

6.3 Lemonade Stories: From Family Tradition to School Community

This transdisciplinary project for 4th graders turns a simple drink into a meaningful exploration of family traditional knowledge of food science and sustainability. The journey begins with students connecting lemonade to personal memories, using "taste-linked" emotions to build a shared collection of cultural stories. Children then step into researchers' shoes, interviewing families for recipes and conducting mindful taste tests to compare homemade versions with store-bought options. The core of the program features a "Recipe Experiment Lab," where teams apply the scientific inquiry cycle to test ratios of acid, water, and sweetness.

Beyond the science, students practice "Story telling" and "Science Communication" drafting respectful messages for their community that explain both the chemistry and the history of their blend. The project culminates in a student-run, eco-friendly lemonade stand that prioritizes waste reduction through composting peels and using reusable cups. By serving their own creations to the school, students practice high-level social-emotional skills like welcoming diverse preferences and working as a coordinated team. It is a multi-week adventure that proves how a small choice - like an ingredient or a cup - can impact both people and the planet.

Basic Information Sheet

Age group	Student number	Duration	Number of stages	Subjects connection and relevance
3 rd and 4 th grade students (joint effort)	12-24 students	Multiple sessions over 2–4 weeks (depth adjustable)	6 stages (session blocks)	Transdisciplinary with a focus on Science + Literacy + SEL (and light numeracy through measuring/pricing)

STEAM Event Summary

SPIRIT Skill Focus

- Valuing people and nature
- Connectedness
- Empathy
- Emotional awareness regulation and communication



Complementary/Secondary SPIRIT Skill(s)

- Problem-solving

National curriculum Link and Objectives

- Apply a simple inquiry cycle in food science (observe, ask, test, record, compare, improve).
- Use measurement tools to follow and adjust a recipe (ratios in practical form).
- Develop narrative literacy: sharing and writing personal/cultural stories with a clear audience and respectful tone.
- Compare ingredients and packaging choices through a health and sustainability lens (age-appropriate).
- Collaborate in teams with roles and shared responsibility to deliver a real school-community outcome.

Real-world STEAM Connection and Problem definition

Connection (student perspective):

Lemonade is something families make in different ways. It tastes different depending on ingredients and choices. When we make it for other people, we have to think about what they like, what is healthy, and how to avoid waste.

Problem definition (student perspective, age-specific):

“How can we create a lemonade that tells our family stories, tastes good to many people, uses ingredients thoughtfully, and brings our school together - without making unnecessary waste?”

Materials at a Glance

- Fresh lemons (ideally from school trees if available), water
- Sugar and/or honey (optional), optional flavourings (mint, berries)
- Juicers (manual/electric), pitchers, stirring spoons
- Measuring cups/spoons, recipe recording sheets
- Tasting cups/spoons, water for rinsing, napkins
- (Optional) pH strips for simple acidity comparison
- Chart paper, markers, clipboards
- Story prompts, drafting paper, sentence stems, word banks

- Allergy/sensitivity checklist
- Stand materials: flyers, menus, signage, role badges
- Sustainability supplies: reusable cups, if possible, compost bin for peels, recycling bin, cleanup kit

Indoor/Outdoor and Classroom layout

- Storytelling corner (circle seating + drafting materials)
- Research station (tablets/books + recipe worksheets)
- Taste-test station (small sample cups + observation charts; supervised)
- Recipe lab station (juicers, measuring tools, mixing area; hygiene setup)
- Event planning/design station (posters, pricing sheets, role charts)
- Final stand location (outdoor shaded area or cafeteria) with a clear flow line and cleanup area

Notes on Research-based approach and integration

Students begin with lived experience and meaning - family traditions and memories - then move into structured exploration. They collect recipes through home interviews, compare options through guided tasting, and test ingredient ratios through hands-on mixing. This mirrors a child-friendly inquiry cycle: notice → compare → try → improve.

The project integrates science (ingredients and change), literacy (storytelling and persuasive communication), and sustainability (packaging choices, waste reduction) into one coherent purpose: serving the school community. Throughout, students practice communicating feelings and preferences respectfully, listening to others' perspectives, and making decisions together. The real audience (the school) keeps motivation high and makes learning feel relevant and shared.

