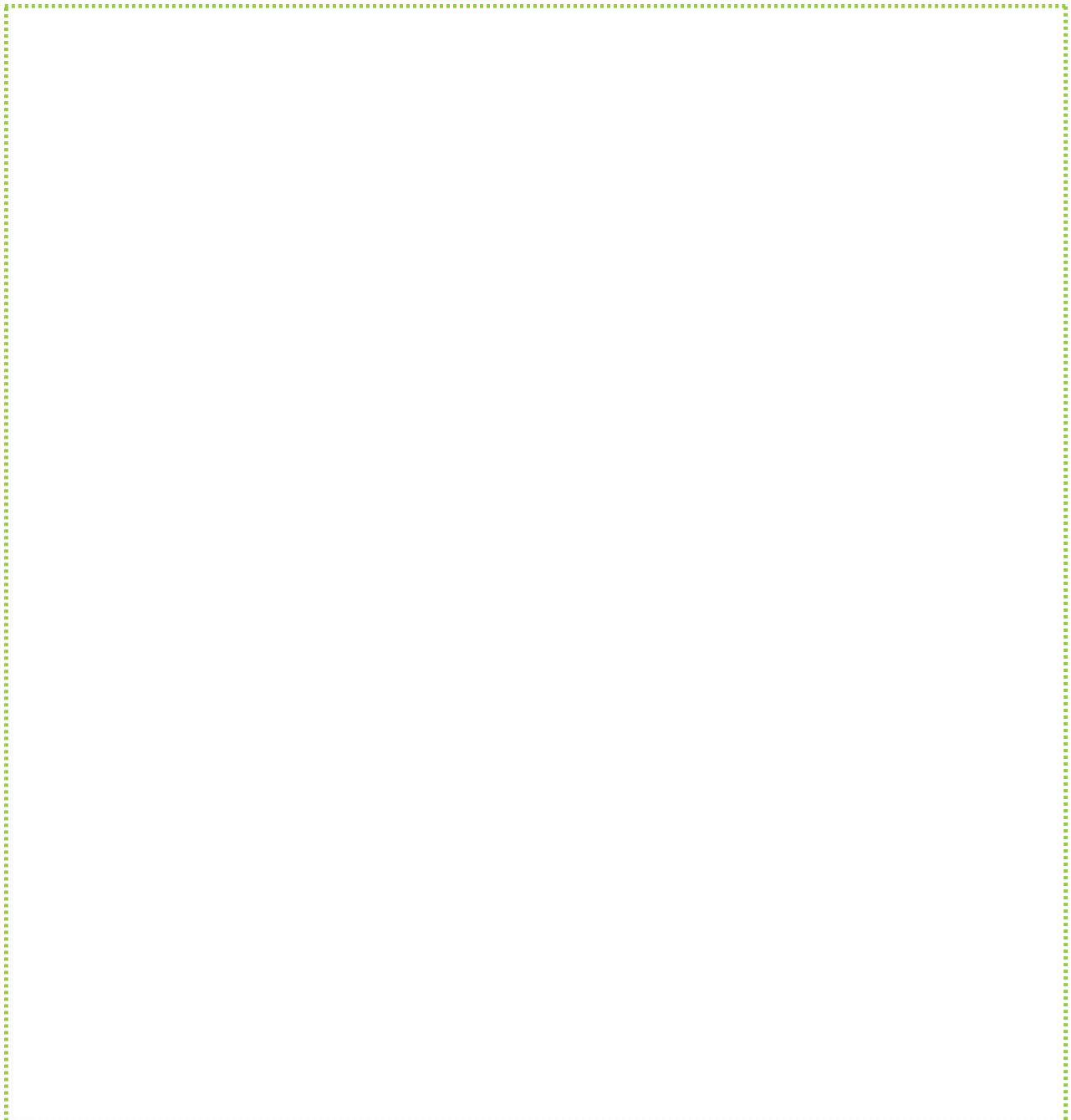
A public urban space with fruit trees open for community use.

MY URBAN FARM

ADD DIFFERENT
VEGETABLES, FRUITS,
ANIMALS AND PEOPLE
TO YOUR PICTURE.

INSTRUCTIONS:

DRAW YOUR DREAM URBAN FARM. THINK ABOUT WHAT GROWS AND LIVES THERE. INCLUDE PLANTS, ANIMALS AND PEOPLE IN YOUR DRAWING. DON'T FORGET TO ADD AREAS WHERE CITY RESIDENTS CAN REST, PLAY, OR LEARN. WHEN YOU FINISH, GIVE YOUR FARM A NAME.



NAME OF MY FARM: _____

1.3

Locally Produced Food

GENERAL DEFINITION (Ministry of Agriculture, Forestry and Food of Slovenia):

Locally produced food is food that is grown, processed, and consumed close to the consumer – usually within the same region or country. It emphasises short food supply chains, which means less transport, greater freshness, and higher nutritional value. It also contributes to sustainable development by reducing the carbon footprint, supporting local farmers, and promoting food security within the community.

BY AGE GROUPS:

1. Ages 6–8:



Locally produced food is food that grows or is made near where we live. This means that apples, milk and meat come from nearby farms, not from another country. Such food is fresher, healthier, and helps local farmers earn a living.

2. Ages 9–11:



Locally produced food is food that comes from places close to our home rather than from far away. Because it doesn't travel long distances, it stays fresher and more nutritious, doesn't need as many preservatives, and pollutes the environment less. By buying local food, we also support farmers in our community, helping them earn a fair income.

3. Ages 12–14:



Locally produced food is food that is grown, processed, and consumed within the same geographical area where we live. Short food supply chains reduce the environmental impact of transport, improve food security, and support sustainable development. Local food is usually tastier, fresher, and richer in vitamins and minerals than imported food.



LEARNING MATERIALS:

Material 1: Artificial Intelligence

Students observe images generated using an AI tool such as ChatGPT. Under each image, they describe what they see and explain whether they think the scene could exist in real life – and why or why not. Afterwards, they compare answers with classmates.

As homework, students imagine something impossible related to food production and write a prompt for the AI tool to generate an image. They then present the image to their classmates and discuss the result.

Material 2: Where Does Our Food Come From?

Students bring one packaged food item from home in its original packaging. Teachers show them where to find the product label and how to identify the country of origin. Each student reads the label and estimates how far their food has travelled to reach the country where they live.

It is important that students learn to recognise what AI tools can and cannot do. These systems are based on advanced machine learning models that learn from vast amounts of text and data – which may include inaccurate information. Artificial intelligence is not all-knowing; it learns from patterns rather than personal experience.

TEACHERS SHOULD EXPLAIN THAT AI-GENERATED IMAGES ARE THE RESULT OF PROBABILITY-BASED MODELLING, REAL-LIFE EXPERIENCE.



Artificial Intelligence

Homework:

Think of something impossible related to food production. Give an AI tool a prompt to create an image based on your idea. Show your image to your classmates at school and compare your images.

Instructions:

The pictures below were generated using the artificial intelligence tool ChatGPT. Observe them carefully. Under each picture, write what it shows and explain why you think what's happening in it is (im)possible. Compare your answers with a classmate. Do you share the same opinion?

In the picture, there is:



In the picture, there is:



In the picture, there is:

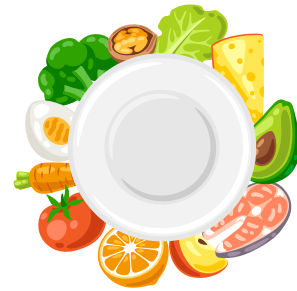


Name: _____

Date: _____

Where Does the Food We Eat Come From?

Answer the following questions about the food item you brought to school today.



1 My food item is:

2 Country of origin (check the label):

3 How do you think it travelled to our country?

4 How long do you think it took to reach our country?

5 Could this food be produced locally? Why or why not?

6 What do you think would be different if this food were produced locally?

1.4

Food Self-Sufficiency

GENERAL DEFINITION (Ministry of Agriculture, Forestry and Food of Slovenia):

Food self-sufficiency is the ratio between domestic food production and domestic food consumption. A 100% self-sufficiency rate means that a country can meet all of its food needs through its own production.

BY AGE GROUPS:

1. Ages 6–8:



Food self-sufficiency means that we can produce enough food in our country – in gardens, fields, or on farms – so we don't need to buy it from other countries.

2. Ages 9–11:



Food self-sufficiency means that a country produces enough food for its population. A 100% self-sufficiency rate means that all the food people eat can be grown locally without importing it from other countries.

3. Ages 12–14:



Food self-sufficiency shows how much food is produced within a country compared to how much is consumed. A 100% self-sufficiency rate means that domestic production fully meets the food needs of the population so imports are not necessary.

LEARNING MATERIALS:

Material 1: Homegrown or Imported?

Students sort images of different foods into two categories – domestic and imported. They discuss why some foods are more often produced locally while others are mostly imported.

Material 2: Local Food Basket

Students draw or paint a National Food Basket, including fruits, vegetables, and other foods that are grown or produced in their own country. They reflect on traditional dishes and their role in shaping cultural identity.



Homegrown or Imported?

ACTIVITY IDEAS:

- Each student receives one card and decides whether the food item can be locally produced or is usually imported.
- Students identify which foods they commonly use at home when preparing meals.
- In groups, students sort the foods into two categories – local and imported – and discuss why some are more often locally produced while others are imported.
- Students draw additional foods of their choice in the empty boxes.



Mango



Buckwheat



Salmon



Pineapple



Rice



Bananas



Tuna



Avocado



Homegrown or Imported?



Coffee



Tomatoes



Corn



Potatoes



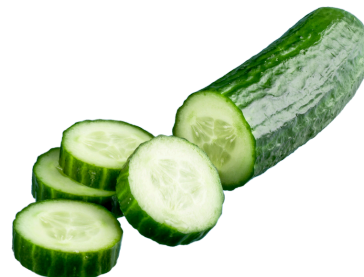
Apple



Milk



Cottage Cheese



Cucumber

Homegrown or Imported?



Beans



Ginger



Trout



Chicken Meat



Honey



Onion



Pumpkin Seed Oil



Chickpeas

Homegrown or Imported?



Millet Grains



Bread



Eggs



Polenta



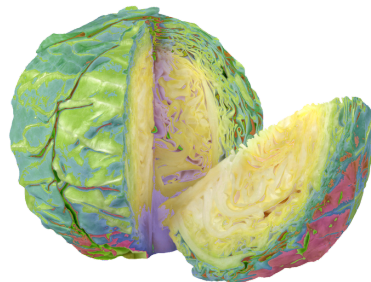
Soy Sauce



Cashews



Walnuts



Cabbage

Homegrown or Imported?

LOCAL FOOD BASKET

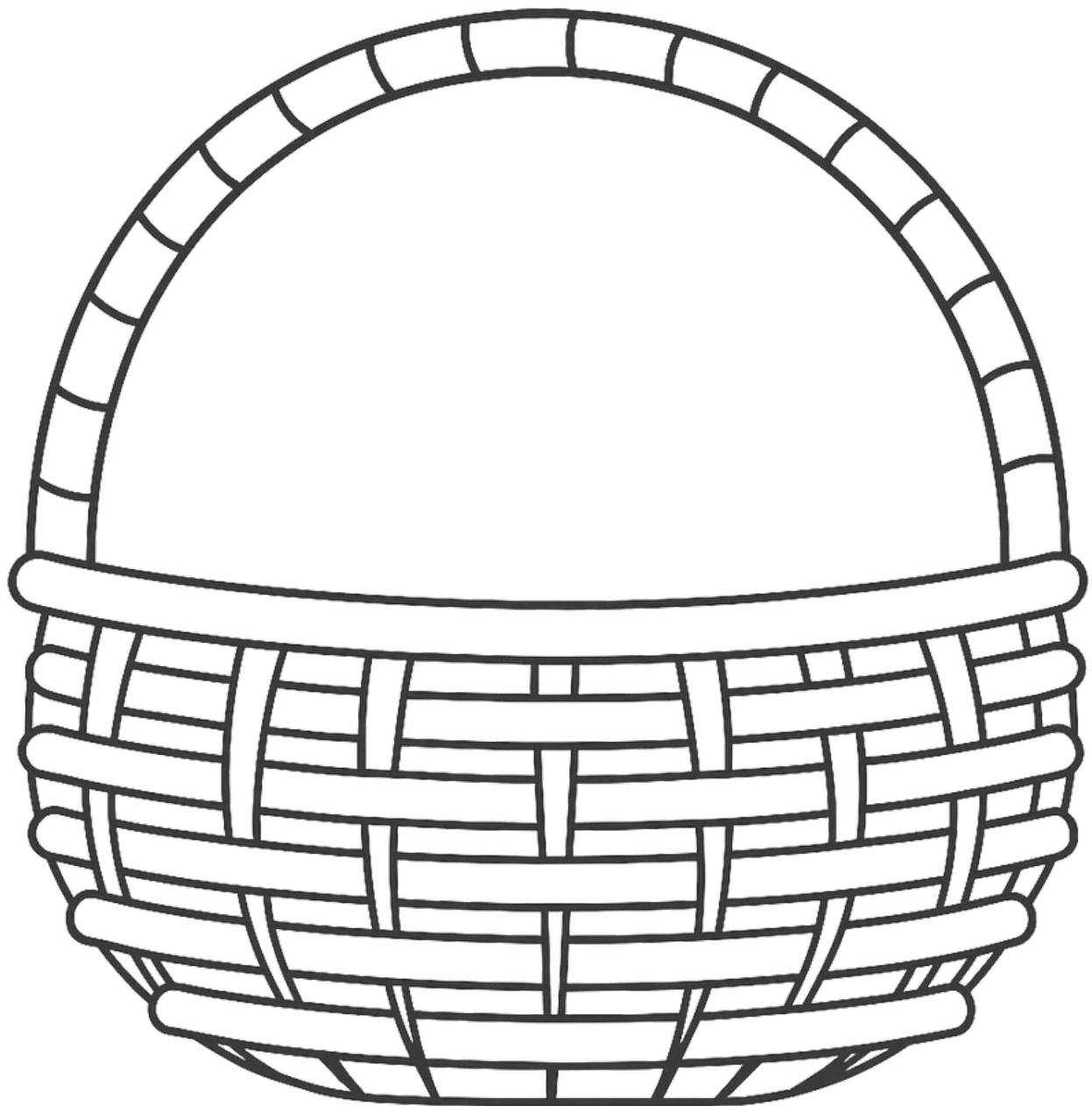
NAME:

CLASS:

DATE:

INSTRUCTIONS:

DRAW FRUITS AND VEGETABLES THAT CAN BE GROWN IN YOUR COUNTRY INSIDE THE BASKET. YOU MAY ALSO ADD CHEESE, SALAMI, BREAD, YOGURT, HONEY, EGGS, OR OTHER LOCALLY PRODUCED FOODS FROM YOUR REGION.



