

6.4 Team Mission: Planet Rescue

This 6-hour outdoor adventure turns 4rd graders into "rescue astronauts" tasked with saving a damaged planet by solving real-world environmental crises. The journey follows 6 stages, where teams must build functional water filters, cross "lava fields" with sturdy bridges, and engineer wind-resistant shelters. Using a mix of natural and recycled materials, students apply scientific and design thinking cycles to protect their mission from simulated "alien winds" and pollution. A unique focus on "SPIRIT skills" integrates emotional feedbacks after every challenge, helping students name their feelings by using weather icons like "sunny" or "stormy." The mission concludes with a Reflective walk with emotional prompts, where teams celebrate both their engineering triumphs and their growth in empathy and resilience.

Basic Information Sheet

Age group	Student number	Duration	Number of stages	Subjects connection and relevance
4 th , 5 th grades students	Whole class (Teams of 5–6 students)	6h	6 stages	Science art

STEAM Event Summary

SPIRIT Skill Focus

- Valuing people and nature
- Resilience
- Problem-solving
- Emotional awareness, regulation and communication
- Empathy
- Creativity



National curriculum Link and Objectives

- Apply scientific thinking to real-world challenges (environmental science, engineering).
- Use creativity and design to build and test prototypes.
- Develop collaboration and problem-solving skills under constraints.

Real-world STEAM Connection and Problem definition

Children take on the urgent role of young astronauts sent to rescue a damaged planet - echoing real environmental crises like pollution, natural disasters, and climate change. The activity mirrors real-life needs for clean water, stable infrastructure, and protection from extreme weather. These are challenges children have likely seen in news stories, local discussions, or experienced during family hikes or city flooding. They must work together to solve practical survival problems, making the learning deeply relevant and memorable.

Materials at a Glance

- Natural/recycled materials (leaves, cardboard, string, plastic bottles, sticks)
- Water, sand, cloth, small containers
- Fans or cardboard for wind simulation
- Mission folders with role instructions
- Emotion/weather cards, clipboards (optional), timers

Indoor/Outdoor and Classroom layout

Setting: Outdoor space, preferably in a natural environment such as a park, schoolyard with trees, or open field.

Layout Description:

- Mission Base: Central area with all materials prepared (natural and recycled items).
- Challenge Zones: Three clearly marked areas (e.g., cones, signs, chalk) for each mission (Water Filter, Lava Bridge, Alien Wind Shelter).

Reflection Trail: A short walking path or space with cards/posts for guided reflection.

Notes on Research-based approach and integration

The activity is grounded in inquiry-based and experiential learning. Children formulate questions (“How can we clean dirty water?” “What materials will hold up to wind?”), test hypotheses through construction, and revise their solutions based on trial outcomes. They also draw from their own observations - perhaps remembering a family camping trip, storm, or a news clip - bringing life relevance to each problem. The emotional check-ins add a socio-emotional lens, fostering metacognition and reflective learning.

Lesson Flow Overview (linked to details below)

Stage	Title	Brief Description	SPIRIT Skills	Duration	Link to Details
1st	Cooperative Team Role Assignment + Story-Based Introduction	Students are introduced to a fictional scenario: they are astronauts landing on a damaged planet and must complete three survival missions. The story creates a sense of urgency and engagement. This stage builds curiosity and sets expectations. Students work in teams of 4–5, read their mission briefing, and assign roles such as: • Mission Leader • Materials Manager • Emotional Reporter • Timekeeper	• Emotional awareness, regulation and communication • Empathy • Valuing people and nature	30 minutes	STAGE 1 – Cooperative Team Role Assignment + Story-Based Introduction
2nd	Clean Water Challenge + Team Emotional Check-in	After landing on the planet, teams must ensure access to clean water. Their task is to build a simple filter using natural/recycled materials. Afterwards, they check in emotionally as a team.	• Emotional awareness, regulation and communication • Empathy • Resilience • Problem-solving	90 minutes (70 min + 20min)	STAGE 2 – Clean Water Challenge + Team Emotional Check-in
3rd	Lava Bridge Challenge + Team Emotional Check-in	Teams must build a bridge over a “lava field” (area marked on ground) using limited materials. Then, they pause for emotional reflection and share how the challenge made them feel and how they supported each other.	• Emotional awareness, regulation and communication • Empathy	90 minutes (70 min. challenge + 20 min. reflection)	STAGE 3 – Lava Bridge Challenge + Team Emotional

