Rainflower

RAINFLOWER YOUTH RESEARCH

Research Team *Handbook*

How the platform works, how to claim and run a research team, the ethics every researcher keeps, and every open research paper in full.



NOVEMBER 1, 2026 EDITION

When it rains, the flower blooms.

About this handbook

This is the handbook for Rainflower research teams: the students who take on a research paper together, and the coordinators who support them. Read Parts I to III once from start to finish. Keep Part IV, the research papers, to hand while you choose a paper and while you work on it.

This edition was made on November 1, 2026 and contains 2 open research papers. It is rebuilt whenever a proposal changes, so the latest edition is always at **rainflower.world/guides/handbook/pdf**. The same material, with search and an Ask Thunder button, is online at **rainflower.world/guides/student** and **rainflower.world/guides/coordinator**.

Questions about a paper go in the Questions section on that paper's page. Anything else: ask your coordinator.

Scan for the latest edition

https://rainflower.world/guides/handbook/pdf

“When it rains, the flower blooms.”

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THE PEOPLE BEHIND RAINFLOWER

Ethan Kabir

FOUNDER OF RAINFLOWER · ROCKLIN HIGH SCHOOL, CALIFORNIA

> *"No problem is too big or too small for anyone — and especially not for kids in K–12."*

Where it began

Ethan Kabir started studying rainfall and water with his family when he was in elementary school. Those early questions about where rain falls, where it goes and who it reaches grew into the program you are now part of.

The first Rainflower

He spent most of 11th grade building the first Rainflower: a flower-shaped rain collector, installed in Rocklin, California. The whole program is named after it. Its hardware, software and design are being open-sourced, so Rainflower teams anywhere can build one, deploy it, monitor it and make it better.

The platform

Ethan built this platform and its documents alongside AI agents. That is why AI plays such a large part in how Rainflower works, from Thunder answering your questions to the agent that writes research proposals, and why this handbook asks you to use AI honestly. He is now in 12th grade at Rocklin High School.

Why Rainflower

He believes a student in school can do research that matters, and Rainflower exists to prove it: real questions, real data from your own neighborhood, and real credit for the students who do the work.

When it rains, the flower blooms.

Ethan Kabir

THE PEOPLE BEHIND RAINFLOWER

Meet your coordinators

Coordinators bring students into Rainflower and support them and their teams through every stage of research.

MR

Mostafijur Rahman

DHAKA, BANGLADESH

Mostafijur graduated in Computer Science and Engineering from American International University-Bangladesh (AIUB) and works as an AI developer. His interests span machine learning, computer vision, natural language processing and data science. He enjoys building practical, data-driven solutions to real-world problems, and brings that same habit of careful, evidence-first thinking to the students he guides.

RH

Rabiul Hasan

NOAKHALI, BANGLADESH

Rabiul is an elementary school teacher who earned his B.A. and M.A. in History at the University of Chittagong. He is interested in how education, AI and entrepreneurship can drive national development. A believer in lifelong learning and evidence-based thinking, he values constructive collaboration and helping young people contribute to Bangladesh's sustainable progress.

NH

Najmul Huda

CHATTOGRAM, BANGLADESH

Najmul is a Master's student in Public Administration at the University of Chittagong, studying how AI is shaping education, public institutions and decision-making. He founded Boithak, a youth initiative that brings students together through reading circles and discussions to encourage critical thinking, civic engagement and informed public debate.

Every coordinator's profile is on **rainflower.world/team**.

PART I

The Rainflower platform

Who we are, how the site works, raindrops and badges, and the stages of Rainflower research.

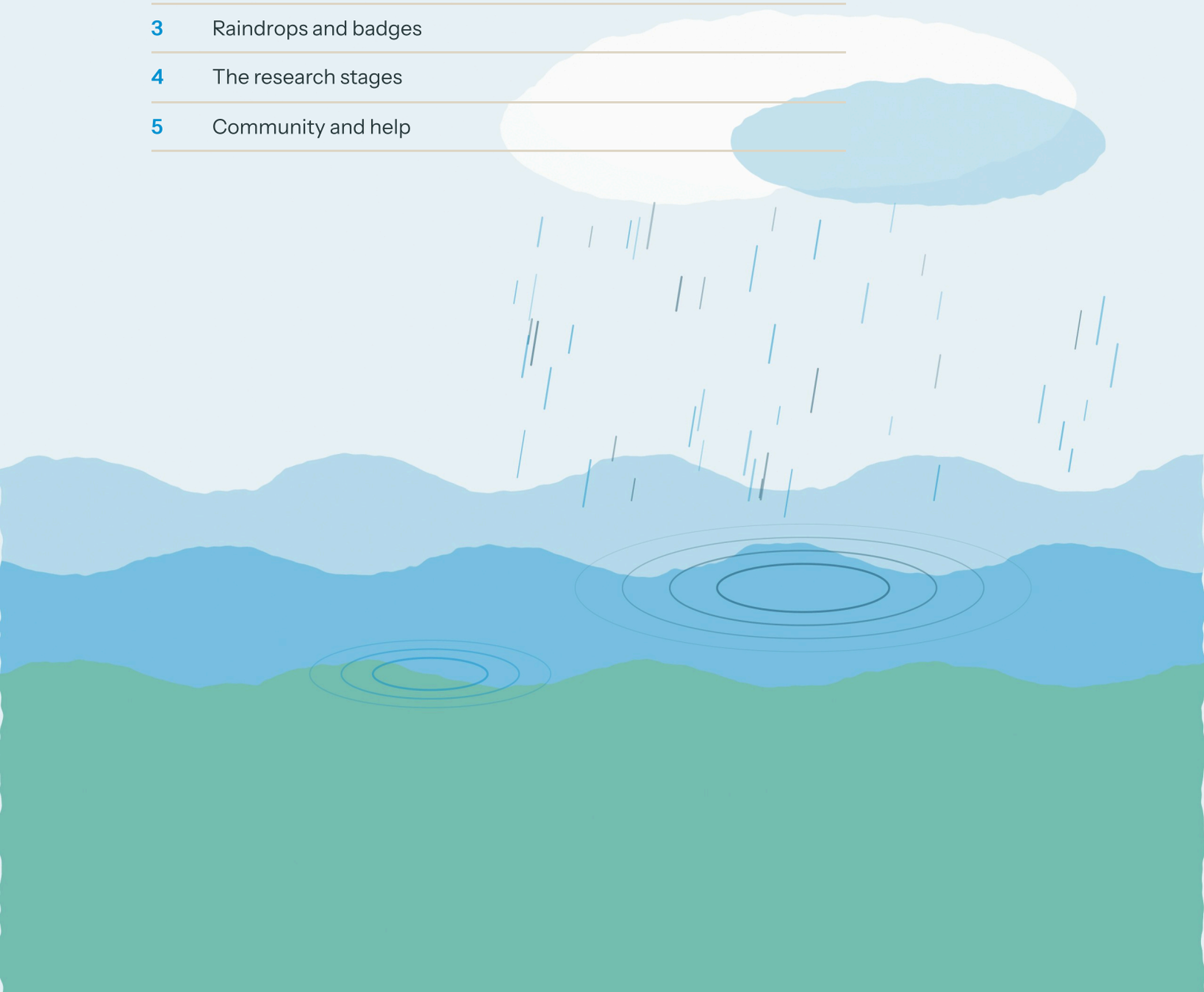
1 Welcome to Rainflower

2 Getting started

3 Raindrops and badges

4 The research stages

5 Community and help



CHAPTER 1

Welcome to Rainflower

Who we are, why water, and the people who will help you.

Rainflower is a youth research program about water. School students in grades 9 to 12, most of them in Bangladesh, collect real data about rain and water in their own neighborhoods and turn it into research that matters.

Most research about Bangladesh is written by adults, often from far away. You live here. You can walk to the tube well, the water seller, the pond and the kitchen tap, and you can ask your neighbors questions no outside researcher can. That is what makes your work valuable.

> *When it rains, the flower blooms.*

What this handbook is for

This handbook is for **research teams**: the one to five students who take on a Rainflower research paper together, and the coordinators who support them. It has four parts:

1. **The Rainflower platform**: how the site works, raindrops, badges and the research stages.
2. **Research teams**: how to claim a paper, get approved, and run your group's work for 13 weeks.
3. **Research ethics**: how to treat people, data and AI honestly and safely. Read this part before any field work.
4. **The research papers**: every open research proposal, in full.

The people around you

WHO	WHAT THEY DO
You, the researcher	Choose a paper, collect the evidence, analyze it and write the paper.
Your teammates	Share the work and the credit. Everyone on a team is a co-author.
Your coordinator	Approves your account, supports you locally, and runs a checklist review before field work and before you submit.
Your AI research assistant	Reads your plan, survey, data and drafts at every stage and gives feedback. It helps you do the work; it never does it for you.

WHO	WHAT THEY DO
Your advisor	Reviews your question, sampling plan and first data, then rates your finished paper.
Thunder	The Rainflower AI. Ask it questions about the program or the science at /ask, or on any proposal page.
Rainflower	Approves research groups, reviews and grades papers, and chooses which papers go to a journal.

The research stages

Rainflower research grows in stages, each building on the one before: **Learn** (surveys), **Experiment** (measurements such as daily rainfall), **Analyze** (your own observations), **Pilot** (the Rainflower device) and **Publish** (real research papers). This handbook is mostly about the last one.

What success looks like

A successful research paper ends with three things: a finished paper in English, a full evidence package that shows the work is yours, and acceptance by Rainflower. A small, careful study that answers a small question honestly is exactly what good science looks like. A paper that finds "we expected X but found Y" is still a success.