Thematic Modules

This section presents a collection of educational materials organised into six thematic modules, designed to help teachers address key sustainability topics through activities connected to the school garden.

THEMATIC MODULES:

Module 1: Food Self-Sufficiency

Module 2: Environment and Biodiversity

Module 3: Waste Reduction and Circular Economy

Module 4: Developing Social Skills

Module 5: Sustainable Mobility

Module 6: Energy

Each module contains clear learning objectives, suggested activities with possible extensions, and ready-to-use materials that teachers can implement in the classroom or in the school garden.

The materials are marked according to recommended age groups (6–8, 9–11, and 12–14 years). These markings serve only as guidance, and teachers can freely adapt the activities depending on students' age, prior knowledge, interests, the season, and the possibilities of the school environment.



First age group (ages 6–8)



Second age group (ages 9–11)



Third age group (ages 12–14)

2.1

Food Self-Sufficiency

The materials help teachers introduce the concept of food self-sufficiency through practical activities connected to the school garden.

Food self-sufficiency is an important part of sustainable development. Through this topic, students learn where food comes from, understand the importance of local and seasonal production, and recognise how food choices influence the environment and community resilience.

**Age group 6–8**

Students explore the basic connection between growing and eating food. Activities focus on observation, sensory exploration, and simple gardening tasks, such as following the journey from seed to food, sensory food games, and discussions about food waste.

**Age group 9–11**

Students investigate where food comes from and how it reaches their plates. Activities include mapping food journeys, creating seasonal food calendars, comparing local and imported food, and designing simple zero-waste recipes.

**Age group 12–14**

Students critically examine food systems and their environmental impact. Activities encourage analysis and creative solutions, such as designing edible spaces around the school, calculating the carbon footprint of meals, analysing food trends, and developing ideas for more sustainable food practices in their school or community.

Module 1: Food Self-Sufficiency – LEARNING EXPERIENCES

Age group 6–8



From Seed to Sandwich

- Picture journal
- Drawing, cutting, linking
- What can we do with leftovers?

Grumpy the Food-Waster

- Story-based activity
- Educational game
- Food waste awareness



Age group 9–11



Taste Investigation

- Local vs. imported foods
- Food tasting
- Research worksheet

Age group 12–14



A Meal with a Footprint

- Carbon footprint
- Worksheet
- Imported foods





From Seed to Sandwich

TEACHER PREPARATION

Print the worksheets and begin with a discussion about sandwiches and their ingredients. Encourage students to think about where food comes from, how it is produced (home gardens, farms, greenhouses), and whether ingredients are local or transported from far away.

ACTIVITY

Students complete the worksheets and create a visual diary of a sandwich – drawing, photographing, or arranging pictures that show the journey of ingredients from production to the plate. They connect foods with their place of origin and arrange the steps in the correct order.

Students understand where food comes from, recognise the processes behind food production, and reflect on the importance of local food and self-sufficiency.

REFLECTION QUESTIONS

Can you make a sandwich using only local ingredients?

Which professions were involved in the process “from seed to plate”?

EXTENSION ACTIVITIES

Organize an exhibition of students’ “sandwich projects.”

Encourage students to explain the concept of a local sandwich to their families.

NOTES FOR TEACHERS

Some foods may have more than one correct origin. The goal of the activity is to encourage discussion about the journey of food from producer to plate, rather than to find a single correct answer.

MY SANDWICH: PLANT OBSERVATION – VISUAL DIARY

NAME:

CLASS:

DATE:



MY PLANT IS CALLED:

DRAW OR ATTACH PHOTOS TO SHOW HOW YOUR PLANT GROWS. OBSERVE IT EACH WEEK AND UPDATE YOUR DIARY WITH NEW DRAWINGS OR NOTES.

WEEK	DRAW OR ADD A PHOTO	WHAT DID YOU NOTICE?
		
		
		
		



STEPS: FROM SEED TO SANDWICH

NAME:

CLASS:

DATE:

CUT OUT THE PICTURES AND **STICK** THEM IN THE CORRECT ORDER.

1.



2.



3.



4.



5.



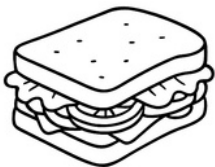
1.



2.



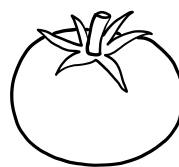
3.



SANDWICH



SEED



CROP



GROWTH



SEEDLING

CONNECT THE DOTS FROM 1 TO 20.

What picture do you see?

When you're done, color it in!





WHERE DOES FOOD COME FROM?

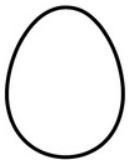
MATCH EACH FOOD ITEM TO ITS PLACE OF PRODUCTION OR PROCESSING.



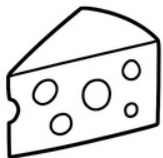
TOMATO



TUNA



EGGS



CHEESE



HERBS



PEPPER



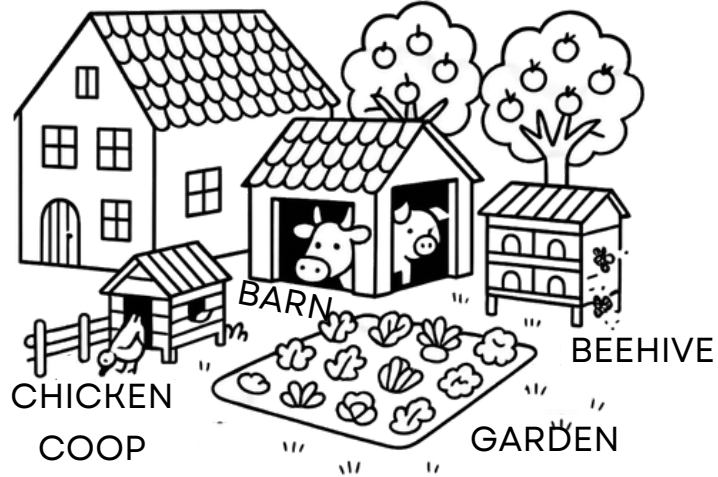
YOGURT

BAKERY



FARM

ORCHARD



BARN

CHICKEN
COOP

BEEHIVE

GARDEN

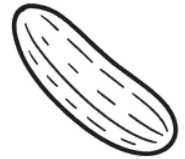


DAIRY

FACTORY



SEA



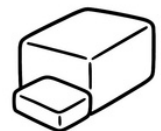
CUCUMBER



HAM



BREAD



BUTTER



APPLE



CABBAGE



HONEY



DRAW YOUR SANDWICH

NAME:

CLASS:

DATE:

YOU'VE MADE YOUR OWN SANDWICH!

DRAW IT AND WRITE WHAT'S INSIDE (OR LABEL IT).

NAME OF MY SANDWICH:

MY SANDWICH **DRAWING**:



INGREDIENTS INSIDE:



MY SANDWICH TASTE TEST

NAME:

CLASS:

DATE:



CIRCLE WHAT APPLIES TO YOUR SANDWICH AND **COMPLETE** THE SENTENCES.



MY SANDWICH CRUNCHES BECAUSE OF:



LETTUCE



CUCUMBER



CARROT



CABBAGE

NOTHING



RADISH



BREAD



PEPPER

OTHER:



MY SANDWICH SMELLS LIKE:



MY SANDWICH HAS COLORS:



RED



ORANGE



YELLOW



GREEN



BROWN



WHITE

OTHER: OTHER:



I LIKE IT BECAUSE:



WHAT DID I DO WITH MY LEFTOVERS?

NAME:

CLASS:

DATE:

WHAT DID YOU DO WITH THE PEELS, INEDIBLE PLANT PARTS, OR LEFTOVER BITS OF YOUR SANDWICH? DRAW OR WRITE YOUR ANSWER.





Grumpy the Food-Waster

PREPARATION FOR TEACHERS

Prepare picture cards (e.g., foods, professions, transport, natural resources, packaging) and a large “waste bin poster” divided into several sections.

ACTIVITY

Start by reading the story Grumpy the Food-Waster, about a child who refuses food until he learns how many resources and people are involved in bringing food to the table. After the story, students discuss the hidden resources behind food and how food waste affects the environment. In small groups, students draw picture cards and place them in the correct section on the waste bin poster (e.g., water, farmer, transport). They explain their choices and discuss how all these elements are wasted when food is thrown away.

Students understand that food production requires natural resources, work, and transport, and reflect on how they can reduce food waste.

REFLECTION QUESTIONS

Do you sometimes behave like Grumpy the Food-Waster?

What happens to food after we throw it away?

EXTENSION ACTIVITIES

Students create posters about a chosen food item (e.g., apple, yogurt), illustrating everything needed for it to reach the table and what is wasted if the food is thrown away.





STORY: GRUMPY THE FOOD-WASTER

EVERY STORY USUALLY BEGINS SOMETHING LIKE THIS:

“ONCE UPON A TIIIIIME, FAR BEYOND THE HILLS AND ACROSS TEN RIVERS, THERE LIVED...” WELL, OUR STORY DOESN’T BEGIN LIKE THAT. NO, BECAUSE OUR MAIN CHARACTER IS STILL ALIVE TODAY. DON’T BELIEVE ME? THEN LET ME ASK YOU SOMETHING – BUT PROMISE TO TELL THE TRUTH, OKAY? WHEN YOU GET A BOWL OF BROCCOLI, CAULIFLOWER, AND CARROT SOUP AT SCHOOL, WHAT DO YOU SAY? IF YOU WRINKLE YOUR NOSE, TWIST YOUR MOUTH INTO A FROWN, AND SAY “EWWW!”, THEN A VERY SPECIAL LITTLE CREATURE IS AT WORK. YOU DON’T BELIEVE ME? LET ME INTRODUCE YOU TO GRUMPY THE FOOD-WASTER.

GRUMPY’S BIGGEST TALENT IS COMPLAINING. MOST OF ALL, HE COMPLAINS ABOUT FOOD. IT DOESN’T MATTER WHAT IT LOOKS LIKE OR WHERE IT COMES FROM – HE TASTES IT, MAKES A FACE, AND THROWS IT AWAY. “I WON’T EAT THAT WRINKLY CARROT!” HE GROWLS. “IT MUST TASTE WEIRD!” “GIVE ME LOOOOOTS OF SOUP! OH, YUCK! THIS SOUP IS TOO GREEN! IF I EAT A PIECE OF BROCCOLI, I’LL PROBABLY GET PINK SPOTS ALL OVER MY FUR!”

ONE MORNING, WHEN GRUMPY WOKE UP AND STRETCHED – FROM THE TIP OF HIS TAIL TO THE CLAWS ON HIS PAWS – HE NOTICED SOMETHING STRANGE. INSTEAD OF A DELICIOUS BREAKFAST, A BIN FULL OF HALF-EATEN FOOD WAS WAITING FOR HIM. “HMMM,” HE THOUGHT WHILE DIGGING THROUGH THE LEFTOVERS, “WHO WOULD THROW AWAY A PERFECTLY GOOD PIECE OF BREAD?” “GRUMPY, THAT’S THE FOOD YOU THREW AWAY,” SAID HIS MOTHER GENTLY. “ME?!” HE ASKED IN SURPRISE. “YES,” SHE SAID. “HAVE YOU EVER THOUGHT ABOUT THAT? WHEN YOU THROW AWAY FOOD, YOU ALSO THROW AWAY THE HARD WORK OF FARMERS WHO SOWED THE SEEDS AND WATERED THEM. YOU WASTE ALL THE FUEL USED TO BRING THE FOOD TO THE SHOP. AND YOU WASTE THE TIME I SPENT PREPARING A TASTY, HEALTHY MEAL FOR YOU.” GRUMPY’S EYES GREW WIDE. “I NEVER THOUGHT ABOUT THAT,” HE ADMITTED. “I PROMISE I’LL TRY TO GIVE FOOD A CHANCE – EVEN THE FOODS I DIDN’T LIKE BEFORE. AND I’LL ONLY TAKE AS MUCH AS I CAN EAT.”