			• Resilience • Problem-solving		Check-in
4th	Building a Wind-Resistant Shelter	Teams are challenged to build a shelter using natural or recycled materials that can protect from strong “alien winds” (simulated by a fan or cardboard flapping). The structure must stay upright and shelter a small object (e.g., a cup or a plastic figure).	• Emotional awareness, regulation and communication • Empathy • Resilience • Problem-solving	60 minutes	STAGE 4 – Building a Wind-Resistant Shelter
5th	Reflective walk with emotional prompts	Students go on a short walk (in a hallway, schoolyard, or designated space) with their group and emotional reporter. Along the path, they encounter reflection prompts that guide them to discuss both the technical and emotional aspects of their missions.	• Emotional awareness, regulation and communication • Empathy	30 minutes	STAGE 5 – Reflective walk with emotional prompts
6th	Whole-class reflection and sharing circle	After completing all missions and the reflection walk, the whole group gathers in a circle. Each team is invited to share one technical learning (from the challenges) and one emotional insight (from teamwork or check-ins). The teacher gently facilitates the conversation, celebrating both engineering effort and emotional growth.	• Emotional awareness, regulation and communication • Empathy • Valuing people and nature	25-30 minutes	STAGE 6 – Whole-class reflection and sharing circle

Tips and Tricks for dealing with challenges (for the whole STEAM program)

- Model emotional regulation early - for example, demonstrate how to name a feeling and take a breath before solving a problem.
- Provide supportive scripts for the emotional reporter (e.g., “I noticed we started rushing - can we slow down?”).
- Encourage small wins: praise moments like tying a knot well or showing calm teamwork.
- Have one adult circulate among teams to model resilience and calm problem-solving when frustration arises.

Difficulty level tailoring notes

- **Beginner learners:** For students with lower emotional regulation, keep roles consistent and assign a calm peer as co-leader. Give extra structure to the emotional reporter’s role (e.g., check-in checklist).
- **Advanced learners:** Use checklists with more subtle emotions, both pleasant and unpleasant (envy, guilt, satisfaction, etc.). Remember to always celebrate their efforts!
- **Expert learners:** For more emotionally mature groups, encourage deeper peer feedback after each mission (“What did we do well? What can we improve emotionally?”).

STEAM Program Debriefing and Reflection Questions

- What emotion came up most during the mission?
- How did your team help each other when things got stressful?
- What was your proudest moment - emotionally and technically?
- If you could do one thing differently, what would it be?
- When something didn’t work on the first try (water filter, bridge, shelter), how did you react and what helped you try again?
- Which moment of the mission made you feel discouraged, and how did your team help you regain calm and motivation?
- What strategy did you use to stay focused even when the construction seemed difficult or the time was running out?
- What did you learn about yourself when you had to adapt or change your idea during the mission?
- Which information or observations guided your team in deciding which materials to use to solve each challenge (dirty water, lava, wind)?
- How did you choose between different ideas within your team? What decision-making process did you use?
- What did your first test (of the filter, bridge or shelter) show you, and how did you improve the design after seeing the result?
- In what way did communication among team members improve - or complicate - the search for a solution?

6.4.2. Stage details and Activities Flow

STAGE 1 – Cooperative Team Role Assignment + Story-Based Introduction

How does this develop particular SPIRIT skills

This stage supports:

- Cooperation and role clarity within a team
- Active listening and shared decision-making
- Emotional awareness through the introduction of the Emotional Reporter role

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Foster collaborative mindset.
- Develop imagination and problem-solving in a cooperative setting.
- Begin awareness of roles and emotional dynamics within a group.

Academic/Curriculum Objectives Connection

Science (Earth and Environmental Science)

- Understand the importance of clean water for ecosystems and human survival.
- Explore basic water filtration techniques using natural materials.
- Investigate properties of materials (absorption, filtration, permeability).

Geography

- Recognize the role of water in sustaining life on planets.
- Consider environmental challenges in extreme habitats (e.g., arid or polluted areas, extraterrestrial environments).

Engineering

- Apply problem-solving and design thinking to create a functional filtration system.
- Use iterative testing and improvement to refine solutions.