Lesson Flow Overview (linked to details below)

Stage	Title	Brief Description	SPIRIT Skills	Duration	Link to Details
1st	Stories and Taste Memories	Students connect lemonade to memories and emotions through teacher modelling and student sharing, then begin a class “Lemonade Stories” collection	• Emotional awareness/communication • Empathy • Connectedness	45-60 minutes.	STAGE 1 – Stories and Taste Memories

2nd	Family Recipe Research and Respectful Comparing	Students share family recipes and compare homemade vs store-bought through a guided tasting and observation chart, focusing on respectful language and mindful choices.	• Empathy • Valuing people and nature • Emotional awareness/communication	45-60 minutes	STAGE 2 – Family Recipe Research and Respectful Comparing
3rd	Recipe Experiment Lab	Teams test lemon/sweetener/water ratios and record results, then solve problems by improving their recipe for taste, balance, and inclusivity	• Problem-solving • Connectedness • Valuing people and nature	1–2 sessions × 40–60 minutes	STAGE 3 – Recipe Experiment Lab
4th	Story + Science Communication	Teams finalize a short “recipe story card” explaining their lemonade and what it represents, using clear and kind communication.	• Emotional awareness/communication • Empathy	40-60 minutes	STAGE 4 – Story + Science Communication
5th	Event Planning and Sustainability Design Observations	Students plan roles, signage, pricing (optional), and eco-friendly serving routines to run a school lemonade event.	• Connectedness • Valuing people and nature • Problem-solving	40-60 minutes	STAGE 5 – Event Planning and Sustainability Design Observations
6th	Lemonade Stand + Reflection	Students run the stand, welcome visitors, share stories/science, gather feedback, and reflect on what they learned about people, nature, and teamwork.	• Connectedness • Empathy • Valuing people and nature • Emotional awareness and communication	Event day + 40–60 min reflection	STAGE 6 – Lemonade Stand + Reflection

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

- Taste disagreements: Normalize differences (“Different tongues, different preferences”) and use respectful sentence stems.
- Too many ideas: Limit teams to 1–2 variables per test round (e.g., sweetener amount + one add-in).
- Allergies/dietary needs: Use a checklist early; keep flavourings optional and clearly labelled.
- Time drift over weeks: Use a visible timeline board: “This week we research; next we test; then we plan; then we host.”
- Hygiene + safety: Clear routines: wash hands, use clean cups, no sharing cups, teacher manages knives if any are used

Difficulty level tailoring notes

- **Beginner learners:** Focus on storytelling + simple tasting language + one class recipe (teacher-led mixing)
- **Intermediate:** Teams run 2–3 test batches using measuring tools and record simple results.
- **Advanced learners:** Add pricing/costing, packaging comparison, visitor feedback forms, and a “sustainability pledge” component.

STEAM Program Debriefing and Reflection Questions

- What did you learn about how ingredients change taste?
- What did you learn about speaking respectfully when people disagree?
- How did your team make decisions together?
- What choices helped us reduce waste?
- What would you improve next time - for taste, teamwork, or sustainability?

6.3.2. Stage details and Activities Flow

STAGE 1 – Stories and Taste Memories

How does this develop particular SPIRIT skills

- Builds emotional awareness and communication by linking taste to feelings and learning to describe emotions with appropriate words
- Strengthens empathy by listening to classmates' memories and respecting differences in experiences
- Supports connectedness by creating a shared class story-bank that values everyone's voice

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

As a result of this activity, students will be able to:

- Use at least two feeling words to describe a taste-linked memory (e.g., proud, comforted, excited).
- Listen without interrupting and respond with a respectful comment or question.
- Share one tradition or family connection and notice similarities/differences across the group.

Academic/Curriculum Objective connection

Narrative literacy + oral communication; using descriptive vocabulary and respectful listening.

Materials and tools needed for implementation

Teacher story/read-aloud, story prompts, emotion word bank, drawing/writing sheets.