OF COURSE, THAT DAY GRUMPY STILL GRUMBLED – ABOUT HIS COLORFUL SOCKS, THE MINTY SMELL OF HIS TOOTHPASTE, AND THE SUN SETTING TOO EARLY. BUT WHEN HE LAY IN BED THAT NIGHT, HE COULDN'T STOP THINKING ABOUT WHAT HIS MOTHER HAD SAID. “FARMERS, WATER, FERTILIZER, FUEL, SHOPS, MOM ... BY THREE CURLY PIGTAILS! I NEED TO FIND OUT IF SHE'S RIGHT.”

“HEY, YOU – YES, YOU – STILL SITTING THERE, NOT ASLEEP YET! I'M LOOKING FOR THE SMARTEST RESEARCHERS, THE MOST CURIOUS DETECTIVES, AND THE BRAVEST HEROES. IS THAT YOU? WILL YOU HELP ME FIND OUT IF MOM WAS RIGHT – AND WHETHER THROWING FOOD AWAY WASTES ALL THAT TOO? SHHH... SO SHE DOESN'T HEAR US. COME ON – LET'S PLAY A GAME TOGETHER! LISTEN CAREFULLY TO THE INSTRUCTIONS AND RULES...”

(AUTHOR: TINA HRIBAR)





Game Rules (Teacher's Instructions)

PREPARATION FOR TEACHERS

1. Divide students into groups of four (or adjust group size depending on the total number of participants).
2. Each group receives: one Grumpy's Waste Bin poster with colored sections, a set of 24 cards, and a copy of the game rules.
3. Shuffle the cards thoroughly and place them face down (you can also put them into small bags or envelopes for drawing).
4. Encourage students to observe Grumpy's Waste Bin carefully. It shows the food that Grumpy the Food-Waster threw away. The bin is divided into six color-coded zones, each marked with an icon that represents the type of card that belongs there.

The Six Color Zones Represent:

- **Fruit and Vegetables** (cards: broccoli, carrots, bananas, apples),
- **Dairy and Meat Products** (cards: salami, chicken drumstick, cheese, butter),
- **Professions** (cards: cook, farmer, driver, shopkeeper),
- **Natural Resources** (cards: soil, water, fertilizer, fuel),
- **Packaging** (cards: glass jar, milk carton, yogurt cup, sardine can),
- **Transport** (cards: tractor, ship, car, truck).

STEP-BY-STEP GUIDE

1. The first player draws a card, looks at the picture, and decides which color zone it belongs to on Grumpy's Waste Bin. The next player continues by drawing a new card and placing it in the correct zone. The goal is for the group to sort all 24 cards into six categories. After the game discuss with students: What did they learn? How can they reduce food waste at home or at school?

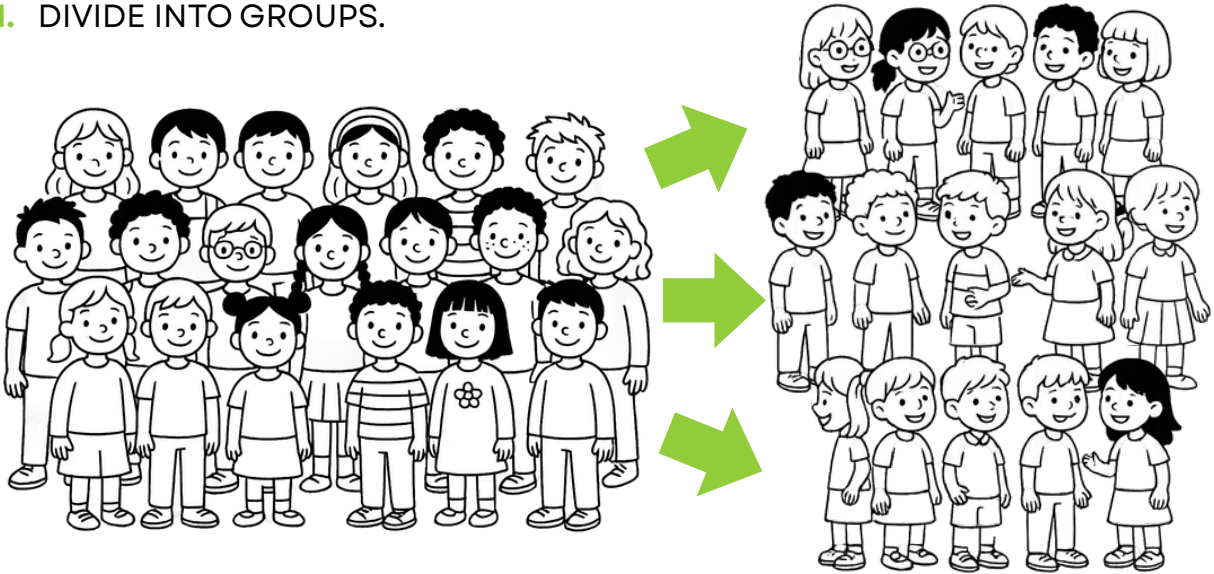
EXTENSION ACTIVITIES

1. For an advanced version of the game: Keep the cards face down, the first student draws a card, looks at the image, and says a sentence about it before placing it in the correct zone. The next player draws a new card and continues the story by explaining how their image connects to the previous one.

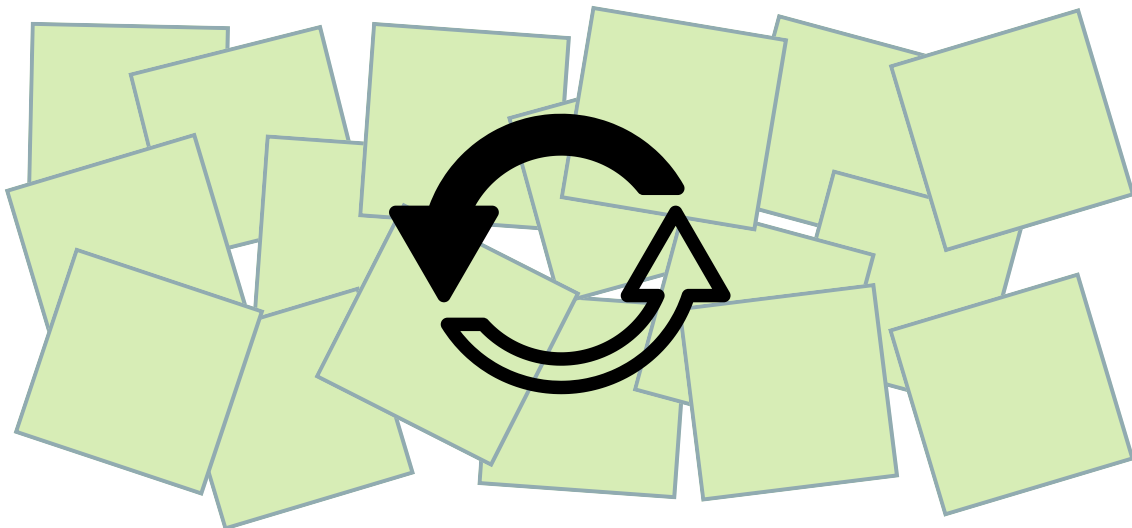


GAME RULES FOR STUDENTS

1. DIVIDE INTO GROUPS.



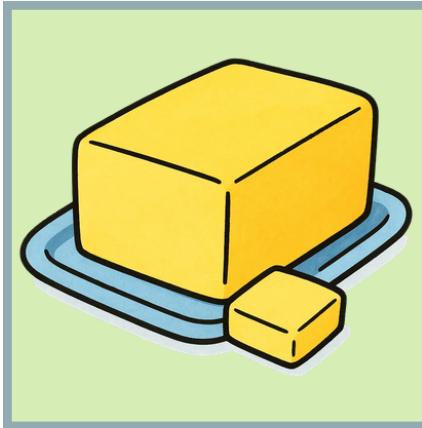
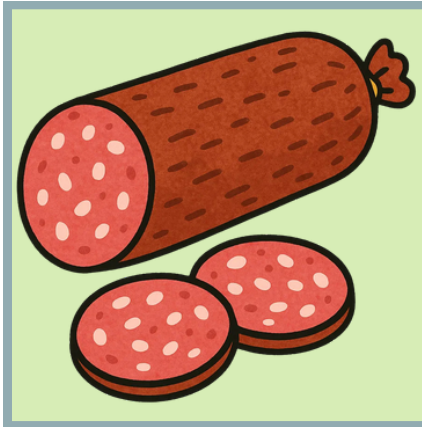
2. TURN ALL THE CARDS FACE DOWN AND SHUFFLE THEM WELL.



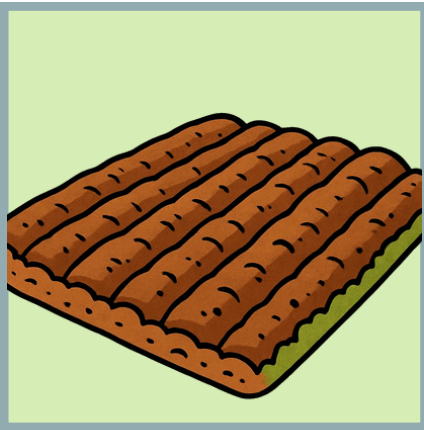
3. THE FIRST PLAYER DRAWS ONE CARD, LOOKS AT THE PICTURE, AND PLACES IT IN THE CORRECT COLORED SECTION OF GRUMPY'S WASTE BIN.



PLAYING CARDS

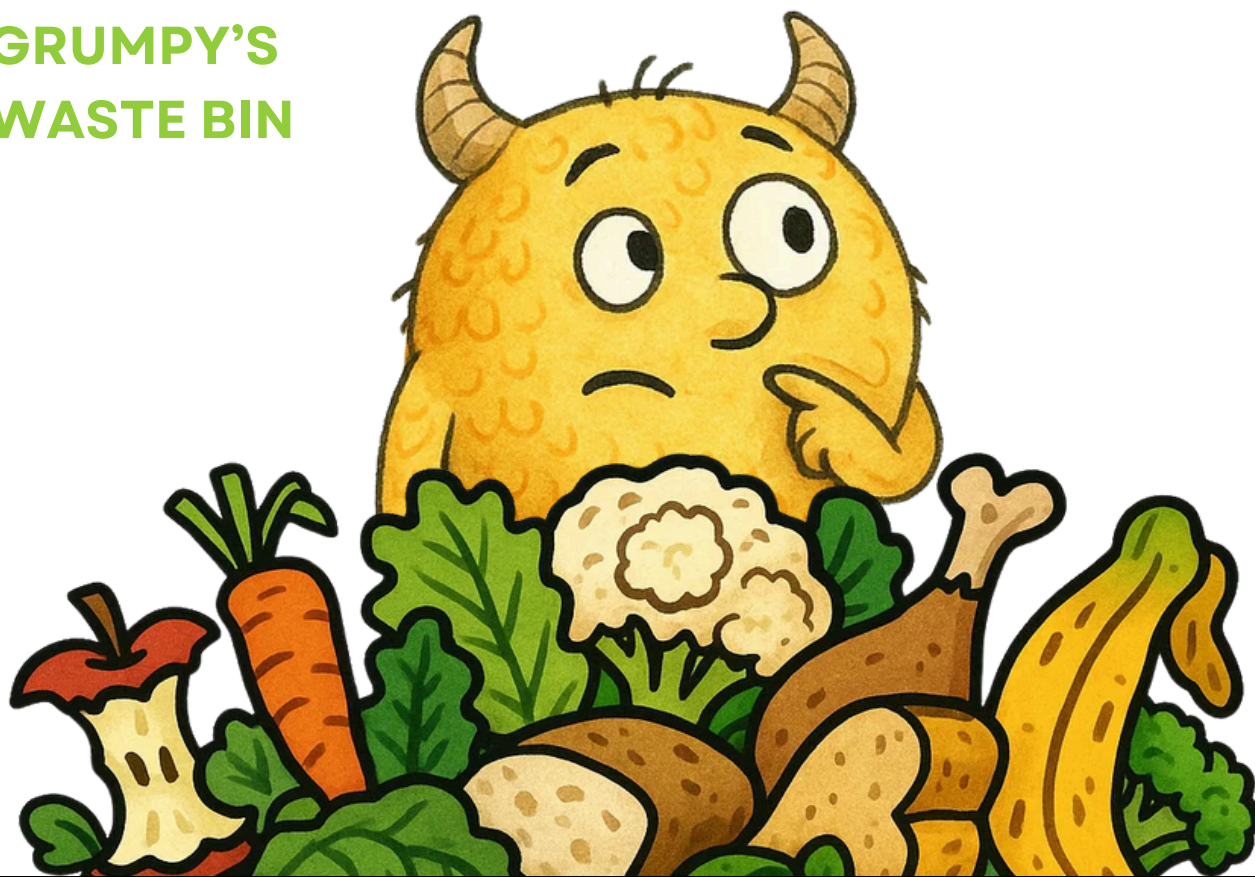


PLAYING CARDS





GRUMPY'S WASTE BIN



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How to Make “Grumpy’s Waste Bin”

You can print it on A5 paper and laminate it for durability.

