



STEM Little Explorers

# Summer of curiosity

30+ screen-free science adventures for long, sunny days —  
sorted by age and ready for the backyard.

activities for ages 1-12





# Welcome, summer explorers!

Long days, no homework, and a whole world to poke at. Inside are some of our favourite hands-on STEM activities – most use things you already have in the kitchen. Pick by your child's age, head outside, and let them get curious (and a little messy).

## What's inside



**Little explorers - sensory & squishy**

ages 1-3 · toddlers

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**Curious preschoolers - kitchen magic**

ages 3-5 · preschool

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**Junior scientists - backyard experiments**

ages 6-8 · lower elementary

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**Master explorers - big-kid STEM**

ages 9-12 · upper elementary

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**Summer survival kit for parents**

for grown-ups

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**Summer science bingo**

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ages 1-3 · toddlers

# Little explorers - sensory & squishy



## Calm-down sensory bottle

🕒 10 min    Mess ● ● ●

Glitter swirling slowly through water - mesmerizing for little hands, and a sneaky lesson in density.

**You'll need:** a clear plastic bottle, water, clear glue, glitter

**Full guide:** [stemlittleexplorers.com/en/homemade-sensory-bottle-child-sensory-development](https://stemlittleexplorers.com/en/homemade-sensory-bottle-child-sensory-development)



## Rainbow rice sensory bin

🕒 20 min + drying    Mess ● ● ●

Dye rice in summer colors for scooping, pouring and burying treasures. Great for the porch.

**You'll need:** dry rice, food colouring, zip-lock bags, a tray

**Full guide:** [stemlittleexplorers.com/en/how-to-make-colored-rice](https://stemlittleexplorers.com/en/how-to-make-colored-rice)



## Squishy homemade playdough

🕒 15 min    Mess ● ● ●

A no-cook batch you mix together: squish, roll and learn what makes it stretchy.

**You'll need:** flour, salt, water, oil, cream of tartar, food colouring

**Full guide:** [stemlittleexplorers.com/en/make-homemade-playdough-learn-science](https://stemlittleexplorers.com/en/make-homemade-playdough-learn-science)



## Color-mixing splash play

🕒 15 min    Mess ● ● ●

Two colors in, a brand-new one out: messy, hands-on color discovery for the water table.

**You'll need:** water, food colouring, clear cups, a tray

**Full guide:** [stemlittleexplorers.com/en/make-sensory-play-colors](https://stemlittleexplorers.com/en/make-sensory-play-colors)



ages 3-5 · preschool

# Curious preschoolers - kitchen magic



## Magic colorful milk

🕒 10 min    Mess ● ● ●

A drop of soap sends colors exploding across the plate. Pure wow, zero cleanup stress.

**You'll need:** a plate, milk, food colouring, dish soap, a cotton bud

**Full guide:** [stemlittleexplorers.com/en/make-colorful-milk-polarity-experiment](https://stemlittleexplorers.com/en/make-colorful-milk-polarity-experiment)



## Groovy lava lamp

🕒 10 min    Mess ● ● ●

Bubbling blobs rise and fall in a bottle - a calm, hypnotic show for a hot afternoon.

**You'll need:** a clear bottle, water, vegetable oil, food colouring, an effervescent tablet

**Full guide:** [stemlittleexplorers.com/en/make-lava-lamp](https://stemlittleexplorers.com/en/make-lava-lamp)



## Erupting volcano

🕒 15 min    Mess ● ● ●

The classic fizzing eruption: best done outside where the foam can go everywhere.

**You'll need:** baking soda, vinegar, dish soap, food colouring, a small bottle

**Full guide:** [stemlittleexplorers.com/en/how-to-make-homemade-volcano](https://stemlittleexplorers.com/en/how-to-make-homemade-volcano)



## Bouncy (glowing!) egg

🕒 5 min + 2-day wait    Mess ● ● ●

Soak an egg in vinegar for a few days and the shell vanishes, leaving a wobbly, bouncy egg.

**You'll need:** a raw egg, a glass, white vinegar

**Full guide:** [stemlittleexplorers.com/en/egg-in-vinegar-make-bouncy-glowing-egg](https://stemlittleexplorers.com/en/egg-in-vinegar-make-bouncy-glowing-egg)



ages 6-8 · lower elementary

# Junior scientists - backyard experiments



## Baking-soda rocket

🕒 15 min Mess ●●●

Vinegar + baking soda = lift-off. A loud, messy, gloriously summer-outside launch.

**You'll need:** an empty plastic bottle, baking soda, vinegar, a cork, paper

**Full guide:** [stemlittleexplorers.com/en/how-to-make-homemade-rocket-vinegar-baking-soda](https://stemlittleexplorers.com/en/how-to-make-homemade-rocket-vinegar-baking-soda)



## How to make popsicle Catapult

## Popsicle-stick catapult

🕒 20 min Mess ●●●

Build it, then launch pom-poms across the lawn - a backyard physics tournament.

**You'll need:** craft sticks, rubber bands, a bottle cap, pom-poms

**Full guide:** [stemlittleexplorers.com/en/make-popsicle-catapult](https://stemlittleexplorers.com/en/make-popsicle-catapult)



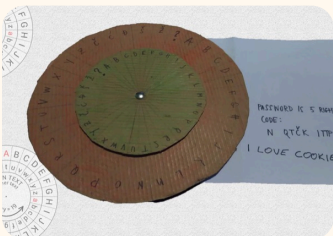
## Grow gummy bears in water

🕒 5 min + overnight Mess ●●●

Leave gummy bears soaking and watch them balloon overnight - a tasty intro to osmosis.

