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Play to Learn

Nature-Inspired Games

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NATURE ENGINEERS – THE MEASUREMENT MISSION

Class / Grade	2nd–4th grade
Subject	Mathematics, Environmental Studies
Related Lesson plan	Math & Nature: Measuring What We Find
Duration	60-70 minutes

GAME GOAL

- Students take on the role of “Nature Engineers” tasked with solving real-world environmental challenges by estimating and measuring natural elements (such as the height of a tree or the circumference of a trunk) without traditional measuring tools.
- They learn to apply mathematical thinking, creativity, and teamwork using only natural materials they find around them.

LOCATION

- Outdoors

VARIATIONS

- Easier: Measure smaller objects; use pre-selected natural tools.
- Challenging: Add time limits; justify methods; compare tools.
- Creative: Build a Nature Toolkit; sketch process; propose eco-solutions.
- Seasonal: Measure leaves in autumn, snow in winter, growth in spring.
- Cross-curricular: Link to math (averages), ecology (tree height & forest protection).

MATERIALS

- Blank mission sheets or Nature Engineer journals (optional: pre-printed worksheet)
- Pencils/pens
- String, if available (or teams collect their own natural alternatives)
- Timer or stopwatch (optional for timed challenges)
- Optional: tape measure or ruler for checking estimation accuracy
- Clipboards (if available) for outdoor writing
- Reward system: stickers, points, badges (optional)

Game steps	Est. Time Frame	Description
Introduction	10 minutes	• Explain that students are becoming Nature Engineers, working on a forest mission that involves measuring without rulers or measuring tapes. • They will rely on observation, estimation, and natural materials. • Students form teams of 2–4 people and choose a team name.
Main part	10 minutes	In small groups, students collect 3–5 ideas of what natural materials could be used for measurement (e.g., leaf, stick, handspan, step, stone). Then they have a short class discussion: which tools might work best, what are their pros and cons. The teacher can show 1–2 diagrams as examples (e.g., “This stick = 10 cm”). **Objective:** Activate prior knowledge, spark creativity, and develop the idea of improvised tools.

Main part	30-40 minutes	Teams receive a mission sheet or booklet with 3–5 tasks, such as: • Estimate the height of a tree • Measure the circumference of a tree trunk • Estimate the distance between two trees • Create a “measurement unit” using a stick or string • Optional: Build a simple structure using measured materials (e.g. a mini bridge or shelter) Teams complete the tasks one by one using their improvised measuring tools. They: • Estimate • Measure with their natural tools • Record their results • Reflect on accuracy and method Creative elements could be: Don’t let kids sit and measure! Get them moving constantly. • Run to Measure: “Run to the nearest tree, estimate its height, and then back and say!” • Walking Estimation: Use steps or jumps to estimate distance. • Timed Challenges: “You have 3 minutes to find 3 different things to measure!”
Conclusion	10 minutes	After the missions, teams return to the group, share their findings, and discuss: • Which tools were most effective? • How accurate were their estimates? • What challenges did they face? • What did you enjoy the most? • What tool did you invent? • What was your best estimation?

NATURE'S CLOCK: THE SEASONAL DETECTIVES OF THE SCHOOL

Class / Grade	2nd–4th grade
Subject	Mathematics, Environmental Studies
Related Lesson plan	Natural Timekeeping and the Signs of Spring
Duration	1 week (3-4 hours total, approximetely)

GAME GOAL

- In this game, children become "Nature Detectives" who observe and record signs of spring in their environment — blooming flowers, returning birds and insects, weather changes.
- Students learn how plants, animals and insects rely on seasonal patterns.
- They collect their observations in a "Nature Passport", and by the end of the week, they create their own "Nature Clock" using natural materials.

LOCATION

- Outdoors
- Indoors

MATERIALS

- A4 sheets for passports
- Cardboard or stiff paper
- Pencils, crayons, glue
- Natural items: leaves, sticks, pebbles
- Thermometer
- Measuring tape (optional)

MINI CHALLENGES

- Daily task: “Find 3 signs of spring”
- Reward system: “Spring Detective” sticker
- Final reward: “Math Detective” certificate

SUBJECT INTEGRATION

- Science: changes in plants, animals, and weather
- Math: counting, estimating, measurements, graphs
- Art: designing and building the Nature Clock
- Geography: observing local landscapes and habitats
- Literacy: formulating and sharing observations

OPTIONAL EXTENSIONS

- Extend for other seasons: summer, autumn, winter
- Weekend challenge: family spring walk and photo collection
- Mythology link: such as a Greek story of Demeter and Persephone

Game steps	Est. Time Frame	Description
Day 1	40 minutes	*Meet the Seasons*: A short introduction to introduce division and motivate kids to begin with. ◦ What are seasons? What happens in spring in our country? ◦ Count how many months are in each season A mini Math Talk: • If a year has 12 months and 4 seasons..how many months per season? Visual activity: Explore spring-related images of nature - • Show them cute pictures (e.g., about plants waking up or birds returning) - by searching on google *Start the "My Nature Passport"*: Kids start making their''Nature Passport'' For this purpose,they are going to use an A4 page,one page per season and they also going to need some nice pictures with leaves,flowers, sun Students begin decorating their Nature Passports (A4 sheets)
Day 2	40 minutes	**Nature Walk & Observation: Direct engagement with the natural environment using all senses.** *Preparation*: • Brief reminder of respectful nature behavior. Equip each child with their Nature Passport and a pencil. Visit a nearby park/garden/schoolyard and ask guiding questions: • "What do you see that shows it's spring?" • "Do you hear any birds?" • "Can you smell anything special?"

Game steps	Est. Time Frame	Description

Day 2	40 minutes	*Recording Observations*:
		• Pages in the passport:
		  ◦ “I see…” (e.g. yellow flower)
		  ◦ “I hear…” (e.g. buzzing bee)
		  ◦ “I feel…” (e.g. warm sun)
		Encourage drawings + simple words or sentences.

Day 3	40 minutes	**Nature & Math: Apply math skills (counting, estimating, measuring) through nature** *Math in Nature Tasks (individually or in small groups)*: • Count flowers in a small area and record numbers. • Estimate the number of petals on a flower or leaves on a branch. • Measure the length of a stick or leaf using fingers/spans or Do a little estimation (e.g., “How many leaves on a branch?”) *Data representation*: • Use a thermometer to record temperature of the weather. • Use tally marks or draw a simple bar chart of flower types or colors seen. ◦ Example: 5 yellow, 3 white, 2 purple flowers *Optional*: Use a measuring tape to compare one estimation to actual size. *Reflect*: Was your guess close?

Game steps	Est. Time Frame	Description
Day 4	40 minutes	Make a Nature Clock using stones instead of numbers and sticks for hour hands to show the time. Show example of a “Nature Clock” with natural elements. Explain that each part of the clock represents springtime. Students use collected materials: sticks (hands), pebbles (numbers), leaves/flowers (decoration). Students design and build their own Nature Clock. Add symbols for things they observed (e.g. draw a bee at 3 o'clock).
Day 5	40 minutes	**Share & Reflect: Reflect on learning, share discoveries, and celebrate completion** *Circle Presentation*: Each student shows their Nature Clock. They share: ◦ their favorite spring discovery ◦ one thing they learned ◦ a fun observation from the nature walk Final Passport Entry: • Page title: “My favorite spring moment was…” • Students write/draw a personal highlight. • Gallery Setup: • Display Nature Clocks and Passports in hallway or classroom. • Invite another class or parents for a mini “Spring Exhibition”.