If you want a larger version, draw it on poster paper or cardboard.

Use six different colors to create the sections and decorate each with relevant images – cut from magazines or draw them yourself:

- Green Zone: fruit and vegetables
- Blue Zone: dairy and meat products
- Pink Zone: food-related professions
- Orange Zone: transport and food-processing vehicles
- Red Zone: natural resources used for growing food
- Purple Zone: packaging materials

Adjust the size of the cards to match your waste bin layout. Laminating the printed cards will make them reusable for future classes.





Taste Investigation

PREPARATION FOR TEACHERS

Prepare pairs of food samples for comparison (e.g., local vs. industrially produced apples, bread, yogurt, tomatoes, or cheese). Label samples for a blind tasting and prepare evaluation worksheets.

ACTIVITY

Students taste two versions of the same food in pairs or small groups. They record their observations (appearance, smell, taste) and guess which product is local and which is industrially produced.

After the tasting, the teacher reveals the origin of each sample and leads a discussion about differences in taste, texture, quality, and production methods.

Students develop awareness of the differences between local and industrially produced food and reflect on the benefits of local, seasonal products.

REFLECTION QUESTIONS

Why do locally produced foods often taste different?

What are the benefits of choosing local food?

How can we recognise high-quality food?

EXTENSION ACTIVITIES

Students prepare a short report, poster, or infographic about their findings.

Prepare a simple seasonal meal using local ingredients.

Connect the activity with foods grown in the school garden.



Taste Investigation

WORKSHEET

Date:

Class:

Name:



Taste the prepared foods and complete the worksheet.



FOOD (WRITE THE NAME)	HOW DOES IT LOOK?	HOW DOES IT SMELL?	HOW DOES IT TASTE?	WHICH ONE DO YOU PREFER? WHY?	WHICH ONE DO YOU THINK IS LOCAL?
A					
B					
C					
D					
E					
F					
G					
H					



Meal with a Footprint: How Much CO₂ Do We Eat?

TEACHER PREPARATION

Briefly introduce the concept of the food carbon footprint and explain how food production contributes to greenhouse gas emissions. Prepare examples of meals and provide links to online carbon footprint calculators.

ACTIVITY

Students work in small groups and choose a common meal (e.g., pasta, pizza, sandwich). They break it down into key ingredients and explore their origin and transport distance. Using online tools, they estimate the carbon footprint of the ingredients and redesign the meal to make it more sustainable (e.g., using local, seasonal, or plant-based alternatives). Each group presents the original and improved version of the meal, including estimated emissions and practical tips for reducing the environmental impact of food.

Students understand how everyday food choices influence carbon emissions and learn how to design more sustainable meals.

USEFUL SOURCES AND CALCULATORS:

- *BBC Climate Food Calculator*
- *Environmental Footprints*
- *Carbon footprint*



REFLECTION QUESTIONS

What local alternatives could replace imported foods?

How does transport influence the environmental impact of food?

EXTENSION ACTIVITIES

Organise an exhibition of “before and after” sustainable meal ideas.

Meal with a Footprint

WORKSHEET

Group members:

Class:

Date:



Name of the dish



Ingredients



Ingredient 2



Estimated CO₂ footprint (per kg):

Local or imported?

Country of origin:

Ingredient 3



Estimated CO₂ footprint:

Local or imported?

Country of origin:

Ingredient 1



Estimated CO₂ footprint:

Local or imported?

Country of origin:

Ingredient 4



Estimated CO₂ footprint:

Local or imported?

Country of origin:

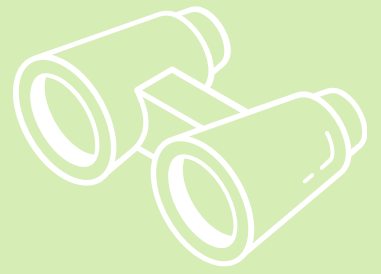
Total CO₂ footprint (approximate):

More sustainable version (ingredient swaps, new recipe idea, etc.):



Further Exploration

- *Urban school garden, a teacher's guide*
- *Gardening Etiquette*
- *Gardening Journal*
- *Simple Steps to Self-Sufficiency*
- *Food for Life*



2.2

Environment and Biodiversity

The materials help teachers introduce the concepts of biodiversity, ecosystems, and environmental responsibility through practical activities connected to the school garden.

Urban school gardens are important spaces for learning about biodiversity. Through observation and hands-on activities, students discover how plants, animals, soil organisms, and humans are interconnected, and how protecting biodiversity contributes to a healthy environment.



Age group 6–8

Students develop a basic connection with nature through observation and play. Activities include exploring plants and animals in the school garden, drawing or modelling garden organisms, planting flowers for pollinators, and solving simple biodiversity-themed puzzles and tasks.



Age group 9–11

Students explore relationships between living organisms and learn about garden ecosystems. Activities include investigating food chains, observing animals in the garden, building insect hotels, and preparing posters or presentations about plants and animals found in the school garden.



Age group 12–14

Students analyse the role of biodiversity and the impact of human activities on ecosystems. Activities include conducting species surveys in the school garden, creating habitats for wildlife, designing pollinator-friendly spaces, and researching the life cycles of plants and animals.

Module 2: Environment and Biodiversity – LEARNING EXPERIENCES

51

Ages 6–8



Biodiversity Thinking Tasks

- Counting and basic maths
- Letter grid and word search puzzle
- Coloring activity

Ages 9–11



Animals in Our School Garden

- Worksheet
- Observation
- Pair and group work

Ages 9–14



Food Chains in the School Garden

- Animal and plant cards
- Producer – Consumer – Decomposer classification
- Group activity

Ages 12–14



Animal Survey in the School Garden

- Worksheet
- Interconnectedness of living organisms
- Poster or infographic creation





Biodiversity Thinking Tasks

TEACHER PREPARATION

Prepare a set of simple activities that help students explore biodiversity in the school garden (e.g., counting plants and animals, word-search puzzles with biodiversity terms, or identifying and colouring garden organisms).

ACTIVITY

Students complete the tasks individually, in pairs, or at learning stations. The activities encourage observation, logical thinking, creativity, and basic maths skills.

After completing the tasks, discuss together what students discovered about biodiversity and why a variety of species is important for a healthy garden ecosystem. For some activities (e.g., word search), students can also go outside and try to find the plants and animals in the school garden.

Students become familiar with different species in the garden and understand the importance of biodiversity and coexistence in ecosystems.

REFLECTION QUESTIONS

Why is it important for different species to coexist in the garden?

What would happen if only one type of plant or animal lived there?

EXTENSION ACTIVITIES

Create a class poster showing plants and animals students would like to see in the school garden.

Keep a simple “Biodiversity Journal” with drawings, photos, and notes about observed species.

NAME:

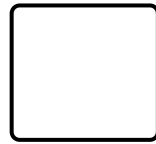
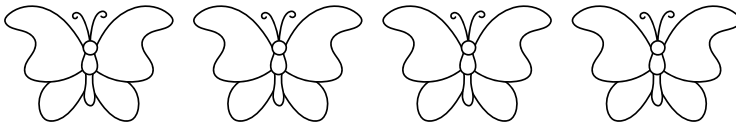
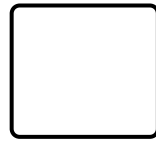
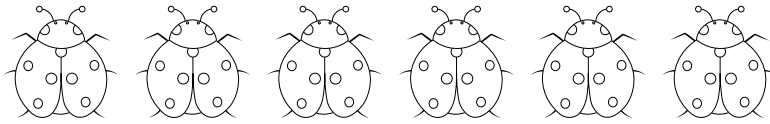
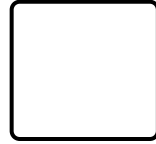
CLASS:

DATE:



COUNT AND CALCULATE

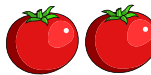
**COUNT THE ANIMALS YOU CAN FIND IN THE SCHOOL GARDEN.
DO YOU KNOW THEM? COLOR THEM IN!**



**WRITE A MATHS PROBLEM, SOLVE IT, AND NAME THE
VEGETABLE.**







 $5 - 2 = 3$

TOMATO

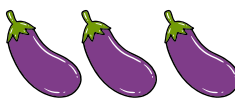


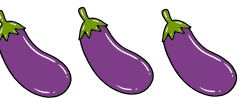


















NAME: _____

CLASS: _____

DATE: _____



FIND **THE WORDS**



FIND 10 WORDS RELATED TO **BIODIVERSITY** IN THE SCHOOL GARDEN.

WORDS YOU FOUND: _____

G	T	B	E	E	T	S	T
A	M	C	N	H	O	N	N
R	R	O	S	T	M	A	I
D	G	U	L	C	A	I	M
E	B	K	G	E	T	L	A
N	S	E	E	D	O	E	N
B	L	O	S	S	O	M	T

GO TO YOUR
SCHOOL GARDEN
AND FIND THE
PLANTS AND
ANIMALS YOU HAVE
DISCOVERED
IN THE GRID. CAN
YOU FIND THEM
ALL?

ANSWERS: BEE, GARDEN, TOMATO, BLOSSOM, SEED, ANT, SNAIL, BUSH, MINT, MOLE

NAME: _____

CLASS: _____

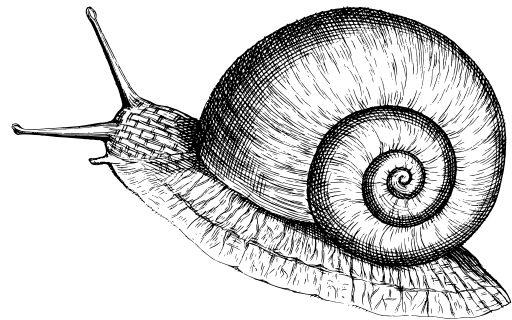
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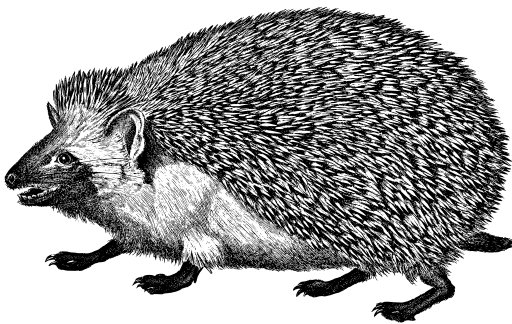


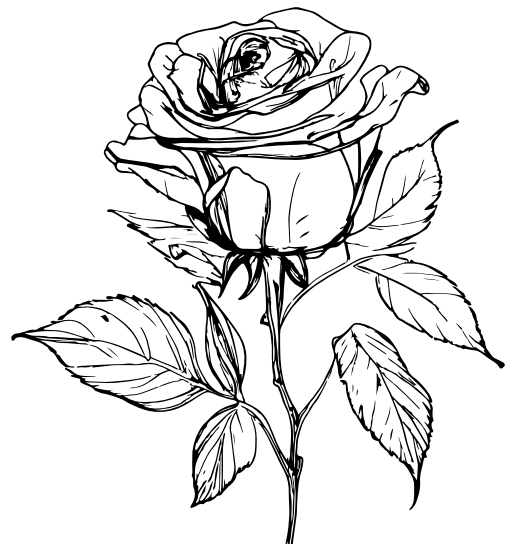
NAME AND COLOR

NAME THE ANIMALS AND PLANTS IN THE PICTURES AND COLOR THEM IN.











Animals in Our School Garden

TEACHER PREPARATION

Prepare worksheets with pictures of animals commonly found in the school garden and provide simple observation tools (e.g., magnifying glasses, notebooks). Before the activity, explain the rules for safe and respectful observation of animals.

ACTIVITY

Students work in pairs or small groups and explore the school garden, looking for animals that match the pictures on their worksheets. When they find one, they record its name; if they observe a new species, they can draw or photograph it. Back in the classroom, students review their findings and discuss the roles animals play in the garden ecosystem (e.g., pollinators, decomposers, natural pest control).

Students learn to observe and identify animals in the school garden and understand their role in maintaining a balanced ecosystem.

REFLECTION QUESTIONS

Which animal did you see for the first time today?

Why are some animals harder to find?

How do animals help the garden ecosystem?

EXTENSION ACTIVITIES

Create posters or presentations about animals found in the school garden.

Build simple garden features that attract wildlife (insect hotels, bird feeders, flowering plants).

Keep a seasonal “School Garden Animals Calendar” to track which species appear throughout the year.

Name: _____

Class: _____

Date: _____



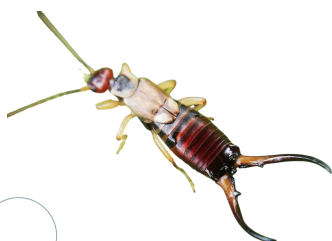
Animals in Our School Garden

Find the animals in the pictures in your school garden. When you **spot** one, **tick it** and **write down** its name.



bee





Find the animals in the pictures in your school garden. When you spot one, tick it and write down its name.



Find the animals in the pictures in your school garden. When you spot one, tick it and write down its name.