Preparation notes

Prepare sentence stems: "I remember when...", "It made me feel...", "I noticed..."

Guided Questions

- "What does lemonade remind you of?"
- "How did that moment feel inside?"
- "What did you learn about your classmates from their stories?"

Stage Debriefing Questions (Optional)

- "How can words help someone feel included when they share a memory?"

Tips and Tricks for dealing with stage challenges

- **Challenge:** Some students struggle to share personal stories.
Tip: Offer choice: draw it, write one sentence, or share with a partner only.
- **Challenge:** Students react negatively to others' traditions.
Tip: Use a class norm: "Different is interesting," and provide respectful response frames.

STAGE 2 – Family Recipe Research and Respectful Comparing

How does this develop particular SPIRIT skills

- Strengthens empathy by honouring different family/cultural recipes and taste preferences without judgment
- Develops valuing people and nature by noticing ingredient lists and discussing packaging waste in a concrete way
- Builds emotional awareness and communication by practicing respectful taste-language (“I prefer...”, “I notice...”) instead of rude reactions.

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

As a result of this activity, students will be able to:

- Record at least three observations comparing homemade and store-bought (taste, sweetness, ingredients, packaging).
- Use respectful language to express preferences and respond to others’ preferences calmly.
- Identify one sustainability choice (e.g., fewer bottles, compost peels, reusable cups).

Academic/Curriculum Objective connection

Observation + simple data recording; early health and sustainability reasoning.

Materials and tools needed for implementation

Homemade + store-bought samples (pre-checked), tasting cups, observation charts, allergy list.

Preparation notes

No blindfolding required - safe tasting routines matter more than “game effects.” Provide rinse water.

Guided Questions

- “What do you notice about the ingredients?”
- “How can we talk kindly if we don’t like something?”
- “What happens to the bottle or carton after we drink it?”

Stage Debriefing Questions (Optional)

- What did you learn about preferences and respect today?”

Tips and Tricks for dealing with stage challenges

- **Challenge:** Students make dramatic “yuck” reactions.
Tip: Use a taste-language protocol: “I notice... / I prefer... / I wonder...”
- **Challenge:** Data recording becomes messy.
Tip: Keep the chart simple: 3 columns (taste / ingredients / packaging).

STAGE 3 – Recipe Experiment Lab

How does this develop particular SPIRIT skills

- Builds problem-solving by testing ratios, noticing results, and making a clear plan for what to change next
- Strengthens connectedness through shared roles and collaborative decision-making under real constraints
- Develops valuing people and nature by making mindful ingredient choices (balance, not excess) and reducing waste during testing.

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

As a result of this activity, students will be able to:

- Measure ingredients accurately for at least two test batches and record what they did.
- Identify one “recipe problem” (too sour/sweet/weak) and propose a reasonable change.
- Work as a team using roles (measurer, mixer, recorder, taster/communicator) and resolve disagreements respectfully.

Academic/Curriculum Objective connection

Practical measurement + inquiry cycle; cause-effect in ingredients and taste outcomes.

Materials and tools needed for implementation

Lemons, water, sweeteners, pitchers, measuring tools, data logs (optional pH strips).

Preparation notes

Limit trials: 2–3 maximum per session. Use a “one change at a time” rule to keep results understandable.

Guided Questions

- “What is the problem with this batch?”
- “What is one change we can try next?”
- “How do we decide fairly when people disagree?”

Stage Debriefing Questions (Optional)

- “Which change helped most, and how do you know?”

Tips and Tricks for dealing with stage challenges

- **Challenge:** Teams keep changing too many things.
Tip: Use a team “change ticket”: only one variable per trial.
- **Challenge:** Strong personalities dominate decisions.
Tip: Use a quick vote + require one reason per person before deciding.

STAGE 4 – Story + Science Communication

How does this develop particular SPIRIT skills

- Develops emotional awareness and communication by shaping a message with tone, clarity, and intention
- Strengthens empathy by writing for a real audience (customers) and considering what will make them feel welcomed and respected

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

As a result of this activity, students will be able to:

- Write a short “recipe story” that includes: a gratitude/tradition link, one feeling word, and one clear message to the reader.
- Create one simple science explanation line (e.g., “Lemon makes it sour because it is acidic.”).
- Practice saying their story aloud in a respectful, friendly voice.