THE MATHEMATICAL GUARDIANS OF WATER

Class / Grade	3rd–4th grade
Subject	Mathematics, Environmental Studies
Related Lesson plan	Let's Count with Water! – Mathematics and Environmental Protection
Duration	60 minutes

GAME GOAL

- Understand measurement units related to volume (liters, milliliters)
- Practice percentages and fractions through real-world scenarios
- Apply logical thinking and problem-solving skills
- Perform unit conversions and interpret numerical data in context
- Understand the water cycle and its stages
- Raise awareness about the importance of water in nature and everyday life

LOCATION

- Outdoors

MATERIALS

Printable Material:

- Mission Cards (one per station)
- Team Answer Sheet (for recording solutions)
- Water Map (divided into collectible pieces)
- Symbol or Riddle Cards
- Final puzzle or instructions for the "Source Code" mission

Station Supplies:

- Measuring containers (liters, ml)
- Plastic bottles or buckets (for water-based challenges)

Optional:

- Timers (e.g., on a phone)
- Tablet/phone (to scan QR codes or watch a short video)

VARIATIONS

Easier Version (e.g. for younger students or learners with difficulties):

- Provide visual aids or example illustrations on each mission card.
- Use multiple-choice questions instead of open-ended ones.
- Use visual symbols instead of numbers for simpler logic.
- Skip the final code challenge and just ask teams to assemble the map.

Harder Version (e.g. for older students or teacher training):

- Add a time limit at each station.
- Include double missions at some stations (e.g. logic + calculation).
- Gather numerical clues at each station that lead to a complex final puzzle.
- Introduce team competition (scoring system or race-based structure).

Game steps	Est. Time Frame	Description
Introduction	10 minutes	The facilitator welcomes students and presents the storyline: • “The Water Cycle has been disrupted! The Mathematical Guardians must restore it!” Students are divided into teams (3–5 players each) and become “Water Guardians.” Each team receives: ◦ A team name & color ◦ An answer sheet ◦ A kit (pencils, notebook, etc.) Stations: • There are 5–6 stations with missions (volume, measurement, logic, codes) • For every correct answer, the team receives: ◦ A piece of the “Water Map” A few symbolic drops (objects or icons)
Main part	40 minutes	The teacher presents the game’s backstory. • Class reviews the water cycle with visuals. Motivational questions: • “Where does water get lost?” • “How can we measure or protect it using math?” Through 4 math-based missions, teams collect "drops of wisdom" to restore balance to the water cycle.

Game steps	Est. Time Frame	Description
Main part		***Stations*:** *1. The Lost Rain – Fractions and Percentages* Students calculate how much rain is absorbed, evaporated, and used by humans. Example: If 100 liters of rain fall, and 1/4 is absorbed, 1/2 evaporates, how much remains? *2. The River of Calculations – Multiplications & Measurements* Teams calculate water flow in an imaginary river. Example: A stream flows at 5 liters/minute. How many liters in 2 hours? *3. The Threatened Water Cycle – Patterns & Logic* Example: A rain cloud drops 48 raindrops over a small forest pond. Around the pond live three curious frogs who want to know how many drops fell near each of them. • Frog 1 gets 20 raindrops. • Frog 2 gets 13 raindrops. Question: How many raindrops fell near Frog 3? *4. The Lake of Conversions – Volume Unit Conversion* Students convert between liters, milliliters, and cubic meters to “rescue” the lake from drying up. Example: A magical lake is drying up! The animals living nearby are collecting water to refill it. Altogether, they bring: • 2 liters of water from a nearby stream • 750 milliliters of water from melted snow • 1,250 milliliters from rain collectors Question : How much water do they collect in total (in liters)?

Game steps	Est. Time Frame	Description
Conclusion	10 minutes	Teams gather and briefly present their results (solutions, strategies). Group discussion: ◦ What did they learn about the water cycle? ◦ How did math help them understand its function and importance? The teacher records key terms on the board (e.g. evaporation, flow, volume, patterns, percentages).

THE WAYS OF WATER

Class / Grade	4th–5th grade
Subject	Environmental Science / Natural Science
Related Lesson plan	The Journey of Water – Following the Cycle
Duration	60-90 minutes

GAME GOAL

- Understand key stages of the water cycle: evaporation, condensation, precipitation, rivers, and groundwater.
- Explore the environmental impact of water misuse and pollution.
- Apply math skills to solve real-world environmental problems.
- Encourage critical thinking, teamwork, and sustainability awareness.

LOCATION

- Outdoors

MATERIALS

- Basins, ice cubes, water, measuring tapes, rain meters
- Plastic cups, bottles, buckets
- Water cycle cards (evaporation, condensation, rain, rivers, groundwater)
- Ice cubes for condensation experiment
- Animal and plant image cards
- Pencils, paper, calculators (if needed)

VARIATIONS

- Visual aids and hands-on tools for learners who need support
- Verbal instructions supplemented with diagrams
- Advanced students can work with larger area conversions or mixed units
- Mixed-ability grouping to promote peer learning

Game steps	Est. Time Frame	Description
Introduction	10 minutes	The game consists of five stations, each representing a stage of the water cycle. Students are divided into teams and rotate through each station. At each stop, they face a realistic environmental challenge, which they solve using mathematical reasoning, experiments, and teamwork. The group discusses the water cycle and the problem of water pollution. Each team randomly selects a stage of the water cycle and has to solve a specific problem related to that stage
Main part	60-70 minutes	*Station 1: Evaporation* Task: Compare how much water evaporates in sun vs. shade. • Measure 500 ml in each basin. • Place one in the sun, one in the shade. • After 1 hour, measure again. • Calculate evaporated water and compare. • Math: Evaporation = Initial volume – Final volume ◦ Example: For the sun: 500 ml - 450 ml = 50 ml *Station 2: Condensation* Task: Observe how water vapor forms clouds. • Place ice cubes in a container above hot water • Measure the weight of the ice cubes before placing them in the container (e.g., 20 g) • Measure the weight of the container with the condensed water (e.g., 25 g) • Calculate the amount of water collected in the container after condensation: 25 g - 20 g = 5 g • Observe and calculate condensation. • Compare the amounts of water condensed under different conditions • Math: Condensation = Final weight – Initial weight