A light blue circle and a dashed green rectangle.	A light blue circle and a dashed green rectangle.	A light blue circle and a dashed green rectangle.
A light blue circle and a dashed green rectangle.	A light blue circle and a dashed green rectangle.	A light blue circle and a dashed green rectangle.
A light blue circle and a dashed green rectangle.	A light blue circle and a dashed green rectangle.	A light blue circle and a dashed green rectangle.
A light blue circle and a dashed green rectangle.	A light blue circle and a dashed green rectangle.	A light blue circle and a dashed green rectangle.



Draw and label any additional animals you discovered in the school garden.



Food Chains in the School Garden

TEACHER PREPARATION

Prepare picture cards of plants and animals commonly found in the school garden (e.g., lettuce, earthworm, snail, ladybird, bird). Cards can also include simple information about each organism's role in the food chain.

ACTIVITY

Students work in small groups and build a food chain using the cards, starting with a plant (producer) and adding consumers and decomposers. Each group creates a chain with at least three links and labels the role of each organism.

Groups then present their food chains and discuss how the organisms are connected within the garden ecosystem.

Students understand how producers, consumers, and decomposers interact and how food chains maintain balance in nature.

REFLECTION QUESTIONS

What ties together all parts of a food chain?

Why are decomposers essential for nature?

How would the disappearance of one link affect the others?

EXTENSION ACTIVITIES

Combine several food chains into a food web representing the school garden ecosystem.

Observe the real organisms outdoors and connect them to the created food chains.

Food Chains in the School Garden



Using the picture cards, **create as many food chains as possible** from the living organisms found in an urban school garden.



EARTHWORM



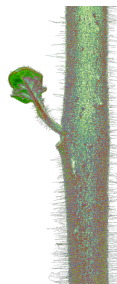
BLACKBIRD



FLOWER



LEAF



STEM



ROOTS



HEDGEHOG



LETTUCE



SNAIL



STRAWBERRY



GREAT TIT



SEED



APHID



BEE



SNAKE



LADYBUG



MOUSE



FROG



CARROT



FOX



VOLE



Animal Survey in the School Garden

TEACHER PREPARATION

Prepare a worksheet where students can record the animal name, animal class (e.g., bird, insect), and its role in the garden. Provide simple identification materials and observation tools if available.

ACTIVITY

Students explore the school garden individually, in pairs, or in small groups and record the animals they observe. If they cannot identify a species, they can draw or photograph it and identify it later with the teacher.

After the survey, students analyse their findings and create a poster or infographic of the garden ecosystem, showing relationships between species.

Students learn to observe biodiversity, classify animals, and understand their ecological roles in the garden ecosystem.

REFLECTION QUESTIONS

Which animal surprised you most today, and why?

Does every animal in the garden have an important role? Why or why not?

How can we ensure that the garden supports a diverse range of animals?

EXTENSION ACTIVITIES

Create a year-long record of garden animals and observe seasonal changes.

Connect the activity with food chain exploration or biodiversity monitoring.

Improve biodiversity by adding features such as insect hotels, bird feeders, or flowering plants.

SURVEY SHEET

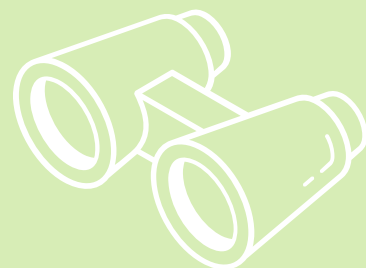
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Further Exploration

- **Urban school garden, a teacher's guide**
- ***Gardening Etiquette***
- ***Gardening Journal***
- ***Biodiversity in schools***
- *A guide to increasing biodiversity in your schools*
- *Teaching tools about biodiversity*



2.3

Waste Reduction and Circular Economy

The materials help teachers introduce the concepts of waste reduction, reuse, recycling, and circular economy through practical activities connected to the school garden.

School gardens provide an excellent environment for learning about responsible resource management. Students discover that many materials considered waste can become valuable resources again. Through composting, recycling, and creative reuse, students explore how natural cycles inspire more sustainable ways of using materials.



Age group 6–8

Students learn the basics of waste separation and reuse through simple and creative activities. Activities include sorting waste in the school garden, building insect hotels from natural and recycled materials, creating planters from plastic bottles, and finding new uses for everyday objects that would otherwise be thrown away.



Age group 9–11

Students explore how materials are used in the garden and how waste can be reduced. Activities include analysing materials used in gardening, building or maintaining a compost system, organising workshops for younger students, creating useful garden objects from discarded materials, and learning about recycling processes.



Age group 12–14

Students critically examine product life cycles and develop solutions based on circular economy principles. Activities include analysing the life cycle of garden products, designing innovative upcycled solutions for the school garden, creating action plans to reduce waste in school, and organising creative upcycling workshops.

Module 3: Waste Reduction and Circular Economy – LEARNING EXPERIENCES

Ages 6–8

Mini Planters

- Plastic bottles or milk cartons
- Decorating planters
- Sowing seeds



Ages 9–11

Waste Sorting

- Group work
- Chart or sorting table
- Waste classification



Ages 12–14

Circular Action Plan for the School Garden

- Group work
- Worksheet
- Action plan development





Mini Planters

TEACHER PREPARATION

Collect empty plastic bottles or milk/juice cartons and prepare simple materials for decorating and planting (soil, seeds, scissors, paints). Briefly discuss with students why plastic waste is an environmental challenge and how it can be reused creatively.

ACTIVITY

Students design and create mini planters from reused containers. They cut and decorate the bottles or cartons, add drainage holes, fill them with soil, and plant seeds (e.g., herbs or flowers). The finished planters are placed in a sunny classroom or garden space.

Students learn how everyday waste materials can be reused in practical and creative ways, while also caring for plants.

REFLECTION QUESTIONS

How long would a plastic bottle last in nature if we didn't reuse it?

Why is it important not to throw away bottles after one use?

Can you think of other ways to reuse bottles or cartons?

EXTENSION ACTIVITIES

Students keep a simple plant growth journal.

Organise a small exhibition of the planters.

Encourage students to create similar planters at home with their families.





Waste Sorting

TEACHER PREPARATION

Prepare a simple waste-sorting chart, examples of common waste items (or pictures), and a few bins or boxes to simulate sorting. Briefly introduce the basics of waste separation and composting.

ACTIVITY

Students sort different waste items into the correct bins (e.g., organic waste, paper, plastic). They mark which materials can be composted and discuss their choices together.

Students understand the importance of proper waste separation and learn which materials can be composted in the school garden.



REFLECTION QUESTIONS

What happens to waste when we dispose of it correctly?

What does “residual waste” mean?

Why must we be careful about what we put into compost?

EXTENSION ACTIVITIES

Create a poster with waste-sorting instructions for the school garden.

Using *Urban School Garden, a teacher's guide*, students build a compost bin.

Students encourage others (family or community) to sort waste properly.



WASTE SORTING

WORKSHEET

NAME:

CLASS:

DATE:



Mark the correct bin for each of the **waste items** listed below that you can find in the school garden or school kitchen. Write whether the item can be **composted**. **Add your own ideas** at the end.



WASTE ITEM	ORGANIC WASTE	PACKAGING	PAPER	GLASS	RESIDUAL WASTE	COMPOST (YES/NO)
Potato peels	X					yes
Weeds						
Fertilizer plastic bottle						
Wilted flowers						
Paper bag						
Bread leftovers						
Plastic bottle cap						
Salad leftovers						

WASTE SORTING

WORKSHEET

NAME:

CLASS:

DATE:



Mark the correct bin for each of the **waste items** listed below that you can find in the school garden or school kitchen. Write whether the item can be **composted**. **Add your own ideas** at the end.



WASTE ITEM	ORGANIC WASTE	PACKAGING	PAPER	GLASS	RESIDUAL WASTE	COMPOST (YES/NO)
Potato peels	X					yes
Eggshells						
Tea bags						
Tissue paper						
Meat leftovers						
Broken glass jar						
Rubber band						
Plastic bag						



Circular Action Plan for the School Garden

TEACHER PREPARATION

Divide students into groups and prepare simple planning worksheets, markers, and sticky notes. Briefly review the basic principles of the circular economy and responsible resource use.

ACTIVITY

Students analyse the current waste situation in the school garden and identify where waste occurs. In groups, they propose practical solutions (e.g., recycling bins, material reuse, reducing packaging).

Each group develops a Circular Action Plan describing what they want to improve, how they will do it, and who will be involved. The plans are then presented and discussed in class.

Students learn to identify environmental challenges and design practical solutions for reducing waste and improving sustainability in the school garden.

REFLECTION QUESTIONS

Which actions can we start this month?

Who can help us make these changes happen?

How will we know that our actions made a difference?

EXTENSION ACTIVITIES

Present the action plans to other classes or school staff.

Document progress through photos or short videos.

Share the ideas with parents or the local community.



CIRCULAR ACTION PLAN FOR THE SCHOOL GARDEN

WORKSHEET

GROUP NAME:

GROUP MEMBERS:

CLASS:

DATE:



TASK 1: Analyze where and what types of waste you notice in the school garden.



LOCATION	TYPE OF WASTE	DETAILED DESCRIPTION OF THE WASTE	CURRENT WASTE MANAGEMENT PRACTICES	HOW COULD IT BE IMPROVED
garden bed	packaging	plastic bag that contained soil	bags are thrown in the bin	Arrange for a local farmer to deliver soil in bulk (no packaging)
	organic waste			
		plastic pots used for seedlings		
classroom				

TASK 2: What do you think is the biggest problem with the current waste management situation? What could be improved?



TASK 3: Which actions could you take?

Tick (✓) one or more options.

☐

Reducing the amount of waste

☐

Reusing materials

☐

Sorting waste

☐

Student education

☐

Teacher education

☐

Cooperation with parents

☐

Cooperation with the local community

☐

Making useful items from waste

Explain your choice: How would you use the selected actions to improve circularity in the school garden?



TASK 4: Think and write down who could help you implement your Circular Action Plan. What would their roles be?



[illegible]

TASK 6: Give your Circular Action Plan a name.

Be as creative as possible! (Example: “Less Plastic, More Garden Magic!”)



TASK 7: How will you check whether you have achieved your goals?



TASK 8: CIRCULAR ACTION PLAN!

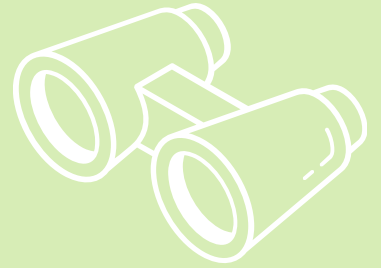
Based on everything you’ve written in the previous tasks – analysis of the current situation, proposed improvements, involvement of parents and the local community, planned actions, and the name of your plan; create your final Circular Action Plan. **Include** what you want to change and why, how you will implement it, who will help you, what resources you will need, how you expect it to go, how you will measure success. After carrying out your plan, don’t forget the **evaluation**: what worked best, where did you face the most challenges, what new things did you learn, what would you do differently next time, and how will you make sure your plan continues in the future?





Further Exploration

- ***Urban school garden, a teacher's guide***
- ***Gardening Etiquette***
- ***Gardening Journal***
- *The Food & Beverage Carton Alliance*
- *SITRA*
- ***EU Commission: Circular Economy***
- *The Circular Design Guide*
- *Ellen MacArthur Foundation*



2.4

Developing Social Skills

The materials help teachers develop cooperation, communication, responsibility, and conflict-resolution skills through practical activities connected to the school garden.

Urban school gardens are not only spaces for learning about plants and sustainability but also environments where students develop important social and interpersonal skills. Working together in the garden encourages teamwork, mutual respect, and a sense of community, while also strengthening connections between students, teachers, and the wider local community.



Age group 6–8

Students develop basic social skills such as sharing, cooperation, and listening. Activities include creating garden rules together, taking on simple garden roles (e.g., watering, harvesting), presenting plants through storytelling, and rotating responsibilities such as being the “garden keeper for a day.”



Age group 9–11

Students strengthen communication and teamwork skills while learning how to resolve conflicts and collaborate effectively. Activities include role-playing garden conflicts, cooperative outdoor games, solving gardening-related challenges, and preparing simple meals from garden produce together.



Age group 12–14

Students deepen their collaboration and leadership skills while learning to manage group projects and discuss different perspectives. Activities include taking responsibility for parts of the school garden, participating in discussions about sustainable food systems, preparing supportive “green messages” for classmates, and sharing knowledge through cooperative learning projects.

Module 4: Developing Social Skills – LEARNING EXPERIENCES

Ages 6–8

Young Gardeners

- Role-Play
- Group Work
- Worksheet



Ages 9–11

Outdoor Games: Garden Explorer

- Observation and guidance
- Worksheet
- Group work, pair work



Ages 12–14

Different – Yet Green

- Group work
- Debate
- For and against discussion





Young Gardeners

TEACHER PREPARATION

Prepare simple role cards (e.g., waterer, observer, recorder, helper) and divide students into small groups.

ACTIVITY

Students receive a role card and complete simple tasks in the school garden according to their role (e.g., watering plants, observing insects, keeping paths tidy, recording observations). After a short time, they switch roles so everyone can try different tasks.

At the end, students discuss which role they liked most and why.

Students develop teamwork, responsibility, and respect for nature while understanding that garden work requires different roles and cooperation.