CHAPTER 2

Getting started

Your account, signing in, consent and your profile.

Your account goes live once you confirm your email and your coordinator approves you. Nobody uses a password: you sign in with a link sent to your email.

Signing up

1. Go to **/signup** (or use your coordinator's own link, `/c/<code>`, or a friend's invite link, `/s/<code>`).
2. Fill in **About you** (full name, email, WhatsApp number with country code) and **Your school** (school name, grade or university year).
3. Pick **Your coordinator**. The list only shows coordinators in your country who are accepting new students.
4. Complete the security check, check the Terms box and press **Create account**.
5. Open the email from Rainflower and click the confirmation link. Your coordinator then reviews you, and you get an email saying *Your Rainflower account has been approved!*

When signups are closed in your country

If no coordinator in your country is taking students, the form becomes a **waitlist**. Leave your email and WhatsApp and press **Join the waitlist**; you will be emailed when a coordinator opens signups.

Signing in

1. Go to **/login**, enter your email and press **Send login link**.
2. Open the email and click the link. It works once and expires after **15 minutes**.

If you see *Your account is pending approval*, your coordinator has not approved you yet.

> *Never forward your login link to anyone. It signs in whoever clicks it.*

First-time checks

- **Birth year:** the first time you sign in you are asked for your birth year.

- **Parental consent (under 18):** you get a link (`/paperwork/<code>`) to send to a parent or guardian. You can press **Continue for now** up to **3 times**; after that your account stays locked until your guardian signs, or your coordinator records a signed paper form.

Your profile

Edit it at **/dashboard/profile**; others see it at `/profile/<username>` .

- **Photo:** press **Change Photo**.
- **Bio:** must be in English and at least **500 characters**. Press **Check with AI**; it checks language, tone and grammar and may offer a polished version (**Approve & Save** or **Keep editing mine**). Bios that break the rules are hidden.
- **Other fields:** name, username, WhatsApp, school, grade and social links. Press **Save Profile** when done.

CHAPTER 3

Raindrops and badges

How you earn raindrops, and the badge ladder.

Raindrops ( ) are Rainflower's reward points. You earn them for real contributions and can spend them in the shop.

Earning raindrops

ACTIVITY	WHAT YOU EARN
Quizzes	Your best score pays; a retake pays only the improvement. Practice rounds pay nothing.
Experiments	Each accepted report pays the experiment's reward. Rainfall pays once per day or week.
Analyze projects	Pays on submission, on thumbs-up from others, for comments, and when accepted.
Memes	10 for each like on your meme (your own likes don't count).
Ask Thunder	Asking at /ask costs 10; an answered question pays back 10, up to 100 a day.
Arcade games	Up to 150 a day in rewarded mode.
Inviting friends	A bonus when your friend is approved, and another once they stay active.
Support feedback	A reward when your report leads to a change listed on the Change Log.
Research papers	Rewards for submitting, grades and advisor ratings, set per paper.

Wallet, leaderboard and shop

- **/wallet** shows your balance and every transaction. To send raindrops to a friend, enter their username and an amount, then press **Send**.
- **/raindrops** is the leaderboard.
- **/shop** lets you spend raindrops, including **Cash out** above a minimum amount.

Badges

Badges follow your raindrop balance and only ever go up: spending raindrops never takes a badge away.

BADGE	RAINDROPS
Novice	0 to 10,000
Observer	10,000 to 20,000
Surveyor	20,000 to 30,000
Field Researcher	30,000 to 40,000
Analyst	40,000 to 50,000
Senior Researcher	50,000 to 100,000
Lead Researcher	100,000 and above

Your dashboard shows how far you are from the next one.

CHAPTER 4

The research stages

Surveys, experiments, Analyze projects, the pilot and quizzes.

All research starts at **/research**, which lays out the stages of the program as cards. Each stage builds on the one before.

STAGE	WHAT YOU DO	WHERE
Learn	Answer public surveys about water and rain, then see the live results.	/research/learn, /surveys
Experiment	Collect measurements, such as daily rainfall from your own collector.	/experiments
Publish	Write a real research paper, alone or in a team.	/research/proposals/open
Analyze	Submit your own observations and creative work on a topic.	/research/analyze
Pilot	Follow the Rainflower device being built and tested.	/research/pilot
Assessments	Take timed quizzes on the program and the science.	/quizzes

Learn: surveys

Open a survey and press **Take the survey**. Each survey has a public report (**View report**) with charts and a map of all responses.

Experiment: rainfall and other measurements

1. Open an experiment at **/experiments** and press **Join this experiment**.
2. Choose how many slots you want and press **Request to join**. Your coordinator approves the request.
3. Submit reports with **Submit a report**.

The daily rainfall form

Fill in when you checked, what you saw (measured rain, no rain, trace, overflow or missed), the amount in mm, any problems, whether you reset the collector, and an optional photo. Press **Save daily observation**.

You can send one rainfall report per day. Sending it again updates it but does not pay twice.

Publish: research papers

Writing a paper has its own page: see Research groups and papers.

Analyze: your own research

Open a project at **/research/analyze**, read its rules checklist and submit your work. You must confirm the work is your own and not AI-generated. Other members can give thumbs-up and comment; an advisor or admin accepts or rejects it.

Assessments: quizzes

Quizzes at **/quizzes** are timed: an answer after the timer ends scores 0. Your history is at **/quizzes/history** and rankings at **/quizzes/leaderboard**.

CHAPTER 5

Community and help

The places to share, ask and learn, and where to get help.

Beyond research, Rainflower has places to meet other researchers, share what you learn and have some fun. Most of them also earn raindrops.

FEATURE	WHAT IT IS	WHERE
Team	A map of where researchers live, with every member and paper team. Filter by role, sort, or search.	/team
Blog	Write posts about your research, life and reviews. An AI check runs first, then a coordinator or admin reviews the post before it is published.	/blog, /blog/new
Memes	Post rain and science memes (an image or a YouTube, TikTok or Facebook link).	/rain-and-science-memes
Arcade	Games that teach water science; rewarded mode pays up to 150 raindrops a day.	/arcade
Ask Thunder	Ask the Rainflower AI anything about the program or the science. Others can reward good questions.	/ask
Documents	Rainflower's shared documents, with likes and comments.	/dms
X Space	The weekly live audio session on X, with agenda, speaker queue and check-in.	/x
Events	Upcoming events you can join, with comments.	/events
Videos	The Rainflower YouTube channel and playlists.	/video
Invite a friend	Your personal invite link; you earn raindrops when friends join and stay active.	/dashboard/profile
Kickoff reward	A one-time raindrop claim for students who attended the kickoff.	/reward

Posting rules

- Blog posts and memes must suit a school audience. Anything flagged is held back or hidden.
- Two flags from other members hide a meme until a coordinator or admin reviews it.
- Your own likes on your memes don't earn raindrops.

Getting help

Ask your coordinator first. Then:

- **The online guides:** /guides/student and /guides/coordinator have everything in Part I of this handbook, with search and an **Ask Thunder** button that answers questions about them.
- **Questions about one paper:** use the **Questions** section on that paper's page (see Chapter "Asking questions and changing plans").
- **Support (/support):** for problems with the site itself. If your report leads to a change, you may earn raindrops.
- **Change Log (/changelog):** what has changed on the site recently.

PART II

Research teams

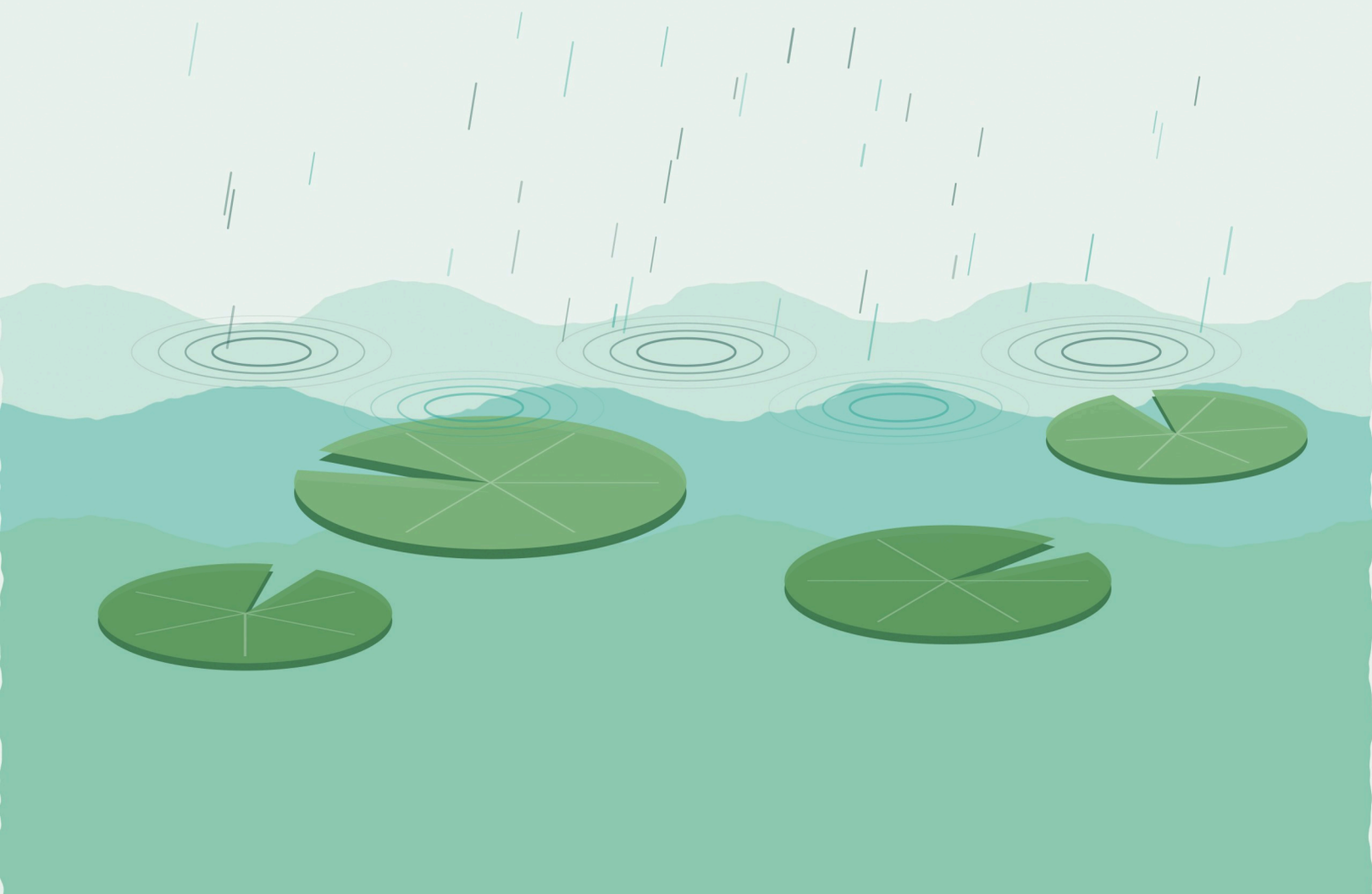
Forming a team, claiming a paper, approval, your group space, the 13 weeks and what to do when plans change.