Game steps	Est. Time Frame	Description
Main part		*Station 3: Rainfall* Task: Simulate rainfall and its impact on ecosystems. • Use a rain meter or surface to catch water and let the water fall on it for 10 minutes. • Measure the amount of water collected in ml • Measure collected volume over 10 minutes. • Calculate how much water falls in 1 m² in one hour (e.g., 50 ml in 10 minutes, so in 60 minutes it will be: 50 ml × 6 = 300 ml) • Consider how much water falls on an area larger than 1 m², e.g., if the area is 10 m², how much water will fall? Example: Rainfall per 1 m² = Amount of water per minute × 60 Total amount for a larger area = Rainfall per 1 m² × area in m² *Station 4: River Flow* Task: Measure water velocity and calculate flow. • Place two points along the river (e.g. 10 meters away from each other). • Throw a leaf or other object into the water and measure the time it takes to cross the distance of 10 meters (e.g. 5 seconds). • Calculate speed and total volume flowing. • Math: Speed = Distance ÷ Time Example: 10 meters / 5 seconds = 2 meters/second • Flow Volume = Width × Depth × Speed If the river is 5 meters wide and 0.5 meters deep, calculate the volume of water passing through this point in 1 second: Volume = Width × Depth × Speed Example: Volume = 5 m × 0.5 m × 2 m/s = 5 m³/s = 5 m³/s

Game steps	Est. Time Frame	Description
Main part		*Station 5: Groundwater* Task: Calculate water absorbed as groundwater after rain. • If rain has dumped 10 mm of water on the ground surface, calculate how much water is entering the ground and stored as groundwater. • Assume that 30% of the rain is absorbed by the soil. If the area of the area is 100 m², calculate the total volume of water penetrating the soil: Water volume = Area × Rainfall depth × Absorption rate. Example: Amount of rain = 10 mm = 0.01 m Water volume = Area × Rainfall depth × Absorption rate Water volume = 100 m² × 0.01 m × 0.30 = 0.3 m³
Conclusion	10 minutes	After each stage, the groups discuss their solutions and the ways in which the human element affects the natural environment. At the end of the game, each team presents their solutions to protect the water.

WINDY WONDERS – THE WIND'S ART SCHOOL

Class / Grade	2nd–4th grade
Subject	Science, Art
Related Lesson plan	The Art of the Wind – How Air Moves and Inspires
Duration	40 minutes

GAME GOAL

- Understand key stages of the water cycle: evaporation, condensation, precipitation, rivers, and groundwater.
- Explore the environmental impact of water misuse and pollution.
- Apply math skills to solve real-world environmental problems.
- Encourage critical thinking, teamwork, and sustainability awareness.

LOCATION

- Outdoors

MATERIALS

- Large sheets of paper or canvas
- Water-based paints (e.g. tempera)
- Straws
- Hand fans
- Feathers, petals, small leaves
- Lightweight paintbrushes (optional)
- Clipboards (optional for wind sketches)
- Aprons or protective clothing

VARIATIONS

- Time Challenge: Complete a painting using wind within 5 minutes.
- Mystery Reveal: Hide half the paper and use wind to "uncover" the artwork.
- Wind Source Comparison: Use straws, fans, and outdoor wind to compare effects.

Game steps	Est. Time Frame	Description
Main part	30 minutes	• Prepare "wind art stations" indoors or outdoors (depending on weather) • Each station includes: watercolor paper or a large sheet, water-based paints (e.g. liquid tempera), straws, hand fans, and natural elements like feathers, leaves, or petals • Divide players into teams or play individually How to Play: 1. Drop watercolor paint on the paper. 2. Use wind-powered tools (breath through straws, waving hand fans, or real wind) to move the paint. 3. Players can dip natural objects into paint and let the wind "stamp" them onto the paper. 4. Observe how different materials and techniques affect the results. 5. Optional scoring: ◦ Accuracy: Move paint to a designated “target zone.” ◦ Creativity: Create the most imaginative design using airflow. ◦ Speed: Complete the painting within a set time using only wind.
Conclusion	10 minutes	The game ends when all students complete their artwork and participate in a reflection circle. Students compare techniques, describe their experience, and connect their paintings to real-life wind effects. Optional: • Organize an "Art Meets Nature" mini-exhibition in the classroom. • Let students name their paintings and write short stories based on their work.

MISSION RECYCLE: THE HEROES OF THE PLANET!

Class / Grade	3rd–5th grade
Subject	Environmental Science, Physics, Mathematics
Related Lesson plan	Mission Recycle – Materials, Waste, and New Lives
Duration	40 minutes

GAME GOAL

- Identify recyclable materials based on their physical properties (e.g. glass is fragile and transparent).
- Understand the impact of waste on ecosystems and the role of the 3Rs: Reduce, Reuse, Recycle.
- Learn how energy is saved by recycling (e.g. aluminum).
- Practice basic Physics, Biology, and Math skills: measuring weight, categorizing waste, calculating percentages.
- Develop environmental responsibility, teamwork, and critical thinking.

LOCATION

- Outdoors

VARIATIONS

- Easier: Virtual cards with symbols.
- More difficult: Calculate recycling rates based on a fictional city

MATERIALS

Prepare an open space (indoors or outdoors) with:

- 4 labeled bins: Blue (paper), Yellow (plastic/metal), Green (glass), Brown (organic/compost).
- Cards or real/simulated waste items for each bin (e.g. newspaper, bottle, eggshells).
- Bonus/penalty cards:
  - "Send Zero Waste!"
  - "Pollution in the City!"
  - "Give a Second Life"
  - "Green Hero"
  - "Rain of Recyclables!"
- Dice, timer, observation sheets, ropes/cones to mark play areas.
- Optional: music, green coins, eco-prizes.

Game steps	Est. Time Frame	Description
Main part	40 minutes	The students are divided into 4 groups , e.g. "Paper Balls", "The Plastics", "Glass Lovers", "Compost Heroes". In front of them lies a "chaotic" field with various "garbage" • Teams take turns rolling the dice and moving to select one item. • Each team decides which bin the item belongs to and justifies their choice. If the asnwer is correct, they earn points. If not, the correct answer is explained. During the game, special challenge cards appear: • "Send Zero Waste!" – find 3 items to reuse (earn 2 pts) • "Pollution in the City!" – incorrect bin use → skip a turn • "Give a Second Life!" – transform waste into something new (3 pts) • "Green Hero!" – share how you would convince others to recycle (1 pt) • "Rain of Recyclables!" – sort 4 cards correctly in 30 sec (2 pts) The game ends when all waste is sorted. The winner is: The team with the most correct separations and creativity points.

MATH MISSIONS

Class / Grade	4th–6th grade
Subject	Mathematics, Environmental Science
Related Lesson plan	Numbers That Matter – Understanding Waste Through Data
Duration	50 minutes

GAME GOAL

- Apply basic arithmetic and word problem-solving in practical contexts.
- Understand environmental challenges through numerical reasoning.
- Collaborate in teams and communicate strategies.
- Reflect on sustainable solutions and daily habits.

LOCATION

- Outdoors

MATERIALS

- Mission cards (printed)
- Colored markers or pencils
- Dice (for random number generation)
- Game board (if applicable) or station setup
- Worksheets for calculations
- Timer/stopwatch
- Environmental visuals (images of forests, oceans, recycling bins, etc.)
- "Eco Hero" stickers or badges (optional)

ECO POINTS

- Teams earn Eco Points for correct answers and teamwork.
- Teachers may assign bonus points for collaboration or creative solutions.
- Teams track their progress on a poster or board.