REFLECTION QUESTIONS

1. Which garden task did you try for the first time today?
2. How are these tasks similar to real-life jobs (e.g., gardener, researcher)?

EXTENSION ACTIVITIES

Create a Gardeners' photo album documenting students' roles and tasks.

Play a simple memory game matching roles with tools or actions.

YOUNG GARDENERS

ILLUSTRATED ROLE CARDS



WATERER



SOIL LOOSENER



HARVESTER



RECORDER



OBSERVER



GARDEN KEEPER



HELPER



PATH KEEPER



YOUNG GARDENERS

NAME:

CLASS:

DATE:



WHICH ROLES DID I TRY TODAY? (CIRCLE ALL THAT APPLY.)



WATERER

SOIL LOOSENER

HARVESTER

GARDEN KEEPER

OBSERVER

RECORDER

HELPER

PATH KEEPER

WHAT DID I DO TODAY? (DRAW OR WRITE.)



I ENJOYED THE MOST BEING A:



BECAUSE:



Outdoor Games: Garden Explorer

TEACHER PREPARATION

Prepare simple search lists of items students should find in the school garden (e.g., plants, animals, tools, natural elements). For the second activity, prepare blindfolds and mark a safe path in the garden.

ACTIVITY

The activity includes two cooperative outdoor games.

In **GARDEN SEEKERS**, students work in small groups and search the garden for items on their list (plants, animals, tools, natural objects). They record where they found them and share their most interesting observations with the class.

In **LEAD ME THROUGH THE GARDEN**, students work in pairs. One student is blindfolded while the other guides them safely through the garden using voice or gentle touch. Students then switch roles and reflect on the experience.

Students develop trust, teamwork, observation skills, and communication while exploring the school garden.



REFLECTION QUESTIONS

How did you feel when guiding your partner?

What was challenging when you were blindfolded?

EXTENSION ACTIVITIES

Try a silent guiding challenge, where the leader cannot speak.

Research why certain animals appear in the garden and what role they play in the ecosystem.

Garden Explorer

WORKSHEET

Group members:

Class:

Date:



PLANT No. 1

Where did we find it?

What do we observe?

Growth stage (circle one):

SEED SPROUT YOUNG PLANT
FLOWER FRUIT



PLANT No. 2

Where did we find it?

What do we observe?

Growth stage (circle one):

SEED SPROUT YOUNG PLANT
FLOWER FRUIT



PLANT No. 3

Where did we find it?

What do we observe?

Growth stage (circle one):

SEED SPROUT YOUNG PLANT
FLOWER FRUIT

ANIMAL No. 1: Where did we find it? What was it doing there?



ANIMAL No. 2: Where did we find it? What was it doing there?



TOOL No. 1: Where did we find it?
What do we use it for?



TOOL No. 2: Where did we find it?
What do we use it for?



THREE NATURAL ELEMENTS (List them below).





Different – Yet Green

TEACHER PREPARATION

Prepare discussion topic cards related to sustainability (e.g., local vs. imported food, organic vs. conventional farming) and simple worksheets for recording arguments. Arrange the discussion space in a circle to encourage open dialogue.

ACTIVITY

Students work in small groups and receive a topic and a viewpoint (for or against). They prepare arguments based on examples from everyday life or the school garden.

Groups then present their viewpoints in a structured discussion, following simple debate rules (listening, speaking respectfully, supporting arguments with examples). After the debate, students try to find a shared conclusion or understanding.

Students develop communication, critical thinking, and respectful discussion skills while exploring different perspectives on environmental and food-related topics.



REFLECTION QUESTIONS

Which argument from the other group did you find most convincing?

Which of your arguments was strongest?

How did you feel during the discussion?



EXTENSION ACTIVITIES

Create a poster summarizing the debate and key conclusions.

Invite a local expert (e.g., farmer, gardener, or food producer) to share their perspective.

Different – Yet Green

DEBATE CARDS

- Each group receives one card with a topic and a specific standpoint (for or against). Students prepare arguments to defend their position during the debate.



Organic food is better than industrially produced food. Your position: FOR	Organic food is better than industrially produced food. Your position: AGAINST
Local food is always more sustainable than imported food. Your position: FOR	Local food is always more sustainable than imported food. Your position: AGAINST
Vegetarianism is more environmentally friendly than an omnivorous diet. Your position: FOR	Vegetarianism is more environmentally friendly than an omnivorous diet. Your position: AGAINST
Every school should have its own school garden. Your position: FOR	Every school should have its own school garden. Your position: AGAINST



Different – Yet Green

DEBATE CARDS

- Each group receives one card with a topic and a specific standpoint (for or against).
- Write your ideas in the blank spaces.

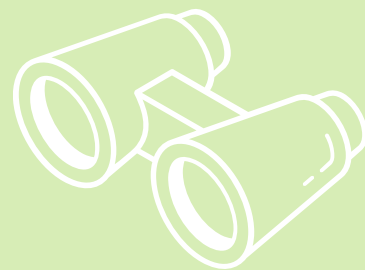


Composting should be mandatory for all schools that have a garden. Your position: FOR	Composting should be mandatory for all schools that have a garden. Your position: AGAINST
Every city resident should have their own garden. Your position: FOR	Every city resident should have their own garden. Your position: AGAINST
Your position: FOR	Your position: AGAINST
Your position: FOR	Your position: AGAINST



Further Exploration

- ***Urban school garden, a teacher's guide***
- ***Gardening Etiquette***
- ***Gardening Journal***
- *Teaching resources*
- *87 Examples of Social Competence*



2.5

Sustainable Mobility

The materials help teachers introduce the concept of sustainable mobility and environmentally friendly transport choices through activities connected to the school garden and the local community.

Sustainable mobility plays an important role in reducing pollution and improving quality of life in cities. By linking everyday travel to the school garden, students learn how their transport choices influence carbon emissions, air quality, and environmental health.



Age group 6–8

Students learn the basics of environmentally friendly travel and reflect on how they move to school or the garden. Activities include tracking their daily travel habits, exploring the garden through movement and sensory activities, building simple models of routes to the garden, and visiting a nearby garden using walking or public transport.



Age group 9–11

Students observe and analyse travel habits and routes to school and the school garden. Activities include keeping travel journals, mapping safe and unsafe routes, calculating potential CO₂ savings from cycling or walking, and collecting simple traffic observations during visits to community gardens.



Age group 12–14

Students critically explore the environmental impact of transport and design solutions for more sustainable mobility. Activities include calculating the carbon footprint of travel to school, researching local mobility challenges, designing awareness campaigns that promote walking or cycling, and proposing improvements for safer and greener access to school and garden spaces.

Module 5: Sustainable Mobility - LEARNING EXPERIENCES

Ages 6–8



Green Steps to the Garden

- Worksheet
- Ways of traveling to school (walking, cycling, by car, etc.)
- Group discussion

Ages 9–11



Travel Journal

- Travel log sheet
- Recording travel methods (walking, cycling, car, etc.)
- Involving parents through questionnaires

Ages 9–14



Sustainable Mobility and Our Environmental Impact

- Worksheet
- Calculating the carbon footprint
- Creating an awareness-raising poster





Green Steps to the Garden

TEACHER PREPARATION

Prepare worksheets and briefly discuss with students different ways of travelling to school or the garden. Together, classify examples of sustainable and non-sustainable transport (e.g., walking, cycling, car, bus).

ACTIVITY

Students complete a worksheet activity in which they help characters find a safe walking route to the school garden. Along the way, they identify different modes of transport and decide which are environmentally friendly.

Students then circle or draw examples of sustainable transport, followed by a short group discussion.

Students understand the benefits of walking and cycling for health and the environment and reflect on how they travel to school.

REFLECTION QUESTIONS

Why is walking good for your health?

Do you notice more things when walking or cycling than when travelling by car?

Which form of transport is the most environmentally friendly?

EXTENSION ACTIVITIES

Students draw their favourite sustainable way of travelling.

Organise a “Walk to School” or “Bike to School” day.

Create a class poster about sustainable journeys to school or the garden.



GREEN STEPS TO THE GARDEN

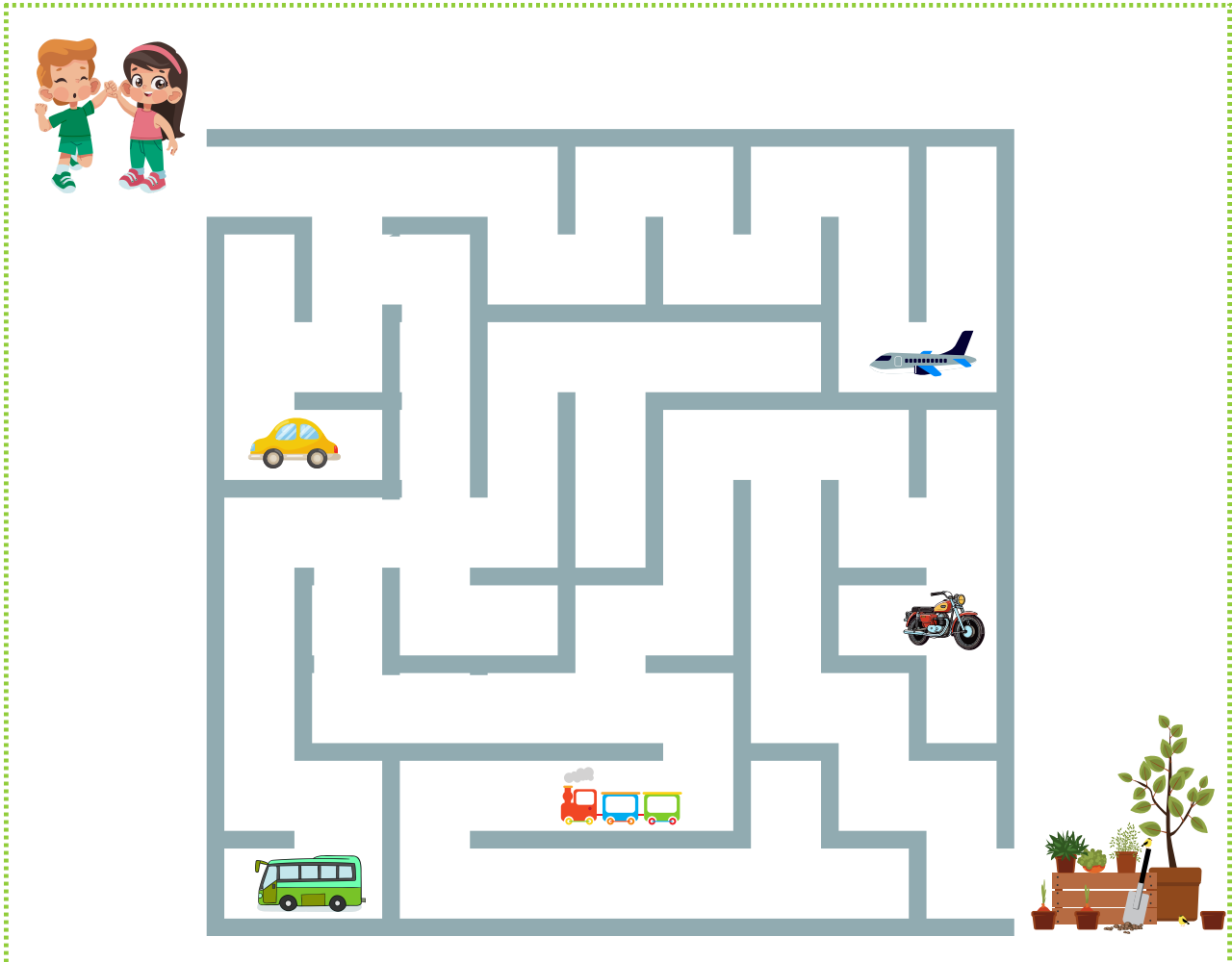
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CLASS:

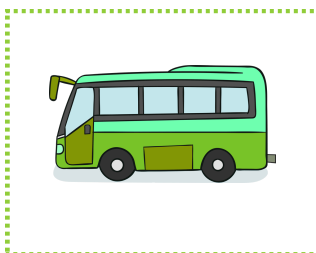
DATE:



HELP ANA AND NIK FIND A SAFE WALKING ROUTE TO THE SCHOOL GARDEN.



CIRCLE THE PICTURES THAT SHOW SUSTAINABLE WAYS OF GETTING AROUND.





Travel Journal

TEACHER PREPARATION

Prepare a simple Travel Journal template for a 5–7 day period in which students record how they travel to school (walking, cycling, scooter, car, or public transport). Together with students, create a short questionnaire for parents about their daily travel habits.

ACTIVITY

Students record their daily journey to school for one week, noting the transport mode and distance. They also complete a short parent survey at home about family travel habits.

Back in class, students compare their results, analyse common transport choices, and discuss how their journeys could become more sustainable.

Possible Question Ideas for parents:

What is your most frequent mode of transport; how often do you use sustainable transport (walking, cycling, public transport); what is your average daily travel distance; how safe do you feel on your route?

Students reflect on their everyday travel habits and understand how different transport choices influence health, emissions, and sustainable mobility.

REFLECTION QUESTIONS

How could you travel more sustainably?

Could your family change any travel habits?

EXTENSION ACTIVITIES

Create a class graph or poster showing travel habits.