6 Forming your team and claiming a paper

7 Approval and your group page

8 The 13 weeks

9 Asking questions and changing plans



CHAPTER 6

Forming your team and claiming a paper

Choose a paper, agree on a team, and claim it together.

A **research group** is the one to five students working on the same research paper. Several groups can work on the same paper at the same time, each in their own space. You do not compete with them: each group produces its own paper from its own neighborhood.

Before you claim

1. Be a Rainflower student researcher with a confirmed account and a coordinator.
2. Read the proposal all the way through. Every paper is in Part IV of this handbook, and online at /research/proposals/open with a PDF of its own.
3. Check the team size on the proposal. Some papers can be done alone; others need a group of 2 to 5.
4. Talk to your teammates first. Agree who is in the group and who will lead it before anyone presses the button.
5. Tell your parents or guardians what you plan to do. Field work needs their agreement.

Choosing the right paper

- **Region:** each proposal says which regions it suits best (Dhaka, Chittagong, Noakhali, Sylhet).
- **Time:** each proposal gives the hours of work per student. Plan for about 3 months with a few focused hours each week.
- **Interest:** you will spend 13 weeks on this question. Pick one you genuinely want answered.
- **Reward and budget:** every proposal shows its raindrop reward and its cash budget for expenses before you accept it.

Claiming

Open the paper you want online, scroll to **Want to write this?** and choose how you will work.

ON YOUR OWN	AS A GROUP
Leave **Teammates** empty.	In **Teammates**, start typing a friend's name or username and pick them from the list. Press × on a chip to remove someone.
Type a group name if you like.	Add a group name, or pick one of your earlier groups to fill the members in.
Press **Claim this paper**.	Press **Claim this paper**.

The student who presses the button becomes the **group lead**. Teammates don't need to do anything: they are part of the group as soon as the claim is made.

> *You can't add more people than the paper allows, and only student researchers can join. A student can be in only one group for each paper, but can be in groups on different papers.*

If you leave the name empty, your group gets a water-themed one like *Lotus Petals* or *Monsoon Herons*. The lead can change it at any time.

Sharing the work

A team works best when everyone owns something. A common split for a team of four or five:

ROLE	OWNS
Lead	The plan, the timeline, and talking to the coordinator.
Survey lead	The AKTI Survey form, the pilot and the survey exports.
Interview lead	The interview guide, recordings and consent log.
Photo and field lead	Geo-tagged photos, the photo log and the field diary.
Analysis lead	The spreadsheet, tables and charts.

Everyone writes. Everyone is a co-author. Meet at least once a week, even for fifteen minutes, and write down what each person will do before the next meeting.

CHAPTER 7

Approval and your group page

What happens after you claim, and how your group's home works.

Waiting for approval

As soon as you claim, you land on your new group page, marked **Waiting for approval**. Your claim now appears for Rainflower admins, who approve or decline every claim (sometimes with a short note), and for your coordinator and each teammate's coordinator.

While you wait, the group lead can rename the group, write a description, add a cover photo, and add or remove members. Use the time to plan: read the proposal again and agree who does what. Approval usually takes a few days.

Once approved, the page says **Approved**, your group's file space opens, and your group appears on the paper's page. If a claim isn't approved, the note from Rainflower explains why, and an admin can reopen it later.

Your group page

Your page at `/research/group/<your-group-name>` is your group's home: the cover photo, group name, the paper, your description, the researchers (the lead is marked) and your coordinator. Find it from **My Group** in the profile menu, at /research/my-groups, or on your dashboard.

Signed-in Rainflower members can see an approved group's name, description and members. **Your files are never public.**

Who can do what

ACTION	GROUP LEAD	TEAMMATES	COORDINATOR	ADMIN
See the files and every version	Yes	Yes	Yes	Yes
Upload and remove files	Yes	Yes	No	Yes
Rename, description, cover photo	Yes	No	Yes	Yes
Add members	Yes	No	Yes	Yes
Remove members	Before approval	No	Yes	Yes

ACTION	GROUP LEAD	TEAMMATES	COORDINATOR	ADMIN
Withdraw the group	Yes	No	No	Yes
Approve or decline the claim	No	No	No	Yes

Renaming changes your page's address too, but the old address keeps working.

Aktiful Survey

Once approved, **Log in to Aktiful Survey** on your group page opens the survey tool already signed in. Everyone in your group shares every survey any member creates there, so build your survey together.

Files and versions

Everything your group collects lives in **Group files** on your page.

1. Drag files onto the upload box, or press **choose files**. Up to 20 at a time, each up to 100 MB.
2. Pick a folder (optional), like `survey` or `photos/week-3`.
3. Say what changed in a few words: "First 15 survey responses".
4. Press **Upload**.

Documents, data (CSV, Excel), photos, audio and video interviews, slides and ZIP files are all accepted.

Nothing is ever lost. Upload a file with the same name in the same folder and it becomes the new version; the old one is still there. Press **Versions** next to any file to see who changed it, when and why. **Remove** takes a file out of the current list, but it stays in the history.

A tidy space

FOLDER	WHAT GOES IN IT
`plan/`	Research question, roles, survey draft, interview guide
`consent/`	Consent scripts (Bangla and English), consent log
`survey/`	AKTI Survey exports (CSV), pilot notes
`interviews/`	Recordings named by date and role, e.g. 2026-11-02_mechanic.m4a
`photos/`	Geo-tagged photos and photo-log.csv
`diary/`	Field diary, one entry per visit
`analysis/`	Spreadsheet, tables, charts

FOLDER	WHAT GOES IN IT
`drafts/`	paper-v1.docx, paper-v2.docx …
`final/`	Final paper, evidence manifest, AI-use and ethics statements

Good habits: upload after every field visit, not at the end; keep a file's name the same when you update it; name new files by date and what they are; and always write what changed.

CHAPTER 8

The 13 weeks

Seven stages from plan to paper, and the evidence each one produces.

A project moves through seven stages. The weeks are a guide, not a rule: finishing well matters more than finishing fast. Your AI research assistant checks in at every stage.

STAGE	WEEKS	WHAT HAPPENS	SAVE TO
1. Choose and plan	1–2	Decide your exact question, who you will ask and where. Draft the survey and interview questions.	`plan/`
2. Permission and pilot	2–3	Guardians' agreement, consent scripts, coordinator's first checklist, pilot the survey with 3–5 people.	`consent/`, `survey/`
3. First sample	3–4	First 10–20 responses, 1–2 interviews, first photos. An advisor reviews your question, sampling plan and early results.	all folders
4. Full data collection	5–8	Run the survey, record interviews, take geo-tagged photos, keep the field diary.	all folders
5. Analyze	9–10	Count, compare and chart. Decide what your data can and cannot support.	`analysis/`
6. Write	11–12	Introduction, methods, results, discussion, limitations, references. AI-use and ethics statements.	`drafts/`
7. Final review	13	Coordinator's final checklist. Upload the paper and evidence package.	`final/`

Three kinds of evidence

Every project must produce all three:

- **Online survey:** a questionnaire on AKTI Survey, answered by real people. It gives you numbers you can count and compare.
- **Video interviews:** short recorded conversations with people who know your topic. They give you the stories and reasons behind the numbers. Record in parts of 3 to 8 minutes.
- **Geo-tagged photos:** the places, sources and problems you study, with location turned on. They show what you saw and where.

Your proposal says how much of each your project needs. Who you ask matters as much as how many: a survey of your neighbors tells you about your neighbors, not about all of Bangladesh. Say in your paper exactly who you reached and what your results can and cannot claim.