VARIATIONS

- Teams earn Eco Points for correct answers and teamwork.
- Teachers may assign bonus points for collaboration or creative solutions.
- Teams track their progress on a poster or board.

Game steps	Est. Time Frame	Description
Introduction	10 minutes	• The teacher introduces the storyline: "The Earth needs your help! Each mission you complete will restore a part of the environment." • Students are divided into teams of 3–4. • Each team receives a Mission Pack with 3–4 mathematical tasks.
Main part	30 minutes	***Mission Stations*** Each team moves from one station to another, solving math tasks related to an environmental topic. Examples of missions (based on original materials): *Mission 1: Save the Forest!* Task: Calculate how many trees can be planted in a plot. • The plot is 100 meters long. • If one tree needs 5 meters of space, how many trees can fit? • Bonus: What if the plot is doubled in size? *Mission 2: Recycle & Reuse!* Task: A factory produces 80 plastic bottles per hour. • How many bottles in 6 hours? • How many could be saved if 30% were reused? *Mission 3: Polar Ice Meltdown* Task: Temperature change calculations. • The Arctic temperature rises by 2°C per decade. • If it's 2020 and the current temperature is –15°C, what will it be in 2050? • Will polar bears be in danger if it goes above –5°C?

Game steps	Est. Time Frame	Description
Main part		*Mission 4: Water Waste Watchers* • Task: Calculate water use. • A dripping tap wastes 15 liters per day. • How much water is wasted in a week? A month? • If 10 taps drip in a school, how much is wasted in a year?
Conclusion	10 minutes	The game ends when all teams complete their missions or when the allotted time runs out. Success is determined by how many missions were correctly completed and how well players applied their math skills to solve the problems. Winners are the teams that achieved the most goals and presented the best solutions for environmental protection.

POLLINATOR PARADE

Class / Grade	4th–6th grade
Subject	Environmental Studies / Natural Science
Related Lesson plan	Buzzing Helpers – Who Are the Pollinators and Why Do They Matter?
Duration	40 minutes

GAME GOAL

- Understand the concept of pollination and the role of pollinators in plant reproduction.
- Recognize specific pollinators (e.g., bees, butterflies, birds, bats) and their matching native Greek plants.
- Identify threats to pollinators such as climate change, pesticides, and habitat loss.
- Develop creative expression, movement coordination, and collaborative skills.
- Reflect on human impact on ecosystems and brainstorm simple, age-appropriate actions for pollinator protection.

LOCATION

- Indoors
- Outdoors

VARIATIONS

- Add data collection: Count how many tokens each plant received.
- STEAM Challenge: Design a "super flower" that attracts the most pollinators.
- Engineering task: Build bee hotels using recycled materials.
- Discuss alternatives to pesticides with students or invite an expert.

MATERIALS

- Pollinator Cards (bees, butterflies, birds, bats)
- Plant Cards (e.g., lavender, olive tree, caper bush, jasmine, sunflower)
- Station Markers (colored cones or signs for plant locations)
- Nectar Tokens (paper cutouts or stickers representing pollen/nectar)
- Observation Sheets
- Art Supplies (paper, crayons, pencils, etc.)
- Certificates ("Pollinator Protector" badges)

Game steps	Est. Time Frame	Description
Main part	40 minutes	Each player receives a Pollinator Card and becomes a bee, butterfly, bird, or bat. Children “fly” from Plant Stations to collect Nectar Tokens. Each plant can only be visited by specific pollinators shown on their cards (e.g., bees → sunflower; butterflies → caper bush, jasmine). If a pollinator visits a wrong plant, they do not collect nectar. At each station, players perform a matching movement: • Buzz (bee) • Flutter (butterfly) • Glide (bird) • Swoop (bat) **Goal:** Each pollinator must visit 3 correct plants and return with 3 nectar tokens. Children use their *Observation Sheet* to look for real flowers and insects, drawing or describing what they see in nature. Each student draws: • Their pollinator • The plants they visited • A short story of their journey Children share in pairs or small groups. Drawings and observation sheets can be displayed in a classroom "Pollinator Gallery."

3R CLASSROOM CHALLENGE – REDUCE, REUSE, RECYCLE!

Class / Grade	3rd grade
Subject	Environmental Studies / Natural Science
Related Lesson plan	Recycling, Reuse and reduce
Duration	40 minutes

GAME GOAL

- Understand and explain the 3R concepts.
- Apply critical thinking to classify and handle waste.
- Engage families in environmentally responsible practices.
- Propose creative solutions for reusing and recycling.

LOCATION

- Indoors

BONUS TASK

- Students bring a t-shirt or clothing item from home they no longer use.
- Create a "classroom exchange corner" where clothes can be swapped.
- Introduce the concept of reusing textiles and reducing fast fashion waste.

MATERIALS

- Reduce: chips in Tupperware vs. pre-packaged chips, reusable water bottles
- Reuse: used clothes, plastic bags for garbage, containers
- Recycle: tin can, plastic bottle, glass bottle, paper
- “3R worksheet” and Tin Can Plan sheet
- Whiteboard or poster for class idea sharing
- Biodegradable time chart

Game steps	Est. Time Frame	Description
Introduction	10 minutes	*Preparation part*: • A recycling station is set up in the classroom with a variety of materials: ◦ Empty snack wrappers, plastic bottles, old newspapers, plastic bags, used clothes, tin cans, etc. • Students are divided into small groups of 2–4. • Each group receives a "3R worksheet". • A “Tin Can Challenge” station is placed at the front of the room with 1–2 empty cans.

Main part	30 minutes	*Sorting challenge*:
		• Each group selects a few items from the classroom “waste bin” or recycling materials table.
		• They discuss and classify them into Reduce, Reuse, or Recycle using the worksheet.
		• For each item, students must write:
		  ◦ How they could reduce its use.
		  ◦ How it could be reused.
		  ◦ How it could be recycled (if possible).
		• The groups present one item and idea to the class; teacher writes the ideas on the board.

Game steps	Est. Time Frame	Description
Main part		*Tin Can Innovation Station* • Each student visits the “Tin Can” station. Task: come up with an idea for how to reuse or recycle the can. • On paper (or computer), they write a short plan and optionally draw or decorate their idea. • The most creative or practical ideas are displayed on a classroom bulletin board. Students go home and interview their family: • How does the family reduce, reuse, or recycle? • What new ideas could they try at home? They write down their findings and prepare to report in the next class.

FANTASTIC CREATURES IN NATURE

Class / Grade	3rd grade
Subject	Natural environmental concerns
Related Lesson plan	Create Your Fantastic Organism
Duration	90 minutes

GAME GOAL

- Understand and explain the 3R concepts.
- Apply critical thinking to classify and handle waste.
- Engage families in environmentally responsible practices.
- Propose creative solutions for reusing and recycling.