Set personal goals (e.g., walking to school twice a week).



TRAVEL JOURNAL

WORKSHEET

NAME:

CLASS:

DATE:



For one week, keep track of **your journey from home to school**. Write down the day, how you travelled, whether you were alone or with someone, how long it took, the approximate distance, and any special observations.

DAY	HOW I CAME TO SCHOOL	WAS I ALONE OR WITH SOMEONE (WHO?)	TRAVEL TIME	DISTANCE	SPECIAL NOTES
Wednesday	by car	with parents	7 minutes	2.5 km	lots of red lights on the way
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					

On FRIDAY, answer the questions below:



1. Which mode of transport did you use most often this week?
2. Which way of travelling did you like the most? Why?
3. What did you notice on your way to school (for example, trees, animals, other children)?
4. What could be changed to make the way to school safer and more enjoyable?

Sustainable Mobility and Our Impact on the Environment



TEACHER PREPARATION

Prepare worksheets and introduce key concepts such as sustainable mobility, CO₂ emissions, and carbon footprint. Use a short video, image, or a local map to start a discussion about travel habits and routes to school.

ACTIVITY

Students complete a worksheet individually or in pairs, reflecting on how different transport choices affect the environment. The class then reviews the answers together and collects ideas for more sustainable travel on a shared poster.

Students understand how everyday travel choices influence air quality, carbon emissions, and environmental sustainability.

REFLECTION QUESTIONS

How do you usually travel to school, and could you do it in a more sustainable way?

Why is it important to reduce car use?

Which means of transport are best for short journeys, and why?

EXTENSION ACTIVITIES

Create posters with sustainability slogans about green transport.

Organise a Car-Free Week or Walk-to-School challenge.

Hold a short class debate on sustainable travel.



Name: _____

Date: _____

Sustainable Mobility and Our Impact on the Environment



1. Circle the correct answer.



What is the main goal of sustainable mobility?

- a) To get to your destination faster, even if it uses more fuel.
- b) To use transport options that produce as little CO₂ emissions as possible.
- c) To buy the latest electric vehicle.
- d) To travel only abroad because local trips are not sustainable.



Which means of transport is most sustainable for a daily trip to the school garden?

- a) Car (diesel).
- b) Bicycle.
- c) Motorbike.
- d) Taxi.



Which is NOT an advantage of an efficient low-carbon transport system?

- a) Saving time and money.
- b) Reducing pollution.
- c) Greater dependence on fossil fuels.
- d) Better health.

2. List at least four benefits of an efficient low-carbon transport system.



3. Match the MEANS OF TRANSPORT with their environmental impact
(in grams of CO₂ per person per kilometre).



MEANS OF TRANSPORT	CO ₂ EMISSIONS (G/KM)
CAR	280 g
BUS	4 g
PLANE	19 g
BICYCLE	87 g
WALKING	17 g
TRAIN	6 g
ELECTRIC CAR	50 g
MOTORBIKE	150 g

4. Complete the sentence.



By carpooling (sharing a car with 4 people), greenhouse gas emissions are reduced by _____ %.

5. True or False (circle the correct answer)



a) Transport in Europe produces more than half of all greenhouse gas emissions.

TRUE / FALSE

b) Flying causes fewer emissions than driving a car.

TRUE / FALSE

c) Electric vehicles have no environmental impact.

TRUE / FALSE

6. Think and answer.

Imagine your class is visiting a community learning garden. How could you get there in a sustainable way? (e.g., by public transport, walking, or cycling)



7. Rank the transport modes from MOST (1) to LEAST (4) sustainable.



CAR (DIESEL)



BICYCLE



BUS



PLANE

8. Create a slogan!

Write a short slogan for a campaign that would encourage your classmates to travel to school in a sustainable way.

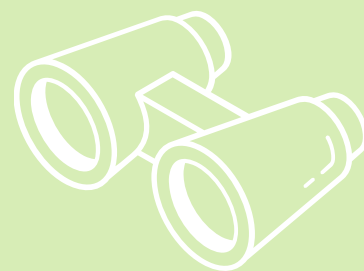


ANSWER KEY SUMMARY

- 1.: b, b, c
- 2.: Saving time and money, better access, energy security, less pollution, better health
- 3.: car – 150 g, bus – 19 g, plane – 280 g, bicycle – 6 g, walking – 4 g, train – 17 g, electric car – 50 g, motorbike – 87 g
- 4.: 75 %
- 5: a) false, b) false, c) false
- 6.: Public transport, walking, cycling ...
- 7.: 3, 1, 2, 4
- 8.: Students' own answers

Further Exploration

- **Urban school garden, a teacher's guide**
- **Gardening Etiquette**
- **Gardening Journal**
- **Cars, planes, trains:** where do CO₂ emissions from transport come from?
- How our daily travel harms the planet
- **Climate change:** Should you fly, drive or take the train?
- **What is sustainable transport** and what role does it play in tackling climate change
- **Sustainable transport**



2.6

Energy

The materials help teachers introduce the concept of energy, renewable energy sources, and responsible energy use through practical activities connected to the school garden.

Energy is present in many natural processes – in sunlight, wind, water, and even in food. Through activities in the school garden, students explore how energy works in nature, how it can be used sustainably, and why it is important to use energy responsibly.



Age group 6–8

Students discover basic sources of energy through observation and creative activities. Activities include exploring wind and sunlight with simple garden installations, building small greenhouses, experimenting with water flow, and playing games that connect energy sources with their effects in nature.



Age group 9–11

Students investigate different renewable energy sources and experiment with simple models. Activities include building a solar cooker, creating small windmills, constructing simple water turbines, and observing how plants use energy through experiments such as the colored celery investigation.



Age group 12–14

Students analyse modern energy challenges and explore sustainable solutions. Activities include building simple renewable-energy devices (solar lamps, wind turbines), experimenting with biomass and heat, and designing ideas for a more energy-efficient and sustainable school garden.

Module 6: Energy - LEARNING EXPERIENCES

Ages 6–8



My Mini Greenhouse

- Crafting
- Growth diary
- Plant observation

Ages 9–11



Solar Cooker

- Crafting
- Solar energy experiment
- Worksheet

Colorful Celery Stalk Experiment

- Experiment
- Water movement in plants
- Worksheet



Ages 12–14



Designing a Sustainable, Energy-Efficient School Garden

- Creative project
- Group work
- Worksheet





My Little Greenhouse

TEACHER PREPARATION

Prepare materials for a simple mini greenhouse: cardboard base, plastic bag, cotton or paper towel, seeds (e.g., bean or sunflower), tape, scissors, and markers. Prepare a growth observation sheet and show students an example greenhouse. Choose a bright location where the greenhouses can be displayed.



ACTIVITY

Students create a small cardboard “house” and attach a plastic bag containing moist cotton and seeds to the back, forming a mini greenhouse. The greenhouses are placed in a bright spot, and students observe seed germination over several days, recording changes in a simple growth diary.

Students understand the basic conditions for plant growth (light, water, warmth, air) and observe the process of seed germination.

REFLECTION QUESTIONS

What is the difference between plants growing in a greenhouse and plants growing in the garden?

What happens if a plant doesn’t get enough light?



EXTENSION ACTIVITIES

Compare growth of greenhouses placed in sun and shade.

NOTES FOR TEACHERS

Fast-germinating seeds such as beans or cress work best. Bean seeds can be soaked in water before planting to speed up germination. Ensure students keep the cotton slightly moist using a spray bottle and encourage them to document plant growth through drawings or short notes in a simple growth journal.

MY LITTLE GREENHOUSE

VISUAL MATERIALS



GERMINATION OF A PEA SEED



PLANTS IN THE SHADE: ROCKET



PLANTS IN THE SUN: BELL PEPPER



GARDEN GREENHOUSE



DIY MINI GREENHOUSE

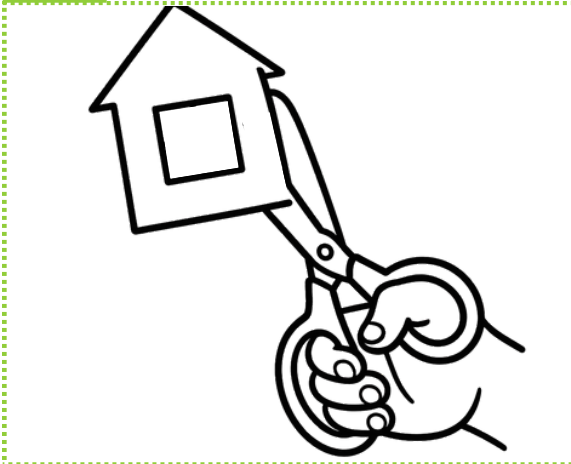
MY LITTLE GREENHOUSE



INSTRUCTIONS FOR STUDENTS

1.

ON CARDBOARD, DRAW A HOUSE SHAPE AND CUT IT OUT. CUT OUT A WINDOW.



2.

COLOR AND DECORATE YOUR GREENHOUSE.



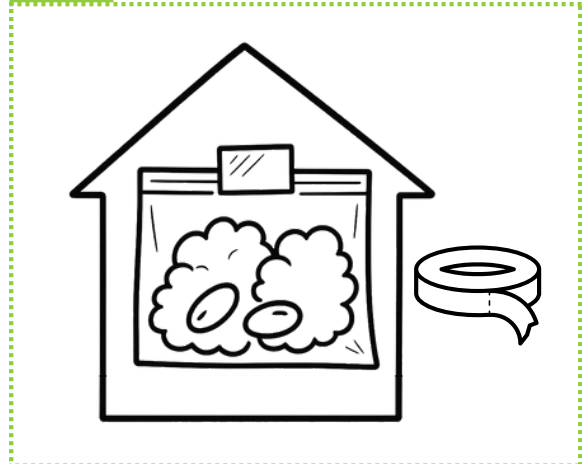
3.

PUT COTTON AND SEEDS INTO THE PLASTIC BAG. MOISTEN THE COTTON WITH WATER.



4.

ATTACH THE BAG TO THE BACK OF YOUR GREENHOUSE.



5.

WRITE YOUR NAME AND THE PLANTING DATE.



6.

HANG YOUR GREENHOUSE IN A BRIGHT SPOT.



EXAMPLE OF A
MINI
GREENHOUSE

EVERY DAY, OBSERVE WHAT HAPPENS AND DRAW HOW YOUR PLANT IS GROWING IN YOUR JOURNAL.



CUT ALONG THE LINE



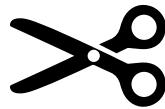
CUT ALONG THE LINE

NAME:

MY GREENHOUSE



PLANTING DATE:



CUT ALONG THE LINE



OTHER:



GROWTH JOURNAL



NAME:

CLASS:



PHOTO OR
DRAWING OF THE
PLANT

OBSERVATION – DAY 1

DATE:

WHAT DID I NOTICE TODAY?

DRAW YOUR PLANT:

OBSERVATION – DAY 2

DATE:

WHAT DID I NOTICE TODAY?

DRAW YOUR PLANT:

OBSERVATION – DAY 3

DATE:

WHAT DID I NOTICE TODAY?

DRAW YOUR PLANT:

OBSERVATION – DAY 4

DATE:

WHAT DID I NOTICE TODAY?

DRAW YOUR PLANT:

OBSERVATION – DAY 5

DATE:

WHAT DID I NOTICE TODAY?

DRAW YOUR PLANT:

OBSERVATION – DAY 6

DATE:

WHAT DID I NOTICE TODAY?

DRAW YOUR PLANT:

OBSERVATION – DAY 7

DATE:

WHAT DID I NOTICE TODAY?

DRAW YOUR PLANT:

OBSERVATION – DAY 8

DATE:

WHAT DID I NOTICE TODAY?

DRAW YOUR PLANT:

OBSERVATION – DAY 9

DATE:

WHAT DID I NOTICE TODAY?

DRAW YOUR PLANT:

OBSERVATION – DAY 10

DATE:

WHAT DID I NOTICE TODAY?

DRAW YOUR PLANT:



Solar Cooker

TEACHER PREPARATION

Prepare materials for each group: a cardboard box with lid, aluminium foil, black paper, transparent plastic wrap, tape, scissors, and a small container with chocolate. Choose a sunny outdoor location and prepare a sample solar cooker to demonstrate the process.

ACTIVITY

Students work in small groups to build a simple solar cooker. The inside of the box is lined with aluminium foil, black paper is placed at the bottom to absorb heat, and the lid acts as a reflector directing sunlight into the box. The opening is covered with plastic wrap to create a greenhouse effect. Students place chocolate inside and observe how long it takes to melt, recording their results and observations.

Students explore how solar energy can be converted into heat and learn about concepts such as light reflection, heat absorption, and the greenhouse effect.

REFLECTION QUESTIONS

Why did the chocolate melt?

How could the solar cooker be improved?



EXTENSION ACTIVITIES

Compare melting times using different materials-

Measure and record the temperature inside the cooker.