After you submit

1. **Rainflower acceptance.** Your paper and evidence pass review and get a grade; your advisor rates it. This is the finish line, and where raindrops are paid.
2. **Journal submission.** From accepted papers, Rainflower selects some and submits them to a US youth science journal on your behalf.
3. **Journal acceptance.** The journal decides, usually after months. Rainflower works with you on any changes.

Most papers stop at step 1, and that is a complete, successful project.

Keeping the budget

Every proposal has a cash budget for the real costs of field work: travel, mobile data, printing consent forms and small items. Track what you spend in your field diary.

CHAPTER 9

Asking questions and changing plans

Getting answers about your paper, and what to do when the team changes.

Asking questions about a paper

Every paper's page has a **Questions** section for questions about that paper: its method, survey, interviews, budget, team, timeline, ethics, writing or submission. Press **Ask a question** near the top of the paper.

- **Thunder answers straight away** when the proposal itself covers your question.
- **Otherwise it waits for a person.** Your coordinator and Rainflower are emailed, and you are emailed when someone answers.
- Until it is answered, you can edit or withdraw your question. Questions are tagged by topic, so read what others asked first.

When plans change

- **Someone wants to join:** the group lead opens **Add members**, any time the paper's team size allows.
- **Someone wants to leave:** before approval the lead can remove them. After approval, ask your coordinator or Rainflower.
- **You can't continue:** the lead can press **Withdraw the group**. Your files are kept, and an admin can bring the group back if you return.

For coordinators

Coordinators find every group that includes one of their students under **Dashboard → Research Groups** (/dashboard/coordinator/research-groups), with claims waiting for approval marked. You can rename a group, edit its description and cover, add or remove members, and open its files and history to follow the work. You cannot upload files, and approving claims is done by Rainflower admins.

Your two reviews in the 13 weeks are the **plan** (weeks 1–2, before field work) and the **final draft** (week 13). Your checklist asks three things: is the group collecting data with a proper method, staying safe, and being honest?

When Thunder can't answer a student's question on a paper, you get an email. Answer from the link in the email or on the proposal page.

PART III

Research ethics

Consent, privacy, safety and honesty: the promises every Rainflower researcher keeps. Read this part before any field work.

10 Why research ethics matters

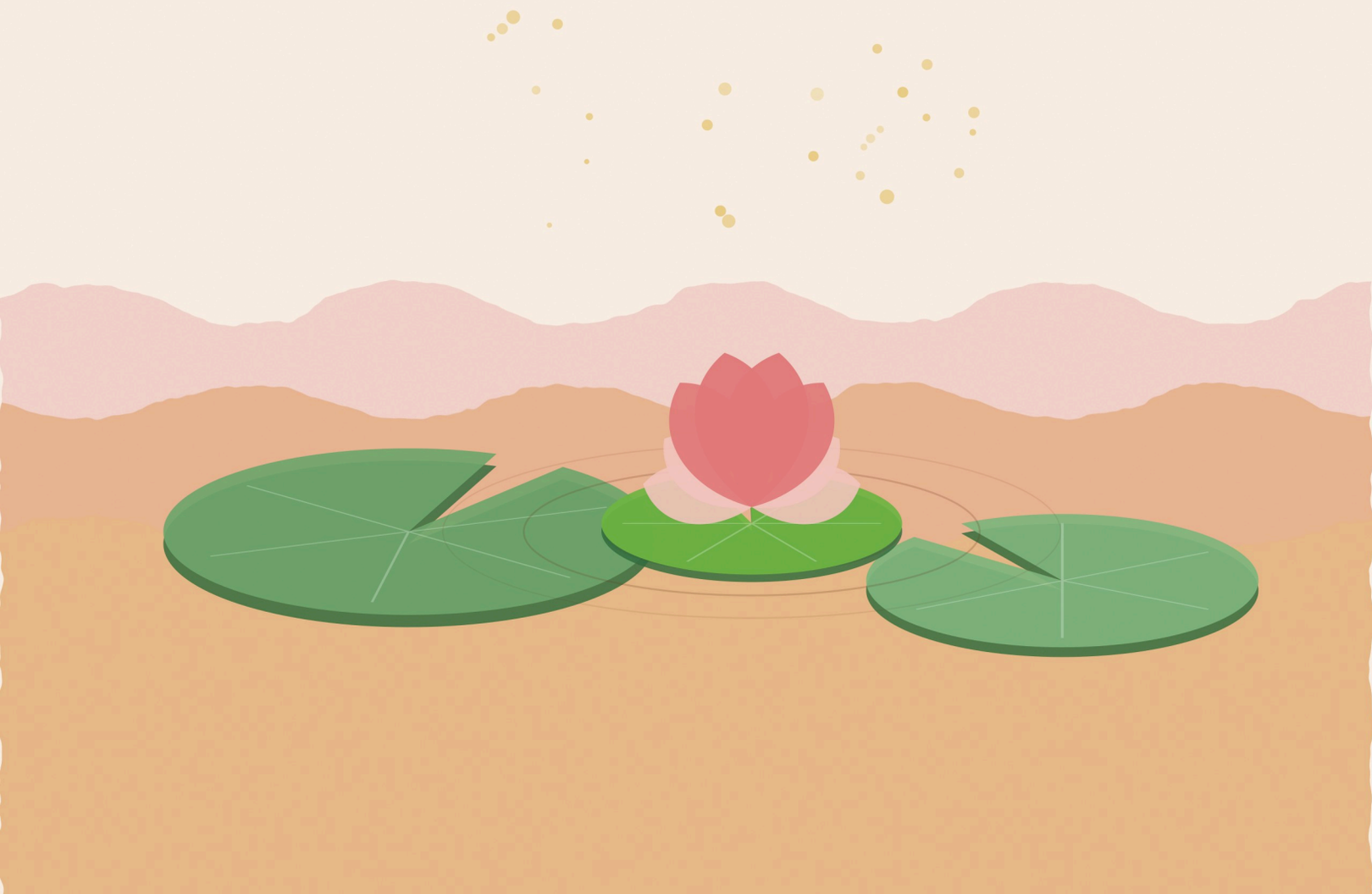
11 Consent

12 Privacy and data

13 Safety in the field

14 Honest data and honest AI

15 Ethics checklist



CHAPTER 10

Why research ethics matters

The promises every researcher makes to the people they study.

You will be working with real people and real places: a mother carrying water home, a tube-well mechanic, a shopkeeper, a neighbor's child. They give you their time, their words and sometimes their pictures. Research ethics is the set of promises scientists make so that nobody is harmed or tricked by taking part.

These rules are not extra paperwork. A paper that breaks them will not be accepted, however good its data, and Rainflower's review checks them before any paper is graded or sent to a journal.

Four principles

PRINCIPLE	WHAT IT MEANS FOR YOU
Respect	People decide for themselves. Explain your project, ask clearly, and accept "no" without argument.
Do no harm	Nobody should be worse off for talking to you: not embarrassed, not exposed, not put at risk. That includes you.
Fairness	Treat everyone you ask the same way. Report what people said, not what you wished they had said.
Honesty	Your data, your quotes, your photos and your use of AI are exactly what you say they are.

The ethics statement

Every Rainflower paper includes a short **ethics statement** confirming that you followed the rules in this part, and an **AI-use statement** saying exactly what you used AI for. Your coordinator's checklist and Rainflower's review both check them.

> *If you are ever unsure whether something is ethical, stop and ask your coordinator before you do it. Asking is always right.*

CHAPTER 11

Consent

Ask first, ask three separate questions, and protect children.

Ask first

Before anyone answers your survey, speaks on video or appears in a photo, explain what your project is and get their clear agreement. Anyone can say no, and anyone can stop at any time, even halfway through an interview.

Three separate permissions

Taking part, being recorded, and having anything shared publicly are **three different permissions**. Ask for each one separately, every time, and respect a yes to one and a no to another.

1. **Taking part:** "Would you be willing to answer some questions about how your family gets water?"
2. **Being recorded:** "May I record this conversation on video (or audio only)?"
3. **Sharing publicly:** "May we use your words or picture in our paper, without your name?"

Each proposal has a consent script in Bangla and English. Use it word for word. On AKTI Survey, the first screen should state the purpose and ask for consent before any questions begin.

The consent log

Keep a simple table in `consent/` : a code for each person (H01, H02…), the date, and their answer to each of the three questions. Never write their name next to their answers in your data.

Children need a parent

If you want to survey, interview or photograph anyone under 18, **including a child who fetches water**, a parent or guardian must agree first, in person, before you record that child.

Your own consent

If you are under 18, your parent or guardian must also agree to your taking part in Rainflower. That is the consent link you received when you first signed in.

CHAPTER 12

Privacy and data

Codes instead of names, private evidence, and what may go public.

Protect people's identity

- No full names, phone numbers or home addresses in your paper.
- Describe people by role: "a shopkeeper in Sylhet", "an adult woman who fetches water for her household". Use a name only if the person asks to be named.
- In data files, use codes such as **H01** for households and **I03** for interviews, never names.
- Never upload or publish photos of **children's faces**, or anything that shows exactly where a family lives.

Two kinds of material

THE PRIVATE EVIDENCE PACKAGE	THE PUBLIC PAPER
Raw survey exports, full interview recordings, original photos with location data, the household list, your field diary.	Summaries and grouped numbers, anonymized quotes, selected photos with exact locations removed.
Seen only by your team, coordinator, advisor and Rainflower reviewers.	Seen by anyone, possibly by a journal.

Keep the private material **only in your group's file space** on Rainflower, not in public chats, social media or shared drives. It is kept only as long as the review and any journal process need it, and is deleted on request.

