



L.E.A.P.

Learn · Experiment · Analyze · Pilot

A training session for student researchers and coordinators

“When it rains, the flower blooms.”



Who this session is for



Student researchers

Grades 9–12

- You choose a question about water where you live
- You collect the evidence yourself
- You report what you found — including what didn't work



Coordinators

Teachers, engineers, MSc students

- You lead a regional group of researchers
- You approve field activity before it begins
- You review every submission before it enters the record

Both roles use the same method. That is what makes findings from different neighborhoods comparable.



Why water, and why now

2 billion

people lack safely managed drinking water

- In crowded cities and remote villages alike, safe drinking water is a daily struggle for far too many people.
- Meanwhile every rainfall is an opportunity going to waste — running off roofs and streets, unmeasured and uncollected.
- Nobody has mapped this at the street level where you live. Public weather estimates are coarse; your neighborhood is not in them.
- That gap is exactly where a student researcher can produce something new.



What L.E.A.P. means



Learn

Understand water use, rainfall, conservation, access, and community needs.



Experiment

Use a repeatable method to measure or test something in the real world.



Analyze

Turn observations, measurements, images, and stories into defensible evidence.

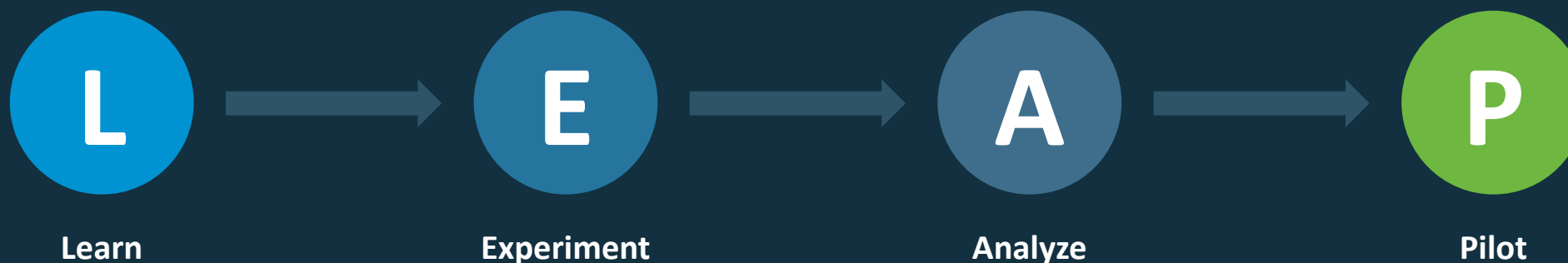


Pilot

Design, build, deploy, and evaluate a small solution before attempting a larger one.



LEAP is a cycle, not a ladder



A pilot creates new questions — and those questions send you back to Learn

Finishing a stage is not finishing the work. Each output becomes the next stage's input.



LEARN

Understand the system before trying to change it.

EXAMPLE PROJECT

Household water consumption survey

- How much drinking water does a family use each day?
- What are the largest non-drinking uses?
- Where does the water come from, and is it treated?
- Where do families think water is wasted?

WHAT YOU HAND IN

- A short survey summary
- An anonymized data table
- One or two charts
- Key findings and limitations
- One new question worth asking



EXPERIMENT

Measure carefully so observations can be compared.

EXAMPLE PROJECT

Neighborhood rainfall measurement

- How much rain falls at your location?
- How often, and how long do wet periods last?
- Do nearby Rainflower stations agree with you?
- How do you compare with public weather estimates?

WHAT YOU HAND IN

- A measurement log
- A weekly summary
- A basic chart
- A comparison with nearby stations
- Notes on placement and device limits



ANALYZE

Explain what the evidence can — and cannot — show.

EXAMPLE PROJECT

Photo record of local rainfall impact

- Where was it taken, without exposing an address?
- When, and how does it relate to the rainfall event?
- What is factually visible in the frame?
- What can this image alone NOT prove?

WHAT YOU HAND IN

- A five-to-ten image evidence story
- A pattern summary
- At least one alternative explanation
- Stated limitations
- A recommendation for what to investigate next



PILOT

Build small, test safely, learn quickly, improve.