**You'll need:** gummy bears, water, glasses

**Full guide:** [stemlittleexplorers.com/en/gummy-bears-osmosis-experiment](https://stemlittleexplorers.com/en/gummy-bears-osmosis-experiment)



## Secret cipher wheel

🕒 20 min Mess ●●●

Make a decoder wheel and swap secret messages with summer-camp friends.

**You'll need:** card, a split-pin, scissors, a pen

**Full guide:** [stemlittleexplorers.com/en/how-to-make-cipher-wheel](https://stemlittleexplorers.com/en/how-to-make-cipher-wheel)



ages 9-12 · upper elementary

# Master explorers - big-kid STEM



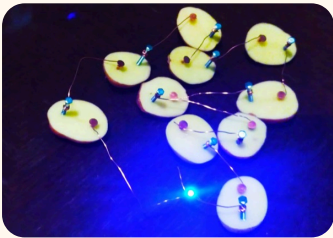
## Backyard movie projector

🕒 30 min Mess ● ● ●

Turn a shoebox + smartphone into a projector for an outdoor movie night under the stars.

**You'll need:** a shoebox, a magnifying glass, a smartphone, tape

**Full guide:** [stemlittleexplorers.com/en/how-to-make-projector-using-smartphone](https://stemlittleexplorers.com/en/how-to-make-projector-using-smartphone)



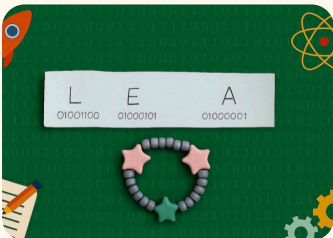
## Potato battery

🕒 20 min Mess ● ● ●

Power a small light from a potato - real electricity from the veggie drawer.

**You'll need:** a potato, copper wire, a galvanised nail, wires, an LED

**Full guide:** [stemlittleexplorers.com/en/how-to-make-potato-battery](https://stemlittleexplorers.com/en/how-to-make-potato-battery)



## Write your name in binary

🕒 25 min Mess ● ● ●

Decode how computers store letters, then string a binary-code name bracelet.

**You'll need:** string or pipe cleaners, pony beads in two colours

**Full guide:** [stemlittleexplorers.com/en/write-your-name-in-binary](https://stemlittleexplorers.com/en/write-your-name-in-binary)



## Grow rock candy crystals

🕒 15 min + 1 week Mess ● ● ●

A week-long sugar-crystal experiment that ends in an edible, sparkly summer treat.

**You'll need:** sugar, water, a jar, string, a pencil

**Full guide:** [stemlittleexplorers.com/en/make-sugar-crystals-stem-activity-kids](https://stemlittleexplorers.com/en/make-sugar-crystals-stem-activity-kids)



when the weather turns

# Rainy-day rescue

Grey skies? These ones happily move indoors, to the kitchen table or the living-room floor.



Calm-down sensory bottle



Squishy homemade playdough



Magic colorful milk



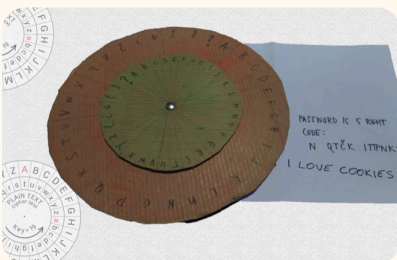
Groovy lava lamp



Bouncy (glowing!) egg



Grow gummy bears in water



Secret cipher wheel



Write your name in binary



Grow rock candy crystals



for grown-ups

# Summer survival kit for parents



## Beat “I’m bored” with a summer jar

Write each activity on a stick; when boredom strikes, they draw one. The choice is theirs, the calm is yours.

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## Embrace the mess - take it outside

Volcanoes, rockets and color splashes are a hose-down away from spotless when you run them in the yard.

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## Ask “what do you think will happen?”

One question turns a demo into real science. Let them guess, test and be wrong - that’s the whole point.

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## Keep a summer discovery journal

A cheap notebook for drawings and “results” fights the summer slide and makes a keepsake by autumn.

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## Sun, water & safety first

Shade, hats and grown-up supervision near water and anything that launches, fizzes or pops.



# Summer science bingo

Try one a day. Fill a row – or the whole card – for a proper summer of discovery!

 <p>Calm-down sensory bottle</p> <input type="checkbox"/>	 <p>Rainbow rice sensory bin</p> <input type="checkbox"/>	 <p>Squishy homemade playdough</p> <input type="checkbox"/>	 <p>Color-mixing splash play</p> <input type="checkbox"/>
 <p>Magic colorful milk</p> <input type="checkbox"/>	 <p>Groovy lava lamp</p> <input type="checkbox"/>	 <p>Erupting volcano</p> <input type="checkbox"/>	 <p>Bouncy (glowing!) egg</p> <input type="checkbox"/>
 <p>Baking-soda rocket</p> <input type="checkbox"/>	 <p>Popsicle-stick catapult</p> <input type="checkbox"/>	 <p>Grow gummy bears in water</p> <input type="checkbox"/>	 <p>Secret cipher wheel</p> <input type="checkbox"/>
 <p>Backyard movie projector</p> <input type="checkbox"/>	 <p>Potato battery</p> <input type="checkbox"/>	 <p>Write your name in binary</p> <input type="checkbox"/>	 <p>Grow rock candy crystals</p> <input type="checkbox"/>



# Keep exploring all summer

This is just a taste. Find every experiment, plus new ones each week, on the site.

[Explore all activities ↗](#)

[stemlittleexplorers.com](https://stemlittleexplorers.com)