When something slips

If you accidentally record a name, a phone number or a face that shouldn't be there, delete or blur it as soon as you notice, upload the corrected file, and tell your coordinator.

CHAPTER 13

Safety in the field

Your own safety comes first, every time you go out.

No piece of data is worth getting hurt for.

Before you go

- Tell your family where you are going and when you expect to return, **every time**.
- Go in pairs where possible.
- Charge your phone and carry a little money for transport.

While you are out

- Work in **daylight** and in **public places**.
- Never enter private property, a household's rooms or yard, a factory or a water facility without permission.
- Do not go near fast water, open wells, unstable banks or standing floodwater, even for a good photo.
- If a route has slopes, stairs or busy road crossings, walk it once without heavy bags before bringing equipment.
- If anyone becomes angry, uncomfortable or unsafe, thank them, stop, and leave.

Seasons

Every Rainflower project must be doable in any month of the year, so you never need to go out in a storm or a flood. Record the date of every visit, and say in your paper how the season may have affected what you saw.

CHAPTER 14

Honest data and honest AI

The data wins, and AI is a helper, never the author.

Honest data

- Report what people said, not what you wished they had said. If your data disagrees with your idea, **the data wins**.
- Record missed days, refusals and things that went wrong. They belong in your limitations section.
- Never invent, copy or "fill in" a response, a quote, a measurement or a photo.
- Say exactly who you reached and how you chose them. Don't claim your neighborhood speaks for all of Bangladesh.
- Read every source you cite. Give credit to every idea, table or picture that isn't yours.

Using AI honestly

AI tools are allowed as a helper, never as the author. AI can help you present your work, but it cannot do your work. That includes your Rainflower AI research assistant.

ALLOWED	NOT ALLOWED
Fixing grammar and spelling, and making your English clearer	Inventing survey answers, interview quotes or photos
Helping you organize sections, headings and layout	Writing your results or conclusions for you
Formatting tables, figures and references	Creating references to sources you have not read
Explaining a concept or a method you want to understand	Writing any part of the paper that claims to be your own observation or data

Every paper includes a short **AI-use statement** that says exactly what you used AI for. Being open about it is normal in science and costs you nothing. **Hiding it, or faking data, ends the project.**

Showing the work is yours

Your evidence does two jobs: it supports every claim, and it shows the work is yours. Your field diary, your stage-by-stage uploads, your check-ins with your AI assistant and advisor, and a short final conversation about your findings complete the picture. A paper without an evidence package will not be accepted.

CHAPTER 15

Ethics checklist

Check off every line before field work, and again before you submit.

Before field work

- [ ] My parent or guardian knows about the project and has agreed.
- [ ] We have the proposal's consent script in Bangla and English.
- [ ] Our consent log is ready, with codes instead of names.
- [ ] The first screen of our survey explains the purpose and asks for consent.
- [ ] We know we must get a parent's agreement before talking to anyone under 18.
- [ ] We have a safety plan: daylight, public places, pairs, family told every time.
- [ ] Our coordinator has run the first checklist review.

Before you submit

- [ ] Every person in our data agreed to take part, and we asked the three permissions separately.
- [ ] No names, phone numbers, addresses or children's faces appear in the paper.
- [ ] All private material is in our group's file space and nowhere public.
- [ ] Every number, quote and photo in the paper is real and ours.
- [ ] We read every source we cite.
- [ ] Our AI-use statement says exactly what we used AI for.
- [ ] Our ethics statement is written and true.
- [ ] Our coordinator has run the final checklist.

PART IV

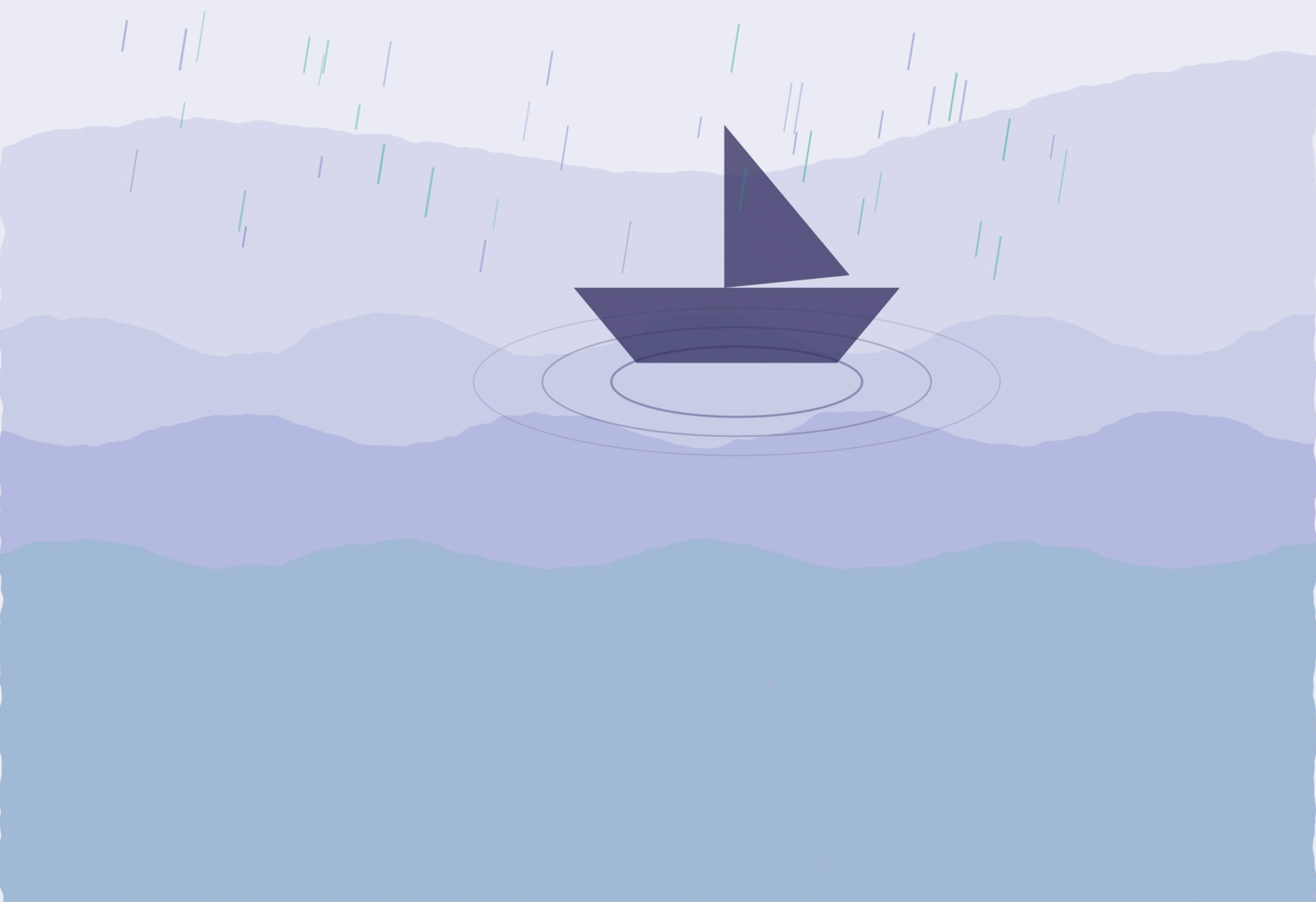
The research papers

Every open research proposal, in full: the question, the method, the evidence, the timeline, the budget and the reward.

16 The papers at a glance

17 Carrying Water Home: Distance, Time and the Person Who Carries Drinking Water on One Residential Lane

18 The Price of a Jar: What Households Near One Market Pay for Drinking Water



CHAPTER 16

The papers at a glance

Every open research paper on one page.

2 research papers are open right now. Each one is a complete proposal you can claim alone or as a team. Every proposal has the same twenty-or-so sections, so once you have read one you can find your way around all of them.

RESEARCH PAPER	TEAM	HOURS EACH	REWARD PER STUDENT	BUDGET
Carrying Water Home: Distance, Time and the Person Who Carries Drinking Water on One Residential Lane On [named lane / block, in a named ward or area], what is the typical distance and time households travel to collect their main drinking water, and who in the household usually carries it?	1–5 students	about 60	3,000 raindrops ($6)	BDT 3,800
The Price of a Jar: What Households Near One Market Pay for Drinking Water Among households living within a 10-minute walk of [a named local market], how much do they pay per litre for their main drinking water source, and how does this price vary by source type and by distance from the market?	1–5 students	about 90	5,000 raindrops ($10)	BDT 6,000

Proposals open and close during the year. The latest list is always at rainflower.world/research/proposals/open, and the latest edition of this handbook at rainflower.world/guides/handbook/pdf.



RESEARCH PAPER 1 OF 2

Carrying Water Home: Distance, Time and the Person Who Carries Drinking Water on One Residential Lane

Who Fetches the Water? Mapping the Daily Walk for Drinking Water on One Lane

RESEARCH QUESTION

On [named lane / block, in a named ward or area], what is the typical distance and time households travel to collect their main drinking water, and who in the household usually carries it?