Academic/Curriculum Objective connection

Narrative writing, audience awareness, oral presentation practice.

Materials and tools needed for implementation

Story templates, word banks, sample texts, drafting paper, poster cards for the stand.

Preparation notes

Model a short example: “This recipe reminds me of..., it makes me feel..., we chose... because...”

Guided Questions

- “What do you want people to feel when they read this?”
- “What story are you proud to share?”
- “How can we explain our lemonade simply and kindly?”

Stage Debriefing Questions (Optional)

- “Which words made your message feel most genuine?”

Tips and Tricks for dealing with stage challenges

- **Challenge:** Students write too long or too vague.
Tip: Use a 3-sentence structure: Story → Feeling → Choice.
- **Challenge:** Some students feel shy presenting.
Tip: Pair presenters; allow shared reading.”

STAGE 5 – Event Planning and Sustainability Design

How does this develop particular SPIRIT skills

- Strengthens connectedness through planning roles, timelines, and shared responsibility for a real community moment
- Develops valuing people and nature through concrete sustainability decisions (cups, waste, peels, cleanup)
- Builds problem-solving by anticipating challenges (crowds, refills, spills) and creating simple solutions

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

As a result of this activity, students will be able to:

- Choose and describe one role and how it helps the team succeed (server, greeter, cleanup lead, story speaker, feedback collector).
- Identify at least two sustainability practices the stand will follow.
- Make a simple plan for one likely problem (“If we run out of ice...”, “If there’s a spill...”)

Academic/Curriculum Objective connection

Planning, persuasive writing (flyers/menus), practical numeracy (optional pricing).

Materials and tools needed for implementation

Flyer/menu templates, role chart, sustainability checklist, signage supplies.

Preparation notes

Keep it realistic: fewer menu options, clear station flow, visible cleanup plan.

Guided Questions

- “How will we welcome everyone?”
- “How will we reduce waste today?”
- “What could go wrong - and what’s our plan?”

Stage Debriefing Questions (Optional)

- “Does everyone feel clear and included in the plan?”

Tips and Tricks for dealing with stage challenges

- **Challenge:** Planning becomes chaotic.
Tip: Use a simple stand map and a role rotation schedule.
- **Challenge:** Sustainability ideas stay abstract.
Tip: Make it visible: bins labelled + peel bucket + reusable cup reminder sign.

STAGE 6 – Lemonade Stand + Reflection

How does this develop particular SPIRIT skills

- Builds connectedness by engaging with the wider school community and working as a coordinated team
- Strengthens empathy through welcoming language, active listening, and respectful customer interaction
- Develops valuing people and nature by practicing sustainable serving habits and sharing why they matter
- Deepens emotional awareness and communication through reflection on pride, nervousness, teamwork feelings, and impact

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

As a result of this activity, students will be able to:

- Welcome visitors using a respectful greeting and explain one part of their story or science.
- Demonstrate one sustainability action during service (sorting waste, composting peels, encouraging reusables).
- Reflect using feeling vocabulary on how it felt to serve the community and work as a team.

Academic/Curriculum Objective connection

Real-world application + consolidation; oral communication and civic engagement.

Materials and tools needed for implementation

Stand setup, feedback slips (simple), reflection sheets, cleanup kit.

Preparation notes

Keep feedback simple: smiley faces or “Loved it / It was okay / Not for me” with one optional comment.

Guided Questions

- “What did you notice about how people reacted?”
- “How did you handle differences in taste preferences?”
- “What did we do today that helped people and helped Earth?”

Stage Debriefing Questions (Optional)

- “What is one thing you feel proud of - and why?”

Tips and Tricks for dealing with stage challenges

- **Challenge:** Students get overwhelmed by crowds.
Tip: Use short shifts and a quiet break spot; rotate roles.
- **Challenge:** Cleanup gets rushed.
Tip: Assign a final “Earth check” role - no one leaves until bins are correct.