EXAMPLE PROJECT

The Rainflower smart collection network

- How reliably does the device detect rain and open?
- How much water does it collect per event?
- What happens in high wind, debris, or power loss?
- Can child units reach the mother unit?

WHAT YOU HAND IN

- Performance data across rainfall events
- A record of every failure observed
- Safety and contamination notes
- Proposed design changes
- The new questions the pilot raised



What makes the work research?

- 1 A question** clear enough that it can actually be investigated
- 2 A method** another researcher could understand and repeat it
- 3 Honest records** including unexpected, messy, or incomplete results
- 4 Proportionate claims** conclusions the evidence actually supports
- 5 Reflection** on limitations, and on what should be studied next

An unexpected result is valuable. A hidden, altered, or invented result is not research.



Who is who in Rainflower



Founder and lead researcher

Ethan Kabir — Rocklin High School, California

Sets direction, maintains the LEAP method, accountable for the project.



Advisors

Academic, technical, business and government-agency experts worldwide

Review methods, mentor on domain questions, test findings against outside scrutiny.



Coordinators

Teachers, computer engineers and MSc students across Bangladesh

Lead a regional group, approve field activity, review every submission.



Student researchers

Grades 9–12

Ask the questions, collect the evidence, produce the findings.

Direction and method flow down. Evidence, questions and field reality flow back up.



Before any field work begins



Parental agreement

Every researcher under 18 has a digital permission agreement completed by a parent or guardian.



Coordinator approval

Your coordinator approves the plan — households, locations, timing — before you start.



Explain yourself first

Before the first question: who you are, what Rainflower is, how the information will be used.



Accept a no

Anyone may decline or stop at any time. Record a refusal as a refusal — never as an estimate.

Escalate the same day: any unsafe condition, dispute, or unexpected risk goes to your coordinator. Stopping work is always an acceptable decision.



People, privacy and photographs

DO

- Photograph conditions — standing water, blocked drains, runoff, erosion
- Report location by neighborhood or general area
- Ask separately before publishing any image of a person
- Record what the image cannot prove, alongside what it shows

NEVER

- Names, house numbers, phone numbers or exact addresses
- Identifiable faces without explicit permission
- Photographs of other children
- Entering private property without an adult resident's invitation

Permission to ask a question is not permission to publish a photograph. Ask for each.



Collected water is evidence, not drinking water

No one drinks, cooks with, or gives to animals any water collected by a Rainflower device unless it has been tested and cleared by a coordinator or advisor.



Clear is not clean

Water with no color, particles, or smell can still be unsafe to drink.



Field tests describe

pH, temperature and dissolved solids describe character. They certify nothing.



Only a lab decides

An accredited laboratory determines whether water meets a drinking standard.

Report contamination, insects, odor, or discoloration. Do not empty the tank and move on — the failure is a finding.



Standards for every Rainflower researcher



Accuracy

Record what happened, not what you hoped would happen.



Consistency

Follow the agreed method and the agreed units.



Transparency

Disclose missing data, uncertainty and limitations.



Respect

Get permission; do not identify people without consent.



Safety

Never work in lightning, floodwater, traffic or unsafe rooftops.



Collaboration

Share methods so others can learn from and verify your work.

Water safety: never drink, cook with or distribute collected water that has not been tested and cleared.



What success looks like



For you as a researcher

- I can explain the question I investigated and why it matters
- I can describe my method well enough for another student to repeat it
- I can separate observation from interpretation
- I can support my conclusions with evidence
- I can name my limitations and propose a next step



For the Rainflower community

- Comparable local data from many neighborhoods
- A growing evidence record of rainfall, water use and impact
- Researchers who collaborate across locations and disciplines
- Pilot solutions shaped by real needs and real evidence
- Open knowledge communities can actually use

Success is not the number of surveys or readings. It is the quality of the questions and the honesty of the analysis.



Take the next LEAP

1

Begin where you live

2

Ask one clear question

3

Collect one trustworthy
piece of evidence

4

Share what you learn

Rainflower begins with rain. Its larger purpose is to cultivate researchers.

rainflower.world

An imagination-engineering project by Ethan Kabir · Rocklin High School