1–5 students TEAM	**about 60** HOURS EACH	**13** WEEKS
3,000 raindrops ($6) REWARD PER STUDENT	**BDT 3,800** EXPENSE BUDGET	**Dhaka, Chittagong, Noakhali, Sylhet** REGIONS

Read online and claim it at rainflower.world/research/proposals/carrying-water-home

IN THIS PROPOSAL

01 Summary
02 Why this matters
03 Background
04 Research question and hypothesis

05 Who should do this
06 Evidence plan
07 Survey design
08 Sampling and limits
09 Interview guide
10 Photo and observation plan
11 Optional measurements
12 Timeline
13 Analysis plan
14 Ethics and safety
15 Expected outcomes and limitations
16 Paper outline
17 Budget
18 Before-you-start checklist
19 Glossary

01 Summary

On one named lane (a short residential street or block, "para" / পাড়া), this project asks: how far do households travel to collect their main drinking water, how long does it take, and who in the family usually does this work? The student team will run a household survey on AKTI Survey, interview people who fetch water or know the lane well, take geo-tagged photos of sources, routes and carrying containers, and keep a field diary. The team will map the lane, measure distances and trip times in categories, and compare households by source type (tube well, shared tap, vendor, pond) and by who carries the water (woman, girl, boy, man, hired help). At the end, the team will be able to say, for this specific lane, how far and how long water-fetching really takes, and whether the burden falls more on women and girls than on others.

02 Why this matters

In many Bangladeshi neighbourhoods, drinking water does not arrive by itself. Someone walks to a tube well, a shared tap, a pond, or a vendor's stand, fills a container, and carries it home — sometimes several times a day. This daily walk rarely gets measured. Parents assume "it is close enough." Teachers may not know that a student arrives late because she fetched water first. A local leader planning a new tube well may not know which part of the lane actually struggles.

This study turns an everyday, invisible chore into something countable: metres, minutes, trips, and a named person. For the families on this lane, knowing the real distance and who carries the load is the first step toward asking for a closer source, sharing the task more fairly, or protecting a child's school time.

03 Background

- Household surveys on water access usually report "improved" or "unimproved" source, not fetching distance or time in detail — BBS or MICS household survey reports [verify].
- International bodies track whether water collection takes under or over 30 minutes round trip as a global benchmark — WHO/UNICEF Joint Monitoring Programme (JMP) reports [verify].
- Water collection is widely described as "women's and girls' work" in rural and urban Bangladesh, but most reports are national, not street-level — NGO WASH sector reports, e.g. WaterAid Bangladesh or BRAC WASH programme reports [verify].

- Government water agencies publish records of tube well installations and coverage gaps by ward or union, but not walking distance per household — DPHE (Department of Public Health Engineering) reports [verify].
- Urban geography and public health literature discusses the "time tax" of water fetching and its link to missed school or work — academic journal articles on water, gender and time use [verify].
- Local government bodies (union parishad, ward councillors) sometimes hold informal lists of water point locations and complaints — union parishad or city corporation ward records [verify].
- Injuries from carrying heavy water (falls, strain, slipping on paths) are mentioned in WASH and public health literature but rarely counted at street level — community clinic or NGO field reports [verify].
- Distance and burden may differ sharply by local geography — coastal char erosion, hill-track stairs, haor flooding — but this is usually described in general terms, not measured lane by lane — regional development or disaster-management reports [verify].

04 Research question and hypothesis

Primary question: On [named lane / block, in a named ward or area], what is the typical distance and time households travel to collect their main drinking water, and who in the household usually carries it?

Secondary questions: (a) Does distance and time to the water source differ by source type (private tube well, shared tube well, piped tap, vendor, pond or river)? (b) Is there a pattern between who carries the water (adult woman, adult man, girl under 18, boy under 18, hired help) and household characteristics such as distance, source type, or household size?

Hypothesis: Households without a private source in their own yard will report longer distances and times, and will be more likely to rely on a woman or girl to carry water, compared with households with a source inside the home.

Null result: If distance, time, and who carries water are similar across all source types and household sizes, that is itself useful — it would suggest the lane is unusually equal, or that some other factor (not measured here) drives who carries water. Say this clearly if it happens; do not force a pattern that is not in the data.

05 Who should do this

Team size: 2 to 3 students work best — enough to split survey, interview and photo/mapping work, but small enough to coordinate easily on one lane. A single student can do this alone by following the timeline carefully and allowing more weeks for each task; a team of 4 can cover a longer lane or two nearby lanes for comparison, but must keep the unit of study clear ("this lane" or "these two lanes," named).

Fit by region:

- **Dhaka:** Dense lanes in older neighbourhoods or informal settlements often show a sharp contrast between households with a rooftop tank or inside tap and households relying on a shared tap down the lane or jar delivery. Distance may be short but trip frequency high.
- **Chittagong:** Hill-side lanes may involve stairs or slopes, which change the "burden" even if horizontal distance is short. Note elevation in the field diary.

- **Noakhali:** Char and coastal lanes may have longer distances to a working tube well due to salinity or erosion; some households may rely on pond sand filters or vendors bringing water from further away.
- **Sylhet:** Haor-edge or tea-garden-adjacent lanes may have seasonal path changes (mud, flooding) — describe the path condition on the day of visit, and note that this may differ in another season.

Role split for a team of 3-4:

- **Survey lead:** builds and manages the AKTI Survey, tracks response numbers, checks for missing answers.
- **Interview lead:** schedules and conducts video interviews, manages consent forms.
- **Photo and map lead:** takes geo-tagged photos, sketches the lane map, marks source locations and distance bands.
- **Data lead:** keeps the master spreadsheet, builds charts, checks for duplicate households. For 1-2 students, one person holds two roles in sequence rather than at the same time — for example, finish all survey visits before starting interviews.

06 Evidence plan

EVIDENCE TYPE	WHAT IT SHOWS FOR THIS QUESTION	HOW MUCH IS ENOUGH	WHY IT FITS
AKTI survey	Self-reported source type, distance band, trip time, trip frequency, and who usually carries water, across many households on the lane	40-60 completed household responses	Gives a countable pattern across the whole lane, not just a few visible cases
Video interviews	Lived detail behind the numbers: what the route feels like, what happens when a child is late, how things have changed over time	6-10 interviews, 3-8 minutes each	Explains the "why" and "how" behind the survey numbers; captures voices the survey cannot
Geo-tagged photos	Visual record of actual sources, routes, containers, and distances; supports the map	15-25 photos covering every source type found and at least 3 route segments	Lets the reader and advisor see the lane, not just read numbers
Field diary	Dates, times, weather, who was present, any problems or changes in plan	Entry for every visit day (expect 15-20 entries)	Shows the study is grounded in real dates and real conditions, and helps explain any season effect

07 Survey design

Target respondent: an adult member of the household (18+) who is usually involved in water collection decisions, ideally the person who most often fetches water. One response per household.

1. What is your household's main source of drinking water right now? — Single choice: Tube well in our own yard / Shared tube well outside our yard / Piped tap (WASA or municipal) inside our home / Shared or public tap outside our home / Water vendor (jar or bottle delivery) / Pond or river / Other
2. Where is this main source located? — Single choice: Inside our home or yard / Outside our yard, on this lane / Outside this lane / Don't know
3. About how far is it from your home to this source, one way? — Single choice: Less than 20 metres (about 25 steps) / 20-50 metres / 50-100 metres / 100-300 metres / More than 300 metres / Not applicable, water is delivered to our home
4. About how long does one round trip (there and back, including waiting and filling) usually take? — Single choice: Less than 5 minutes / 5-10 minutes / 10-20 minutes / 20-40 minutes / More than 40 minutes
5. How many trips does your household make to collect drinking water on a normal day? — Number
6. Who in your household usually carries the drinking water home? — Single choice: Adult woman / Adult man / Girl under 18 / Boy under 18 / Hired help or domestic worker / It is delivered, no one carries it / Varies, no single person
7. If a girl or boy under 18 usually carries water, about how old are they? Write 0 if not applicable. — Number
8. In the last 7 days, has carrying water ever caused a child in your household to arrive late to school or miss school? — Single choice: Yes / No / Not applicable, no school-age child fetches water / Don't know
9. What does your household usually carry drinking water in? — Multiple choice: Plastic jar or gallon container / Bucket / Clay pot (kolshi) / Pitcher / Other
10. About how much drinking water does your household carry in total per day (your best estimate, in litres)? — Number
11. Does anyone help carry water using a cart, rickshaw-van, or other vehicle? — Single choice: Yes, always / Yes, sometimes / No, always carried by hand or on the head / Not applicable, delivered
12. Is your household's drinking water collected in the same trip as water for cooking and washing, or separately? — Single choice: Same source, same trip / Same source, separate trip / Different source entirely / Don't know
13. In the past 12 months, has your household changed its main drinking water source? — Single choice: Yes / No / Don't know
14. If yes, briefly, why did it change? — Short text (optional)
15. How satisfied are you with the distance your household must travel for drinking water? — Scale 1-5 (1 = Very dissatisfied, 5 = Very satisfied)
16. In the past year, has anyone in your household been injured (fall, strain, slip) while carrying water? — Single choice: Yes / No / Prefer not to say
17. Would your household be willing to pay a small amount for drinking water delivered closer to home? — Single choice: Yes / No / Already paying for delivery / Don't know
18. How many people live in your household? — Number
19. What is the approximate age group of the person who carries water most often in your household? — Single choice: Under 12 / 12-17 / 18-40 / 41-60 / Over 60 / Varies, no single person
20. Which part of this lane does your household live on? (Use the segment names your team defines before starting, for example "near the mosque end," "middle," "near the market end.") — Single choice, with

team-defined options

Response target: 40-60 households, aiming to cover the full length of the lane.

Recruitment: Walk the lane door to door in daylight, in pairs if possible. Introduce the project, read the consent script (Section 10), and offer to fill in the survey together on a phone if the respondent prefers not to use their own device.