Materials and tools needed for implementation

- Mission folders (with printed storylines and objectives)
- Role badges or cards (Leader, Materials Manager, Emotional Reporter, Timekeeper)

Preparation notes

- Prepare classroom space with themed posters or props.
- Create and print mission folders and role cards in advance.

Guided Questions

- What kind of problems do you think we might face on this planet?
- How do you think your role can help your team succeed?
- What does it mean to be a good teammate?

Stage Debriefing Questions (Optional)

- How did you feel being assigned a role?
- What are you excited or nervous about in this mission?

Tips and Tricks for dealing with stage challenges

- Ensure students understand their roles clearly.
- If some students are disengaged, use dramatic storytelling or space-themed visuals to captivate them.
- Offer flexibility for students to switch roles later if needed.

STAGE 2 – Clean Water Challenge + Team Emotional Check-in

How does this develop particular SPIRIT skills

Enhances emotional awareness by pausing for a shared emotional check-in, using metaphors and symbols to identify group feelings.

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students apply hands-on problem-solving to simulate survival thinking.
- They identify and name their emotional state using symbolic tools.
- They listen actively to teammates and begin building emotional language together.
- They experience the link between teamwork, stress, and emotional regulation.

Academic/Curriculum Objective connection

Science (Earth and Environmental Science):

- Understand basic filtration and the role of clean water in ecosystems and survival.

Geography:

- Explore resource challenges in different environments.

Engineering:

- Practice design thinking and material testing.

Materials and tools needed for implementation

- Dirty water (pre-prepared by teacher)
- Natural materials: sand, gravel, fabric, cotton, coffee filters, plastic bottles, cups
- Clear containers
- Emotional check-in cards (emoji, weather icons).

Preparation notes

- Prepare dirty water safely (e.g., add soil, food colouring).
- Print visual cards for emotion check-in.
- Ensure equal access to materials for all groups.

Guided Questions

- What strategy did your team use to filter the water?
- What materials worked best? Why?
- How did your team communicate during the challenge?
- What feeling best describes your team right now?
- What made you feel included or excluded during the challenge?

Stage Debriefing Questions (Optional)

- What would you improve if you had to filter water again?
- Did anyone's emotion change during the activity? Why?

Tips and Tricks for dealing with stage challenges

- If emotions are hard to identify, offer simple prompts: “Are we sunny or cloudy today?”
- If groups struggle with the filter design, encourage peer advice across teams.
- Keep the check-in short but sincere; use it to build team trust, not perfection.

STAGE 3 – Lava Bridge Challenge + Team Emotional Check-in

How does this develop particular SPIRIT skills

- Encourages empathy by having team members notice stress or frustration in others and support them.
- Builds resilience and emotional regulation when parts fail or designs don't work.
- Promotes collaborative problem-solving, where success depends on listening and adapting.

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students learn to handle frustration and regroup collaboratively.
- They build sensitivity toward teammates' emotional states.
- They practice balancing technical demands with emotional awareness.
- They articulate emotional coping strategies in real time.

Academic/Curriculum Objective connection

- Mathematics / Physics: force, tension, load distribution
- Engineering / STEM: prototype design, material constraints
- Science / Earth: thinking about structural solutions in nature or other worlds.

Materials and tools needed for implementation

- Sticks, cardboard, tape, string
- Small object (rock, bottle) for testing
- Emotional check-in cards (emoji, weather icons).

Preparation notes

- Define the “lava gap” clearly with tape or markers
- Ensure each group has same material set
- Remind students that partial failures are opportunities to iterate.

Guided Questions

- Which part of your bridge is the strongest? Which is weakest?
- How did your team react when a piece failed?
- What emotion are you feeling right now?
- What could someone in your team say or do to help at this moment?

Stage Debriefing Questions (Optional)

- If you built this again, what changes would you make?
- Did your emotional check-in help your team stay focused or calm?

Tips and Tricks for dealing with stage challenges

- If a team can’t complete a full bridge, encourage them to test smaller spans
- Remind them to pause and breathe if frustration levels rise
- Encourage cross-team sharing of small tips when stuck.

STAGE 4 – Building a Wind-Resistant Shelter

How does this develop particular SPIRIT skills

- Promotes problem-solving and resilience in the face of failure.
- Fosters collaboration as students must combine ideas and adapt.
- Encourages emotional regulation when projects don’t work initially.
- Creates opportunities for empathy, as students support teammates who may feel discouraged.