LOCATION

- Indoors
- Outdoors

MATERIALS

- Natural objects collected outdoors (leaves, stones, sticks, etc.)
- Drawing supplies (paper, markers, colored pencils, scissors, glue)
- Printed or projected images of real-life animals and plants
- Flipchart or board
- Optional: ropes or strings to visualize food chains

OPTIONAL EXTENSIONS

- Biological Characteristics Sheet for each organism
- Classroom Display with drawings and food webs
- Observation Journal Homework: Students observe and describe a real animal or plant during the week

Game steps	Est. Time Frame	Description
Introduction	10 minutes	The teacher begins with a brief discussion about how animals and plants adapt to their surroundings. Using real-life examples or pictures, students explore special traits that help living beings survive (e.g., camouflage, unique feeding habits, specific habitats). The key question follows: • “What if you could create your own creature that’s perfectly adapted to a new environment?”

Main part	70 minutes	• Students take a short walk in the schoolyard or nearby park. Their task is to observe natural elements like plants, insects, birds, or other creatures.
		• They are also invited to collect interesting natural materials for creative use (e.g., feathers, leaves, twigs, pebbles).
		
		• Back in the classroom, students use their collected materials (and additional art supplies) to create a fantastic organism.
		• The teacher helps guide the design process with simple questions:
		  ◦ What color is your creature?
		  ◦ Does it have special features (wings, gills, claws, etc.)?
		  ◦ How does it survive? What does it eat?
		• Students are encouraged to think about the environment their creature lives in and how it’s adapted.

Game steps	Est. Time Frame	Description
Main part		Each student or group presents their creature to the class. They explain: • Its name and characteristics • The type of environment it lives in • How it feeds and survives • The teacher facilitates questions and encourages students to ask each other about the features and survival strategies. *Optional: Food Chain Game* In small groups, students build a food chain using the creatures they created. Each group defines roles: producers, herbivores, carnivores, etc. On large sheets of paper, they draw arrows and connections to show how the food chain works, explaining each step.
Conclusion	10 minutes	In a closing section, the teacher leads a reflection: • What was the most interesting part of the activity? • What did you learn about survival and adaptation? • How does this connect to real nature? • Students may write a short summary in their notebooks or share ideas verbally.

“LET’S DRAW & LAUGH IN ENGLISH!”

Class / Grade:	4th grade
Subject:	Art&English
Related Lesson plan:	Let’s Describe and Feel Through Art
Duration	40 minutes

GAME GOAL

- Use English actively while drawing and describing their work.
- Develop listening and speaking skills through interactive art challenges.
- Strengthen vocabulary related to art and actions (e.g., draw, color, rotate, hold).
- Express creativity and imagination through non-traditional drawing methods.
- Build confidence and teamwork by sharing and discussing their drawings in English.
- Learn that communication and creativity are more important than perfect results.

LOCATION

- Indoors

VARIATIONS

- Easier: Simplify instructions, give more time.
- Harder: Use abstract challenges or require full-sentence descriptions before showing the drawing.
- Add a “Mystery Object” round where students guess the object without explanation.

MATERIALS

- Printed Art Game rule cards (see attachment)
- A4 drawing paper
- Pencils, thick markers, colored pencils
- Timer or stopwatch (for timed rounds)

Game steps	Est. Time Frame	Description
Introduction	10 minutes	*Set the mood for creative play*: Start with a question: • "What is art? Do you like drawing?" • Ask: "What is the funniest thing you have ever drawn?" *Review basic drawing verbs in English*: draw, paint, color, use, hold, rotate, choose, copy *Make sure students understand the gameplay*: Teacher shows sample Art Game rule cards: • "Draw with zigzags!" • "Draw like a 5-year-old!" • "Draw upside down!" *Explain the game flow: 4–6 players per group* • Each turn: one player draws a rule card, follows the drawing challenge • Others guess what it is or give feedback • After 1–3 rounds, a new card is drawn

Main part	10 minutes	• Teacher demonstrates 2–3 drawing rules (e.g., draw using only geometric shapes).
		  ◦ *"Let's draw using only geometric shapes!"* (you draw on the board)
		  ◦ *"Now let's draw with our non-dominant hand!"*
		
		• Students repeat the instructions aloud and follow along.
		  ◦ *"We are drawing with zigzags!"* – *"You must use only 10 seconds!"*

Game steps	Est. Time Frame	Description
Main part	15 minutes	• Divide the class into small groups (4–6 students) • Give each group a shuffled set of Art Game rule cards Each player: • Draws a rule card • Starts drawing while saying the instruction in English (e.g., “I will draw with my mouth!”) • Others guess what the drawing is, using sentences like: ◦ *“It looks like a cat!”, “I think it’s a flower!”* • Teacher walks around, joins in, and encourages use of full sentences.
Conclusion	5 minutes	• Students lay out their drawings on desks • Walk around in pairs and ask each other: ◦ *“What did you draw?”* ◦ *“Which rule did you follow?”* ◦ *“How did you feel while drawing like a 5-year-old?”* End with a group share: ◦ *“What was the funniest drawing?”* ◦ *“What was the most difficult challenge?”*

GUESS THE ARTIST

Class / Grade	4th grade
Subject	English through Nature Topics
Related Lesson plan	Let's Describe and Feel Through Art
Duration	45 minutes

GAME GOAL

- Recognize and name famous artists and their works.
- Practice speaking English using art-related vocabulary.
- Observe and describe colors, lines, and shapes.
- Apply geometric concepts in a creative drawing task.
- Build confidence through peer sharing and teamwork.

LOCATION

- Indoors

VARIATIONS

- Easier version: use only iconic paintings and give clues.
- Harder version: remove clues and ask for more detailed descriptions.
- STEAM extension: include a short research task (e.g., find one fact about the artist).

MATERIALS

- "Guess the Artist" board game
- Dice and player tokens
- Painting cards (with artist's name on the back)
- Worksheets or drawing paper
- Colored pencils or markers
- (Optional) Digital projector to show paintings

Game steps	Est. Time Frame	Description

Introduction	10 minutes	*Activate students' background knowledge*
		• *Show 2-3 paintings (like Starry Night or The Scream).*
		• *Ask: "What do you see?"*
		  ◦ *"What colors? What shapes?"*
		  ◦ *"Do you know the artist?"*
		• *List vocabulary on the board:*
		  ◦ *color, line, shape, dark, bright, sad, happy, famous, paint*

Main part	15 minutes	*Make sure students understand the gameplay*
		• Show the Guess the Artist board.
		• Rules:
		  ◦ Roll the dice, move forward.
		  ◦ Pick a card when told.
		  ◦ Look at the painting.
		  ◦ Guess the artist in English! (Use sentences like:
		  ▪ "I think it is Van Gogh.",
		  ▪ "Maybe it is Monet.")
		Play the game:
		• Students are divided into small groups (4–5 students).
		• Each group gets a dice and cards.
		• They move around the board, guessing the artist for each painting. Encourage full sentences: *"The painting is colorful. I think it is Matisse."*
		
		STEAM Connection:
		• *Use simple math for dice counting, moving spaces, and scoring points.*
		• *Briefly mention technology by explaining that some of these paintings can be explored virtually in online museums.*

Game steps	Est. Time Frame	Description
Main part	15 minutes	*STEAM Mini Activity: Create Your Own Version* • Objective: Integrate Art, Math, and Technology After the game, students pick their favorite painting from the cards. Task: “Draw your version of the painting, but use only geometric shapes!” (STEAM link: math + art) • Students work for 5–7 minutes. (Emphasize creativity, not perfection!)
Conclusion	5 minutes	*Practice speaking and peer appreciation*: • Students quickly show their drawings to the class. Applaud all students for their creativity and effort!