Pilot plan: Test the survey with 3-5 households first (not counted in the final 40-60, or counted if no changes needed). Watch for: confusing distance bands (does "20-50 metres" make sense to people, or should you show a visual reference like "half a cricket pitch"?), respondents unsure how to answer Q6 when multiple people share the task, and whether Q10 (litres) is too hard to estimate — if so, allow "don't know" as an accepted non-answer rather than forcing a guess. Adjust wording after the pilot, then start the full round.

08 Sampling and limits

Sampling method: Number every household on the lane in one direction (start from one named landmark, for example the mosque or the market entrance). Visit every household, or if the lane is very long (over 80 households), visit every second household, alternating sides of the lane. Record the total number of households on the lane and how many you reached, so readers know the coverage rate.

What this sample can claim: A clear, countable picture of distance, time and who carries water for the households surveyed on this named lane, on these dates.

What it cannot claim: Nothing about the whole city, region or country. Nothing about lanes you did not visit. Self-reported distance and time are estimates, not measured facts, unless you personally walked and timed the route (see Section 12).

Obvious bias and how to reduce it: People may answer on behalf of the household in a way that makes their situation look better or worse than it is (social desirability bias), especially for injury (Q16) or child lateness (Q8). Reduce this by keeping the tone neutral when asking, not reacting with surprise, and reminding respondents that answers are private and reported only in grouped form. Also watch for a time-of-day bias — if you only survey in the morning, you may miss households whose main water-fetcher is away at work; try to include some afternoon and early-evening visits.

09 Interview guide

Roles to interview (choose 6-10):

1. An adult woman who regularly fetches water for her household
2. An elder (60+) who remembers water collection on this lane years ago
3. A girl or boy under 18 who fetches water (only with parent/guardian consent, described by role, not name)
4. A tube-well mechanic or caretaker who services wells on or near this lane
5. A water vendor or jar-water shopkeeper who delivers to this lane

6. A school teacher or caretaker (about students arriving late due to water tasks)
7. A union parishad member or ward representative
8. A DPHE or local NGO WASH field worker, if available
9. A community clinic worker (about injuries or health complaints linked to water carrying)
10. An adult man who regularly fetches water, for comparison

Interview questions:

1. On a normal day, how many times do you go to collect drinking water, and about how long does each trip take?
2. Can you describe your route from home to the water source — is it flat, muddy, does it cross a road or path with traffic?
3. Has carrying water ever made you or someone in your family late for school, work, or another duty? Can you describe a time this happened?
4. Who else in your family shares this task with you, if anyone?
5. Has the distance or the main source changed in the past five or ten years? What was it like before?
6. Have you, or anyone you know on this lane, ever been hurt while carrying water?
7. What would make this task easier for your household?
8. (Mechanic) How often do you repair tube wells on this lane, and what happens to people's water distance when a well breaks down?
9. (Vendor) About how many households on this lane do you deliver to, and roughly what do you charge?
10. (Union parishad/DPHE/NGO) Are there any current plans to add a water point on or near this lane?
11. (Teacher/caretaker) Have you noticed students arriving late, and do you know if water collection was ever a reason?
12. (Clinic worker) Have you treated injuries that patients linked to carrying water (falls, strain)?

Consent script — read aloud before recording, in order: taking part, being recorded, being shared publicly.

English: "Hello. We are secondary school students doing a water research project for Rainflower Youth Research. We would like to ask you some questions about collecting drinking water. First: are you willing to take part in this interview? [wait for answer] Second: are you willing to be recorded on video or audio for our research notes? [wait for answer] Third: are you willing for us to share parts of what you say — without your name — in our research paper or presentation? [wait for answer] You can stop at any time, and you do not have to answer any question you don't want to. Thank you."

Bangla (approximate, check wording with a Bangla-speaking adult before use): "আসসালামু আলাইকুম। আমরা মাধ্যমিক বিদ্যালয়ের ছাত্রছাত্রী, রেইনফ্লাওয়ার ইয়ুথ রিসার্চের জন্য পানির গবেষণা করছি। আমরা আপনাকে খাবার পানি সংগ্রহ নিয়ে কিছু প্রশ্ন জিজ্ঞাসা করতে চাই। প্রথমত: আপনি কি এই সাক্ষাৎকারে অংশ নিতে রাজি আছেন? [উত্তরের জন্য অপেক্ষা করুন] দ্বিতীয়ত: আমরা কি আপনার ভিডিও বা অডিও রেকর্ড করতে পারি আমাদের গবেষণার জন্য? [উত্তরের জন্য অপেক্ষা করুন] তৃতীয়ত: আপনি কি রাজি আছেন যে আমরা আপনার নাম ছাড়া আপনার কথার কিছু অংশ আমাদের প্রবন্ধে বা উপস্থাপনায় ব্যবহার করি? [উত্তরের জন্য অপেক্ষা করুন] আপনি যেকোনো সময় থামতে পারেন, এবং কোনো প্রশ্নের উত্তর দিতে বাধ্য নন। ধন্যবাদ।"

Recording tips: Find a quiet spot, public and in daylight. Hold the phone landscape (sideways). Keep each clip 3-8 minutes. At the start of the recording, say the date and the person's role (for example, "9 October 2026, interview with a tube-well mechanic"), not their name. If the person prefers not to show their face, record their hands, the water point, or point the camera away from them while they speak.

10 Photo and observation plan

1. The main water source itself (tube well, tap, pond edge) from a public viewpoint, no faces — shows what the source actually looks like.
2. A wide shot of the route from a household's gate toward the source — shows the real path condition (paved, muddy, stepped).
3. Close-up of a carrying container (jar, bucket, kolshi) — shows the tools people actually use.
4. A person carrying water, from behind or side, with consent, face not shown if preferred — shows the physical task in progress.
5. Your phone's map screen showing the measured distance between two points you walked (see Section 12) — supports your distance data.
6. Any posted sign, rule, or notice near a shared source (for example, timing rules, ownership notice) — shows local rules in context.
7. A storage container inside a home's entrance area (outside the private rooms, with permission) — shows how water is stored after carrying.
8. A queue or gathering point at a shared source, if present, no identifying faces — shows demand at that spot.
9. Any path hazard (broken pavement, open drain, slope, standing water) along a carrying route — supports injury-related interview answers.
10. A hand-drawn or photographed sketch map of the lane, marking every water source and household segment — becomes your main map figure.
11. A vendor's delivery cart or jars for sale, if a vendor serves the lane — shows the delivery option in context.
12. Wide establishing shot of the lane itself, showing the general character of the neighbourhood (useful for the paper's description, not as evidence of any specific claim).

Turning on location tagging: On most phones, go to Camera settings (or Settings > Privacy > Location Services) and allow the Camera app to access location "while using the app." Check that a small location icon or geo-tag appears when reviewing the photo's details.

Photo log — record for every photo: photo number, date, time, place type (for example, "shared tube well," "route segment 2"), and one line on what it shows.

Rules: Never photograph a child's face without separate guardian consent for that specific photo. Never enter a home's private rooms; photograph storage containers only in entryways or courtyards with the household's permission. If someone asks not to be photographed, stop immediately and do not argue.

11 Optional measurements

All items below are OPTIONAL. The study works fully without them, using survey self-report and interviews as the main evidence.

- **OPTIONAL — Measured distance:** Walk the route yourself using a phone map app (recording start and end points) or by counting paces and converting to metres (an average adult pace is about 0.7-0.8 metres; state your own measured pace). Use this to check, not replace, the survey's self-reported distance bands for 5-10 example households.
- **OPTIONAL — Timed trip:** With the household's permission, time (with your phone's stopwatch) how long an actual round trip takes for 3-5 volunteer households, to compare against their self-reported time in Q4.
- **OPTIONAL — Container volume:** Measure the volume of common containers (jar, bucket, kolshi) using a labelled one-litre bottle, to turn "number of containers per day" into an approximate litre estimate, supporting Q10.
- **OPTIONAL — Trip counting:** With permission, observe one household's doorway for a set period (for example, one hour in the morning) and count actual trips made, to spot-check Q5.

None of these measurements test water quality or safety. This study describes distance, time and burden only — it does not claim anything about whether the water itself is safe to drink.