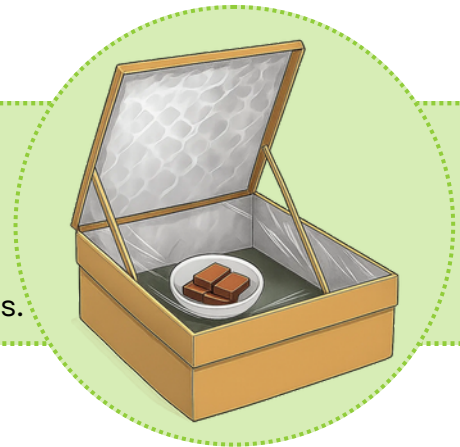




Solar Cooker

INSTRUCTIONS FOR STUDENTS

1. Get ready: Gather all the materials.
2. Build your solar cooker step by step.
3. Place it in the sun, observe, and record your results.



You will need:

- ☐ A cardboard box with a lid (e.g., a shoebox or pizza box)
- ☐ Aluminum foil
- ☐ Black paper (or color the bottom of the box black)
- ☐ Transparent plastic wrap (or clear plastic packaging)
- ☐ Tape
- ☐ Toothpicks, wooden sticks, or straws (to keep the lid open)
- ☐ Scissors
- ☐ A small container or dish for the chocolate
- ☐ A piece of chocolate
- ☐ A stopwatch or timer

Experiment – Observation

- Place your solar cooker in a sunny, windless spot.
- Make sure the lid is securely tilted and facing the sun.
- Start the timer.
- Observe:
 - When does the chocolate begin to melt?
 - When does it melt completely?
- If possible, measure the temperature inside the cooker.

Making a Solar Cooker

INSTRUCTIONS FOR STUDENTS



Note: If the box and the lid are separate pieces, attach them with tape.

1.

Cover the inside of the box with aluminium foil. It will reflect sunlight.



2.

Cover the bottom of the box with black paper. It absorbs heat.



3.

The lid will act as a reflector, so cover the inside with aluminium foil too.



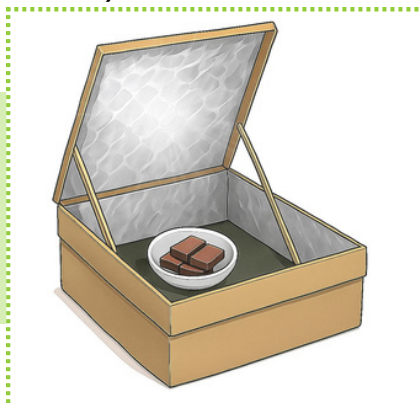
4.

Place a small container (e.g., a jar lid) with a piece of chocolate in the center of the box.



5.

Use sticks to hold the lid at an angle facing the sun (like a mirror reflecting light inside).



6.

Cover the opening of the box with transparent plastic wrap. This will keep the heat inside.



Making a Solar Cooker

WORKSHEET

Name:

Class:

Date:



Draw your solar cooker and label the materials you used.



Mark the lid's angle:



☐ Acute angle (less than 90°)

☐ Right angle (90°)

☐ Obtuse angle (more than 90°)

Experiment Log



Melting start time:

Time melting finished:

Total time:

What did you observe during the experiment?



How could you improve your solar cooker to make it more efficient?





Colorful Celery Stalk Experiment

TEACHER PREPARATION

Prepare celery stalks with leaves, glass jars with water, food coloring, scissors or a knife, paper towels, and observation worksheets. Prepare a demonstration jar with colored water and celery and place the jars in a bright location such as a windowsill.



ACTIVITY

Students place celery stalks into jars with colored water and observe how the color gradually travels through the plant. Over several hours or a day, they record when and where the color appears (stem, veins, leaves).

Optionally, students split the stalk lengthwise and place each half in different colored water to observe color mixing.

Students understand how water moves through plants and why it is important for plant growth and photosynthesis.

REFLECTION QUESTIONS

Why didn't the leaves change color right away?

How does water move through the plant?

Why is this process important for the plant's survival?

CONCLUSIONS:

Plants need water to survive.
Water travels upwards through the plant's vascular tissue to the leaves.
Water carries minerals and nutrients, helps cool the plant, and is essential for photosynthesis.

EXTENSION ACTIVITIES

Compare different types of plants (thin vs. thick stems).

Repeat the experiment using two colors in a split stem.





Colorful Celery Stalk Experiment

INSTRUCTIONS FOR STUDENTS

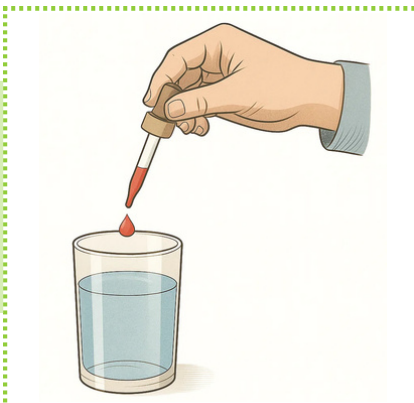
Prepare:

- ☐ a glass jar with water and a dropper or a pipette
- ☐ food coloring (red, blue, green, etc.)
- ☐ a celery stalk with leaves (you can also use Chinese cabbage)
- ☐ scissors or a knife (to cut the stem)
- ☐ a pencil and your worksheet



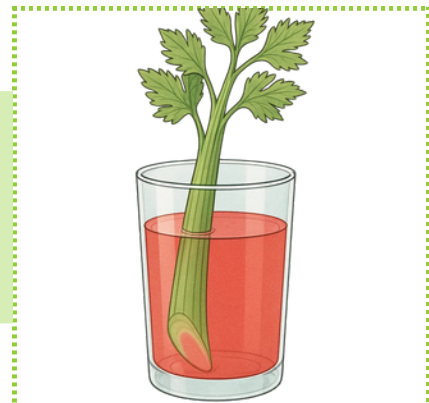
Add 10–15 drops of food coloring to the water.

1.



Cut the bottom of the celery stalk at an angle. Place the stalk into the jar with the colored water.

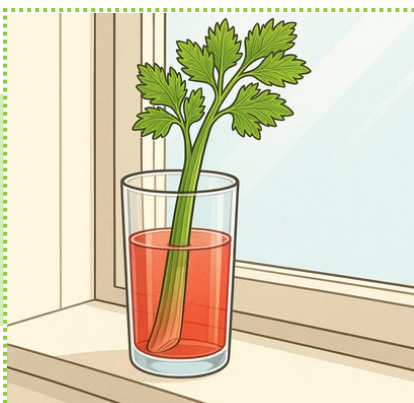
2.



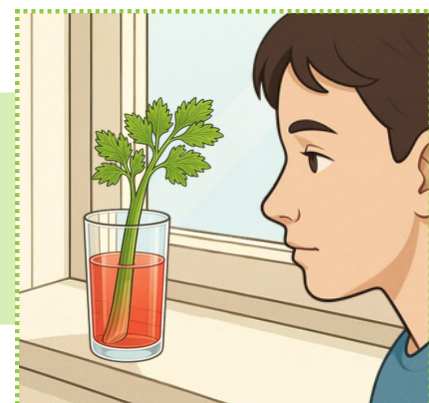
Observe how the color changes in the stem and leaves over the next few hours and the following day.

Place the jar in a bright spot.

3.



4.



Colorful Celery Stalk Experiment

WORKSHEET

Name: _____

Class: _____

Date: _____



Draw your plant before and after the experiment.



Color of the water:



I noticed the first change after hours.

Which parts of the plant changed color?

Which color was the most visible?

What did I discover?



- How does water move through the plant?
- Why did the leaf change color?



Designing a Sustainable and Energy-Efficient School Garden

TEACHER PREPARATION

Prepare garden layout sheets or maps, drawing materials, and examples of sustainable garden solutions (e.g., compost bin, rainwater collector, solar light, greenhouse). If possible, identify observation points in the garden (sun, shade, wind, moisture).

ACTIVITY

Students work in groups to design a sustainable and energy-efficient school garden. After observing the garden or its layout, they identify sunny, shaded, windy, and moist areas. Each group then creates a plan that includes at least three renewable energy elements, such as solar lighting, rainwater collection, composting (biomass), or a small wind turbine. Students present their designs as posters, digital presentations, or simple models and explain how the chosen elements support sustainable energy use.

Students understand how renewable energy sources (sun, wind, water, biomass) can be integrated into a school garden to support sustainable resource use.

REFLECTION QUESTIONS

Which parts of the plan could students create or build themselves?

Which element could we implement this year?

EXTENSION ACTIVITIES

Create a 3D model of the garden using Tinkercad or Canva.

Compare the students' plans with the actual garden and suggest which elements could be implemented next school year.



Designing a Sustainable and Energy-Efficient School Garden

VISUAL MATERIALS



solar garden light



compost bin



rainwater collector



greenhouse



solar panel system



wind turbine

Designing a Sustainable and Energy-Efficient School Garden



INSTRUCTIONS FOR STUDENTS

What are we going to do?

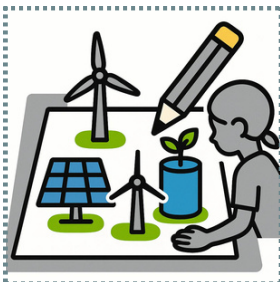
We will explore how the school garden can become energy-efficient and sustainably designed. Your task is to create a plan for a sustainable school garden that uses natural energy sources.



OBSERVE!

Go to the school garden and take notes:

- Where is the sun?
- Where does the wind usually blow?
- Where are the shady, wet, or noisy areas?
- Write down your observations.



PLAN!

Draw a top view (map) of the school garden.

Plan at least three sustainable energy solutions for your garden.

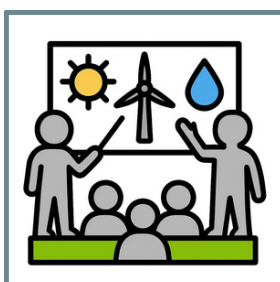
Decide where each element will be placed, its purpose, and how the elements connect to each other.



CREATE!

Present your idea as one of the following:

- a drawing (with a legend, colors, and compass directions),
- a PowerPoint presentation (if you're in the computer lab), or
- a model (mock-up) (if you have time and materials).



PRESENT!

Show your plan to the class and explain:

- What did you design?
- How does it work?
- Why is it sustainable?



Designing a Sustainable and Energy-Efficient School Garden

WORKSHEET

Name: _____

Date: _____

Class: _____

1. OBSERVE!

Write down what you noticed in the school garden:



Where is there the most sunlight? _____



Where does the wind blow most often? _____



Where are areas of shade, moisture, or noise? _____

2. PLAN!

List three renewable energy sources that could be used in the school garden:

1. _____

2. _____

3. _____



Draw a simple top view (map) of the school garden including at least three energy elements (e.g. solar panel, wind turbine, rainwater collector).

- Add a legend and mark the cardinal directions.



3. CREATE!

How will you present your idea?



- ☐ drawing
- ☐ PowerPoint presentation
- ☐ model

Describe what you will use:

4. PRESENT!

Circle: Did you present your plan to the group?

☐

YES

☐

NO



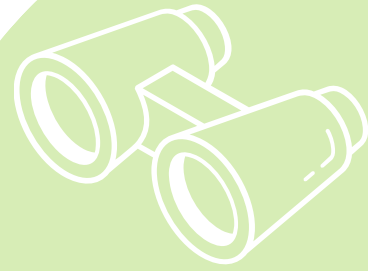
Write two things you learned today about sustainable energy:

1.

2.

Further Exploration

- **Urban school garden, a teacher's guide**
- **Gardening Etiquette**
- **Gardening Journal**
- **Climate Promise:** What is the sustainable energy transition and why is it key to tackling climate change?
- **10 ways to be more sustainable in your garden**
- *Renewable energy use on community gardens and city farms*



3

Sources and References

1. CoFarm4Cities. D3.3.1: Training Methodology and Material for Decision-Makers on Sustainable Agricultural Practices and Food Systems [Project Report].
2. Meznarič Majcen, M., & Cerar, G. (2025). Urban School Garden: A Teacher's Guide. DOVES Association – FEE Slovenia. Available at: <https://ekosola.si/wp-content/uploads/2025/07/Urbani-solski-vrt-prirocnik-za-ucitelje.pdf>
3. Ministry of Agriculture, Forestry and Food. Our Super Food: Educational Content – Respect Food, Respect the Planet. Available at: <https://www.nasasuperhrana.si/projekti/spostujmo-hrano-spostujmo-planet/gradiva-in-povezave/izobrazevalne-vsebine/>
4. Ministry of Agriculture, Forestry and Food. The Importance of Local Food and the Principle of Short Supply Chains in Food Distribution. Available at: <https://www.gov.si teme/pomen-lokalne-hrane-in-nacelo-kratkih-verig-v-dobavi-zivil/>
5. Ministry of Agriculture, Forestry and Food. Food Security in Times of Emergency [Report]. Available at: <https://www.gov.si/assets/ministrstva/MKGP/Dokumenti-/Prehranska-varnost-v-casu-izrednih-razmer.pdf>
6. Ministry of Education. Common Goals and Their Integration into Curricula and Knowledge Catalogues. Available at: https://www.gov.si/assets/ministrstva/MVI/SRI/REFORMA/skupni_cilji.pdf
7. National Education Institute Slovenia. European Sustainability Competence Framework (GreenComp). ZRSŠ. Available at: <https://www.zrss.si/pdf/greencomp.pdf>
8. National Education Institute Slovenia. (2022). Education for Sustainable Development: Roadmap. Available at: https://www.zrss.si/wp-content/uploads/2022/03/VITR_za_2030-1.pdf