“FIND IT IF YOU CAN!”

Class / Grade	4th grade
Subject	English through Nature Topics
Related Lesson plan	Let’s Talk About Nature – Speak, Move, Learn!
Duration	40 minutes

GAME GOAL

- Practice English speaking and listening skills
- Recall scientific and environmental facts
- Encourage creativity, confidence, and teamwork
- Earn the most tokens by answering questions correctly

LOCATION

- Indoors
- Outdoors

VARIATIONS

- Easier: Use simpler questions and vocabulary
- Harder:
- Require full-sentence answers for points
- Add a time limit for responses
- Introduce themed card decks (e.g., “Space”, “Recycling”, “Rainforests”)

MATERIALS

- Printed speaking cards (with questions, answers, punishments)
- Tokens (buttons, paper coins, stickers, etc.)
- Open play area (classroom space, hallway, or outdoor yard)
- Optional: whiteboard to keep group score

Game steps	Est. Time Frame	Description
Introduction	5 minutes	*The teacher introduces the game*: • *"Today we'll play a speaking game called Find It If You Can!"* • Revise 3–4 vocabulary words (e.g., atmosphere, recycle, ocean, flower) • Ask warm-up questions to activate prior knowledge *(e.g., "What do you know about rainbows?", "Where do polar bears live?")*
Main part	5 minutes	*Display simplified rules on the board*: ◦ One person reads a question from a card. ◦ The next player answers it. ◦ If the answer is correct → earn 1 token! ◦ If the answer is wrong or skipped → do a funny punishment! (from the card) Show examples: ◦ *Question: "Which animal runs the fastest?"* ◦ *Answer: "Cheetah" → Earn 1 token.* Wrong answer? → Do the punishment: "Dance for 10 seconds!"

Game steps	Est. Time Frame	Description

Main part	25 minutes	*Let's Play!*
		• In small groups, students rotate roles: one reads, one answers
		• Tokens are handed out for correct answers
		• Punishments may include:
		  ◦ Acting like an animal
		  ◦ Singing a short song
		  ◦ Balancing on one foot
		  ◦ Doing a silly face
		
		Teacher moves between groups, gently correcting and encouraging full-sentence English responses
		
		Students encouraged to say:
		• "The blue whale is the largest animal in the ocean." rather than just "whale"

Conclusion	5 minutes	Ask:
		  ◦ *"What new facts did you learn today?"*
		  ◦ *"Which punishment was the funniest?"*
		• Encourage students to share a fun moment from their group.
		• Bonus Challenge:
		Ask a final question to the whole class. First one to answer correctly gets 5 bonus tokens!

TABOO 1

Class / Grade	4th grade
Subject	English, Science, Social Studies, Visual Arts
Related Lesson plan	“Green World!” – Let’s Talk About Nature
Duration	40 minutes

GAME GOAL

- Develop environmental vocabulary in a fun and engaging way.
- Strengthen students’ speaking and descriptive skills in English.
- Encourage teamwork and active listening.
- Promote awareness of environmental topics through language games.
- Support creative thinking under time pressure.

LOCATION

- Indoors
- Outdoors

VARIATIONS

- Easier: Allow passes, give visual clues.
- Harder: Shorten the guessing time, use advanced vocabulary, or require a full sentence with the guessed word.

MATERIALS

- Taboo cards with nature/environmental words (based on TABOO 1)
- Flashcards or digital presentation for warm-up
- Drawing paper and colored pencils
- Nature comparison photos (e.g., clean forest vs. polluted beach)

Game steps	Est. Time Frame	Description
Introduction	5 minutes	• Show an image of a healthy forest and a polluted beach side-by-side. • Ask: *"Which one do you like more? Why?"* Students describe them using simple English: trees, water, animals, trash... • Write a few key words on the board: forest, fish, trash, clean, oxygen

Main part	10 minutes	*Teach nature-related vocabulary using visuals and simple explanations.*
		• Present selected words from **TABOO 1** using flashcards or a digital presentation: *Forest, River, Dirt, Fish, Plastic, Electricity, Bug, Panel, Warm, Bloom, Trash, Earth, Weather, Environment*
		• For each word:
		  ◦ Show an image
		  ◦ Give a simple English explanation (e.g., *"Bloom means a flower grows and opens."*)
		• Ask students to repeat and make a sentence if possible

Game steps	Est. Time Frame	Description
Main part	20 minutes	*Taboo game*: • Divide students into two teams. • A student picks a Taboo card and describes the word without saying the forbidden terms. Example: • Word: Forest • Forbidden words: Tree, Green, Leaves, Wood • Clue: *"Many animals live here. It has a lot of trees."* • Teammates have 1 minute to guess. • Each correct guess = 1 point. *Creative Task* • Students draw a favorite place in nature and write 2–3 sentences using new words (e.g., "There is a river with fish and clean water.")
Conclusion	5 minutes	• Volunteers present their posters. • Teacher gives feedback and rewards participation (e.g., stars or stickers).

TABOO 2

Class / Grade:	4th grade
Subject:	English, Science, Social Studies, Visual Arts
Related Lesson plan:	Let's Save the Earth!
Duration	40 minutes

GAME GOAL

- Practice and reinforce key environmental vocabulary in English.
- Encourage students to describe terms without using specific "taboo" words.
- Promote teamwork and quick thinking under time pressure.
- Support creative reflection on environmental issues.

LOCATION

- Indoors
- Outdoors

VARIATIONS

- Easier: Allow more "pass" opportunities or show a related picture.
- Harder: Reduce time to 20 seconds or increase the number of forbidden words.
- Require the guesser to use the word in a complete English sentence after guessing.

MATERIALS

- Printed Taboo cards (based on environmental vocabulary)
- Flashcards or digital presentation for vocabulary review
- A4 paper and colored pencils (for follow-up activity)
- Nature-themed photo for the warm-up

Game steps	Est. Time Frame	Description

Introduction	5 minutes	• Divide the class into teams of 3–4 students.
		• Prepare one deck of Taboo cards per group. Each card includes:
		  ◦ 1 target word (e.g., "Recycle")
		  ◦ 2–3 taboo words that cannot be used (e.g., "plastic", "paper", "glass")
		• Show a photo of nature (forest, ocean, planet Earth). Ask students:
		  ◦ *"What do you see in this picture?"*
		• Elicit English words (e.g., sun, water, tree), and introduce core concepts: pollution, recycle, planet.

Main part	10 minutes	*Teach key environmental vocabulary using simple English and visuals.*
		• Introduce selected words from the PDF:
		  ◦ *Pollution, Factory, Recycle, Plastic, Glass, Paper, Global Warming, Flood, Earthquake, Renewable Energy*
		• For each word, present:
		  ◦ A picture
		  ◦ A simple definition in English
		  ◦ A sample sentence (e.g., Factories cause pollution.)