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students practice staying calm and thinking constructively when facing obstacles.
- They develop patience and perseverance.
- They learn to encourage and validate each other’s contributions.
- They understand the value of testing, feedback, and redesign.

Academic/Curriculum Objective connection

- Science: properties of materials, weather/wind resistance
- Engineering / Technology: design, build, and test cycles
- Mathematics: structure dimensions, balance, and proportion.

Materials and tools needed for implementation

- Recycled and natural materials: cardboard, sticks, cloth, string, tape
- Small test object (e.g., plastic figure or paper cup)
- Fan or large piece of cardboard (for wind simulation).

Preparation notes

- Set clear size limits for the shelter (e.g., must fit on a desk)
- Prepare testing area and fan in advance
- Remind students that testing is part of the design, not a final judgment.

Guided Questions

- What shape is most stable in the wind?
- What did you learn from your first test?
- How are you deciding who does what in your team?
- How does your team support each other when things go wrong?

Stage Debriefing Questions (Optional)

- What was your team's biggest challenge? How did you overcome it?
- What role did emotions play in your problem-solving?

Tips and Tricks for dealing with stage challenges

- Encourage iteration: redesign is part of the learning
- Remind students that strong wind might knock down any shelter - it's about learning, not perfection
- Offer positive reinforcement for collaboration, not just final structure.

STAGE 5 – Reflective walk with emotional prompts

How does this develop particular SPIRIT skills

- Supports emotional awareness by inviting reflection on feelings and team dynamics
- Strengthens empathy through shared stories and active listening
- Encourages collaboration through group discussion
- Builds resilience by normalizing challenges and celebrating growth.

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students learn to talk about emotions using constructive language
- They reflect on how teamwork made a difference
- They normalize emotional ups and downs in group tasks
- They practice deep listening and support for peers.

Academic/Curriculum Objective connection

- Physical Education: structured movement and spatial awareness
- Citizenship Education: emotional literacy and group communication.

Materials and tools needed for implementation

- Reflection cards or printed prompts
- Signs, cones, string, or tape to mark the path
- Optional: clipboards and pens for note-taking.

Preparation notes

- Select a safe, quiet route
- Place 4–6 prompt cards at visible intervals
- Prepare one student per group (emotional reporter) to guide the conversation.

Guided Questions

- When did your team feel most connected?
- Which mission was the hardest emotionally?
- How did someone in your group support you today?
- What's one thing you learned about emotions during the missions??

Stage Debriefing Questions (Optional)

- What did you notice during the walk that you hadn't thought about before?
- How can we use these reflections in our everyday school life?

Tips and Tricks for dealing with stage challenges

- Keep the atmosphere calm and respectful
- Encourage each student to speak at least once
- Allow flexibility in how students express themselves (words, drawings, gestures).

STAGE 6 – Whole-class reflection and sharing circle

How does this develop particular SPIRIT skills

- Develops self-awareness through emotional expression
- Builds empathy by listening to peers' experiences
- Encourages communication skills in a respectful group setting
- Fosters a sense of community and shared purpose.

What do we want to achieve regarding SPIRIT skill development (student understanding and/or behaviour)?

- Students articulate their emotional learning and team challenges
- They validate one another's efforts and feelings
- They practice turn-taking and active listening
- They leave the experience with a sense of shared achievement.

Academic/Curriculum Objective connection

- Citizenship Education: group dialogue, emotional literacy
- Oral Communication (language): structured sharing and vocabulary building.

Materials and tools needed for implementation

- A talking object (optional, to take turns)
- Emotion cards or anchor prompts (if needed)
- A soft bell or chime to close the session.

Preparation notes

- Prepare 1–2 prompts for each group to choose from
- Set up a quiet, inclusive space
- Remind students of respectful discussion norms.

Guided Questions

- What was one thing your group did well?
- What emotion surprised you today?
- What helped you stay focused during the missions?
- What would you do differently next time??

Stage Debriefing Questions (Optional)

- How can we bring what we learned today into other lessons?
- What emotion are you feeling as we end?

Tips and Tricks for dealing with stage challenges

- Use a talking object to help manage turns
- Allow shy students to speak in pairs or write their reflections
- Keep the pace gentle, but don't let one group dominate
- Acknowledge all contributions warmly and briefly.