Game steps	Est. Time Frame	Description
Main part	20 minutes	*Taboo game*: • Divide the class into groups of 3–4 students. • Give each group a set of Taboo cards (based on the PDF). • One student explains a word without using the "taboo" words. For example: ◦ Word: Recycle ◦ Forbidden words: plastic, paper, glass • The team guesses the word in 30 seconds *Writing + Art Activity* Encourage creative thinking and integrate visual arts. • Task: ◦ Draw a picture of our planet in the future if we protect it. ◦ Write 3 simple sentences using the words: planet, recycle, and future. Example sentence: We must recycle to protect our planet in the future
Conclusion	5 minutes	• Volunteers show their drawings and read their sentences aloud. • Teacher gives positive feedback. End with a message: *"You are the heroes of the Earth! Let's protect our world together!"*

THE BEST MAPPER

Class / Grade	4th grade
Subject	Geography
Related Lesson plan	Exploring the World with Maps
Duration	40 minutes

GAME GOAL

- Students will identify and locate countries on a world map.
- Students will follow and understand simple instructions in English.
- Students will use estimation and distance skills to guess locations.
- Students will develop map literacy and collaboration through a STEAM-based activity

LOCATION

- Indoors
- Outdoors

VARIATIONS

- Lower-level learners: use labeled maps, provide word banks and visuals
- Higher-level learners: use unlabeled maps, open-ended reasoning tasks
- Language support: vocabulary cards, visual glossary, sentence starters

MATERIALS

- Printed or digital world map
- Mini compass rose handouts
- Country task cards
- Continent puzzle sheet (optional)
- Whiteboard, markers, globe
- Vocabulary flashcards (e.g., ocean, mountain, island, country, capital)

Game steps	Est. Time Frame	Description
Introduction	10 minutes	• Teacher shows a world map and explains the rules of The Best Mapper game. • Each group receives a map and pins. • Roles are assigned: 1 Master Mapper, others are Mappers. Cheat sheet distributed.
Main part	25 minutes	The Master Mapper says a country in English. Mappers place their pins on the map. The closest guesser wins a coin. Play 5–6 rounds. You may also award: • +1 point for following the English instruction correctly. • +1 bonus point for helpful group collaboration.

Game steps	Est. Time Frame	Description
Reflection	5 minutes	*Students share how they felt during the game.* *Teacher gives positive feedback on English use and geographic thinking.*

TOMBOLA

Class / Grade	2nd-4th grade
Subject	Mathematics / Environmental Studies / Visual Arts (STEAM)
Related Lesson plan	Flags and Countries
Duration	40 minutes

GAME GOAL

- Students will locate and identify countries and their flags.
- Students will follow and use simple English commands and country names.
- Students will engage in STEAM thinking: prediction, visual matching, logical reasoning, and collaboration

LOCATION

- Indoors
- Outdoors

VARIATIONS

- Easier version: Use common countries (e.g., France, USA).
- Harder version: Use smaller or lesser-known countries (e.g., Bhutan, Belize).
- Add a distance estimation challenge or country pronunciation task.
- For advanced students, require a short fact about the guessed country.

MATERIALS

- Tombola cards with countries & flags (from your PDF)
- Small chips/paper pieces to cover spots
- A bag with numbers for drawing
- A large world map (optional)

Game steps	Est. Time Frame	Description
Introduction	5 minutes	Teacher says: *"Today, we're playing Around the World Games! Let's learn countries and flags!"* Shows a few examples.

Main part	35 minutes	• Each student or pair gets a Tombola card.
		• The teacher reviews English country names and explains rules clearly in English (simplified).
		• Teacher or a student picks numbers and says them aloud. Players mark matching countries. They say: *"I have [country]!"* in English.
		• Students call out *"first line!"*, *"second line!"*, and *"Tombola!"* when completed.
		• Ask:
		  ◦ *"How did you know which flag matched?"*
		  ◦ "How did you remember the country?"
		
		Let students explain patterns, shapes, and colors. Show flags on screen or map.
		
		• The closest guess wins 1 coin.
		• You may also award:
		  ◦ +1 point for following the English instruction correctly.
		  ◦ +1 bonus point for helpful group collaboration.
		• Rounds: Play 5–6 rounds.
		• At the end, the student with the most coins wins.

NATURE TANGRAM

Class / Grade	3rd-5th grade
Subject	Mathematics / Environmental Studies / Visual Arts (STEAM)
Related Lesson plan	The Shape of Nature: Tangram Preparation Adventure
Duration	45 minutes

GAME GOAL

- Build basic geometric shapes using natural materials (sticks, stones, leaves, pinecones, etc.).
- Combine shapes to create a nature-inspired composition (e.g., mountain, island).
- Present the creation with a creative name and short explanation.
- Optionally participate in a mini-quiz about geometry and observation

LOCATION

- Indoors
- Outdoors

VARIATIONS

- Easier: Use only 2 basic shapes (triangle + square).
- Advanced: Enforce symmetry rules or assign angle estimation tasks.
- Add-ons:
  - Optional time limit
  - End-of-game mini-quiz (e.g., “Why are angles important in a square?”)

MATERIALS

- Natural objects: leaves, sticks, stones, pinecones
- Colored cardboards (base surface)
- Magnifiers, rulers (for examining textures and measuring shapes)
- Optional: printed tangram shape visuals or cards for guidance

Game steps	Est. Time Frame	Description
Introduction	5 minutes	• The teacher introduces the concept of a tangram. • Shows examples and asks, *"What shapes do you recognize?"* • Students discuss how natural objects might form similar shapes.
Main part	30 minutes	• Using magnifiers, students examine texture, symmetry, hardness, and shape of materials. Example prompts: • *"Is this stone harder than the other?"* • *"Which leaf looks more symmetrical?"* Students work in teams to choose 2+ geometric shapes (e.g., triangle, square, parallelogram). Using natural items, they form tangram shapes and assemble them into a larger nature-themed figure (e.g., mountain, island). Each group shares their model, explaining: • What shapes they used • How the object connects to nature • Why they chose that name The teacher asks: "What does this look like in the real world?" Groups name their creation and mount it on cardboard for a mini-exhibition. Other groups observe and give comments: "This looks like...," "The triangle reminds me of..."

Game steps	Est. Time Frame	Description
Closure	5 minutes	Recap: How did we use math, art, science, and creativity? Homework: “What shapes can you create using natural items at home?”

NATURE DIRECTION

Class / Grade	2nd-5th grade
Subject	Mathematics / Environmental Studies
Related Lesson plan	Learning Directions in Nature
Duration	45 minutes

GAME GOAL

- Learn to find cardinal directions using a shadow stick method.
- Follow a series of directional instructions to locate a hidden "treasure."
- Reinforce orientation skills through exploration and creative mapping.

LOCATION

- Indoors
- Outdoors

VARIATIONS

- Easier Version: Use fewer steps and visible landmarks.
- Advanced Version: Add more complex direction changes or include degrees and angles.
- STEAM Link: Integrate math (angle estimation), science (sun/shadow), and art (map drawing).

MATERIALS

- A stick (to act as the shadow stick)
- String and stones (to mark shadow points)
- Paper or cardboard (for drawing the shadow)
- Simple directional task cards
- Compass (for comparison after task completion)
- Treasure tokens (e.g. flowers, secret cards, stones)

Game steps	Est. Time Frame	Description
Introduction	10 minutes	**Preparation:** • Place sticks vertically into the ground for each group. • Prepare directional task cards (e.g., “Take 3 steps north, turn east and take 2 more steps”). • Mark a defined area outdoors for the activity. • Hide small treasure items at destination points. ***Teacher begins with a curiosity trigger:*** • “Can you find direction by looking at the sun?” • Short discussion on the importance of orientation in nature.
Main part	30 minutes	*Students place a stick vertically in the ground.* • Mark the shadow tip at two different moments (approx. 15 minutes apart). • Connect the two marks to establish the North–South line. *Students receive a task card with movement instructions based on cardinal directions.* • They follow the directions step by step to reach a hidden "treasure." • Correct use of directions leads to successful treasure discovery. *After the hunt, students draw a simple map of their path.* • Maps include directions followed and landmarks observed. • Groups share and explain their maps to the class.

Game steps	Est. Time Frame	Description
Conclusion	5 minutes	• A short quiz to consolidate knowledge (e.g., “Where is the sun at noon?”). • Teacher summarizes the shadow stick technique and links it to real-world geography and environmental awareness.

NATURES PALETTE

Class / Grade	2nd-5th grade
Subject	Mathematics / Environmental Studies
Related Lesson plan	“The Earth’s True Colors”
Duration	45 minutes

GAME GOAL

- Discover natural sources of color (e.g., flowers, leaves, soil)
- Create natural paint from these materials
- Use the paint to color a map or geographical shapes
- Explain which natural materials were used for each color

LOCATION

- Indoors
- Outdoors

VARIATIONS

- Easier Version: Allow students to work in pairs and focus on finding only 3–4 natural colors. Provide a pre-drawn outline map to paint on.
- Advanced Version: Challenge students to identify subtle shades (e.g., light vs. dark green) and mix pigments accordingly.

MATERIALS

- Natural materials (flowers, leaves, soil, clay)
- Bowls of water, mortar and pestle or stones for crushing
- Plain paper or map templates
- Brushes or natural tools (e.g., leaves, petals, feathers)

Game steps	Est. Time Frame	Description
Introduction	10 minutes	*The teacher starts by asking*: • *"Where do we see colors in nature?"* or *"Why do leaves have different shades of green?"* • A short observation session follows: students look at gathered natural items on a table (flowers, leaves, soil, stones, fruit skins, etc.). *Teacher prompts*: • *"Do you think we can make paint out of these?"* • *"What colors can you already spot?"*
Main part	10 minutes	• Students are grouped (3–4 per group). Each group receives a small tray or bowl, mortar and pestle (or spoon and plastic cup), and water. *Task*: • Choose 2–3 natural items from the table. • Crush or rub them with water to create a pigment. • Test the color on a piece of scrap paper. • Teacher's role: circulate, guide technique ("Try adding a bit more water!"), and encourage testing different textures. • **Optional:** Introduce terms like tint, hue, or natural dye for vocabulary enrichment.

Game steps	Est. Time Frame	Description

Main part	20 minutes	• Each group receives a printed outline of a landscape map (can include forest, water, fields, mountain, etc.).
		• Task: Use their homemade paints to color each section with a matching pigment.
		  ◦ Forest = green leaf pigment
		  ◦ Soil = brown mud pigment
		  ◦ Water = blueberry juice or diluted ink
		• Encourage creativity: “If you had no blue, what could represent water?”
		• Students may blend pigments or layer strokes for texture.
		• **Outcome:** A unique eco-art piece showing how color can be sourced from nature.
		
		Each group presents their map to the class, and they explain:
		• Which material was used for each color.
		If they had any difficulties creating certain colors.
		• What their favorite pigment was and why.
		• Peer questions are encouraged: *“How did you make the yellow?”*, *“Did you mix two leaves for that shade?”*
		Teacher asks reflective math-based questions:
		• *“How many colors did your group use in total?”*
		• *“Which area of the map was the biggest?”*
		• *“Which pigment covered the most space?”*

Conclusion	5 minutes	Final discussion: • “Could you do this at home? What would you use?” or “Why might people in the past have made their own paint?” • The session ends with a gallery walk – students’ works are displayed around the classroom or hallway

LUCKY LOGIC

Class / Grade	4th grade
Subject	Nature&biology
Related Lesson plan	Lucky Logic: Can We Play Our Way to a Greener Future?
Duration	45 minutes

GAME GOAL

- Practice English speaking through playful communication.
- Answer environmental science trivia correctly.
- Complete creative or physical challenges to move forward.
- Reach the finish line before other players!

LOCATION

- Indoors
- Outdoors

VARIATIONS

- Easier Version: Offer clues or translation help for tough vocabulary. Allow students to discuss in pairs before answering.
- Advanced Version:Require full-sentence answers in English. Include more complex science questions. Add a time limit for each turn.

MATERIALS

- “Lucky Logic” game board
- Dice and player tokens
- Environmental question cards
- Chance/challenge cards (physical or creative tasks)

Game steps	Est. Time Frame	Description
Introduction	5 minutes	The teacher introduces the topic by asking: • “What is recycling?” • “Why is the Earth getting warmer?” • “What can we do to protect nature?” Students brainstorm and review key vocabulary: recycle, pollution, sunlight, ocean, desert, climate, global warming, renewable energy. *Preparation*: • Set up small groups (4–5 players per group). • Place game boards on tables. • Shuffle and place question/chance cards in two separate piles.

Main part	5 minutes	*Rules explaining*:
		• *Each player rolls the dice and moves on the board.*
		• *Depending on the square they land on, they must*:
		  ◦ Answer an environmental trivia question in English.
		  ◦ Complete a fun task like acting, dancing, or imitating animals.
		  ◦ Use full English sentences wherever possible.
		Example answers:
		• *“Plants use carbon dioxide.”*
		• *“I think the hottest climate is the desert.”*

Game steps	Est. Time Frame	Description
Main part	35 minutes	• In small groups, students take turns rolling dice and moving tokens. • Draw a question card: answer in English. • If correct: move forward! • If incorrect: draw a “fun punishment” card (e.g., dance, jump, or sing). *STEAM Integration*: • Science: Discuss recycling, climate, ecosystems. • Technology: Mention tools like solar panels or wind turbines. • Engineering: Talk about basic machines or inventions. • Arts: Act, dance, or draw. • Math: Count steps, add/subtract spaces. *Mini Creative STEAM Challenge*: Prompt: "Draw or describe a machine that helps save the Earth!" Students quickly brainstorm or sketch ideas like: • A robot that collects ocean plastic • A bicycle that generates clean energy • A solar-powered watering system Each student or group presents their machine and describes it in English.