12 Timeline

STAGE	WEEKS	WHAT YOU DO FOR THIS TOPIC	WHAT YOU SUBMIT
1. Choose and plan	1-2	Pick and name the exact lane; sketch its rough length and landmarks; define distance bands and lane segments for Q3 and Q20; draft survey	Plan document, draft survey, named lane with a landmark description
2. Permission, checklist, pilot	2-3	Get parental consent for any under-18 interviewee; tell families you will be walking the lane; pilot survey with 3-5 households; adjust wording	Coordinator checklist, piloted survey, consent forms ready
3. First sample and advisor review	3-4	Collect first 10-15 household surveys; conduct 2-3 interviews; take first 5 photos; advisor reviews early data	First-sample data, advisor feedback notes
4. Full data collection	5-8	Complete remaining household surveys to reach 40-60; complete all interviews; complete photo set; keep field diary current	Full survey dataset, all interview recordings, full photo log
5. Analyse	9-10	Build charts (Section 14); cross-tabulate source type, distance, carrier identity; write first findings notes	Draft charts and tables, findings notes

STAGE	WEEKS	WHAT YOU DO FOR THIS TOPIC	WHAT YOU SUBMIT
6. Write	11-12	Draft full paper following Section 17 outline; select best photos and quotes; write AI-use and ethics statements	Full paper draft
7. Final review and submit	13	Coordinator checklist review; revise; submit paper and evidence package to Rainflower	Final paper, evidence package

13 Analysis plan

What to count:

- Number and % of households by main source type (Q1)
- Number and % of households by distance band (Q3)
- Number and % of households by round-trip time band (Q4)
- Average and range of trips per day (Q5)
- Number and % of households by who usually carries water (Q6)
- Number and % reporting a child late/missed school due to water (Q8)
- Number and % reporting an injury (Q16)

Comparisons to make:

- Distance band vs source type (does private tube well mean shorter distance than shared or vendor-supplied households?)
- Carrier identity (Q6) vs distance band (does "girl under 18" appear more often at longer distances?)
- Carrier identity vs household size (Q18)
- Satisfaction (Q15) vs distance band

Charts to draw:

- Bar chart: households by source type (Q1)
- Bar chart: households by distance band (Q3)
- Stacked bar chart: carrier identity (Q6) broken down by distance band (Q3)
- Bar chart: % reporting child lateness (Q8), broken down by distance band
- Map figure: hand-drawn or photo-based sketch of the lane with sources, segments, and household counts marked
- Scale chart or scatter: trips per day (Q5) vs household size (Q18)

Worked example (example, not a result): Suppose 50 households respond. Imagine 18 report a private tube well, 20 a shared tube well, 8 a vendor, and 4 a pond. Imagine that among the 20 shared-tube-well households, 14 report "20-50 metres" or more, while among the 18 private-tube-well households, 15 report "less than 20 metres." Imagine that among households reporting "100-300 metres" or more (say, 10 households), 7 report that a girl under 18 usually carries the water, compared with 2 out of 15 households at

"less than 20 metres." These numbers are invented to show the kind of comparison to make — your real numbers may look completely different.

14 Ethics and safety

Three permissions, asked separately, every time: (1) willingness to take part, (2) willingness to be recorded, (3) willingness to have words or images shared publicly. Use the script in Section 10 for interviews; for the survey, the first screen on AKTI Survey should state the purpose and ask for consent to take part before any questions begin.

Parental/guardian agreement: Required before surveying or interviewing anyone under 18, including a child who fetches water. Get this in advance through the household's parent or guardian, in person, before recording that child.

No identifying details: No full names, phone numbers, or house numbers in the paper. Describe people by role ("an adult woman who fetches water for her household," "a tube-well mechanic"). Use lane segment names (Section 8, Q20), not individual house identifiers.

Physical safety for this study: Work only in daylight, in pairs where possible. Stay on public paths; never enter a household's private rooms or yard without invitation. Avoid standing water, open wells, or unstable riverbanks when photographing sources. Tell a parent or guardian where you are going and when you expect to return, every time you go out. If a route involves slopes, stairs, or traffic crossings (common in hill or market areas), walk it first without a heavy bag to judge safety before bringing equipment.

Data privacy: Raw survey responses, interview recordings, and the household list stay in the private evidence package shared only with your coach, coordinator, advisor, and Rainflower. Only grouped numbers, anonymised quotes, and faceless or consented photos appear in the public paper.

Raw data retention: Keep raw survey exports, interview recordings, and the original photo log for the duration of the project plus the review period; delete personal identifiers (if any were accidentally recorded) as soon as noticed, and inform your coach.

15 Expected outcomes and limitations

Questions the data could answer:

- Is there a typical distance and time for water collection on this lane, or is it highly mixed?
- Does the burden of carrying water fall mainly on women and girls here, or is it more evenly shared than expected?
- Do households further from a source report more dissatisfaction, more injuries, or more child lateness?
- A null or surprising result — for example, no clear link between distance and who carries water, or carrying is shared roughly equally by gender — would suggest other local factors (household rules, availability of hired help, work schedules) matter more than distance alone on this lane. This is a legitimate and useful finding; report it honestly.

Limitations (write these in the paper):

1. Self-reported distance and time are estimates, not GPS-measured facts, unless checked (Section 12).
2. The sample covers one lane on specific dates; it cannot represent the whole neighbourhood, city, or country.
3. Sensitive answers (injury, child lateness) may be under-reported due to social desirability.
4. Season at the time of data collection (dry or wet) may affect path condition and should be noted and discussed, not treated as representative of all seasons.

16 Paper outline

- **Abstract** (150-200 words): question, lane, method, headline numbers, one sentence on what it means locally.
- **Introduction**: why water-carrying burden matters on this lane; what is known generally (Section 4 background, marked [verify]); the research question.
- **Methods**: lane description and landmark, sampling method, survey questions summarised (full list in appendix), interview roles, photo plan, dates of data collection, any optional measurements used.
- **Results**: survey findings with tables and charts (Section 14), interview quotes (anonymised, by role), described photos with figure numbers, the lane map.
- **Discussion**: what the comparisons suggest, how they relate to the hypothesis, how local geography (hill, char, haor, dense urban lane) may explain patterns.
- **Limitations**: the four points above, plus anything specific that happened during fieldwork.
- **Conclusion**: one clear takeaway for this lane; one suggestion for who locally might use this finding (family, teacher, union parishad).
- **AI-use statement**: exactly what AI was used for (grammar, formatting) and what it was not used for (no invented data, results, or quotes).
- **Ethics statement**: consent procedures followed, how privacy was protected.
- **References**: background sources, each marked [verify] if not personally checked in full.

Figures/tables to include: lane sketch map; source type bar chart; distance band bar chart; carrier identity stacked bar chart; summary table of key numbers; 2-3 selected photos with captions.

Word range: 1,800-3,000 words (excluding references and appendix survey list).

17 Budget

ITEM	REASON	COST (BDT)
Local transport (bus/rickshaw/auto) for repeat lane visits	Multiple visits across 13 weeks	1,200
Mobile data top-up	Uploading survey responses, video interviews, photo backups	800

ITEM	REASON	COST (BDT)
Printing consent forms and photo log sheets	Paper copies for field use	400
Notebook and pens	Field diary	150
Small courtesy item for interviewees (e.g. tea/snack, modest)	Respectful thank-you, not payment for answers	600
Printing final lane map and key photos for the paper	Clear figures for submission	350
Contingency (unexpected small costs)	Buffer	300
Total		**3,800**

Estimated hours per student (total across 13 weeks): 60 hours Breakdown: Plan and consent (Stage 1-2): 8 hours — Pilot and first sample (Stage 3): 7 hours — Full data collection (Stage 4): 22 hours — Analysis (Stage 5): 8 hours — Writing (Stage 6): 10 hours — Final review (Stage 7): 5 hours.

18 Before-you-start checklist

- [ ] Named the exact lane, with a clear starting landmark and approximate length
- [ ] Defined lane segments and distance bands before piloting the survey
- [ ] Built the survey in AKTI Survey and tested the link works on a phone
- [ ] Prepared parental/guardian consent forms for any under-18 interviewee
- [ ] Told a parent/guardian your daily field schedule before each visit
- [ ] Identified at least 6 interview roles and how to reach each one
- [ ] Checked phone camera location tagging is switched on
- [ ] Piloted the survey with 3-5 households and noted any needed changes
- [ ] Reviewed the three-permission consent script in both languages
- [ ] Set up a shared spreadsheet or folder for survey exports, photos, and the field diary
- [ ] Confirmed route safety (no fast water, open wells, unstable banks, heavy traffic) before walking it
- [ ] Shared the plan with your coach for first review

19 Glossary

- **Tube well (নলকূপ):** A hand-pumped or mechanical well that draws groundwater through a pipe.
- **WASA:** Water and Sewerage Authority, the government body supplying piped water in some cities.
- **Kolshi:** A traditional clay or metal pot used to carry or store water.
- **DPHE:** Department of Public Health Engineering, the government body responsible for rural and small-town water supply.

- **Union parishad:** The lowest elected local government body in rural Bangladesh.
- **Char:** A temporary island or land formed by river sediment, common in coastal and riverine areas.
- **Haor:** A large wetland/floodplain basin common in the Sylhet region, flooded in the monsoon.
- **Geo-tag:** Location information (coordinates) attached automatically to a photo by a phone.
- **Consent:** A person's clear agreement, given freely, to take part in research, be recorded, or be quoted.
- **Field diary:** A dated, written record of what the researcher did, saw, and observed each day in the field.
- **AKTI Survey:** The free online survey tool used by Rainflower students to build and collect survey responses.
- **[verify]:** A note meaning the student must check this fact or source before relying on it in the final paper.



RESEARCH PAPER 2 OF 2

The Price of a Jar: What Households Near One Market Pay for Drinking Water

Water for Sale: Price and Distance Near One Local Market's Drinking-Water Shops

RESEARCH QUESTION

Among households living within a 10-minute walk of [a named local market], how much do they pay per litre for their main drinking water source, and how does this price vary by source type and by distance from the market?

1–5 students TEAM	**about 90** HOURS EACH	**13** WEEKS
5,000 raindrops ($10) REWARD PER STUDENT	**BDT 6,000** EXPENSE BUDGET	**Dhaka, Chittagong, Noakhali, Sylhet** REGIONS

Read online and claim it at rainflower.world/research/proposals/the-price-of-a-jar

IN THIS PROPOSAL

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03 Background
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01 Summary

Near most markets (বাজার) in Bangladesh, households buy drinking water in many ways: a jar water shop, a vendor's handcart, a tube well, a WASA tap, or water boiled at home. Prices and habits differ from house to house, even on the same lane. This project studies one named market and the households within a 10-minute walk of it. The team will run a short survey asking what people drink, how much they pay, how far they are from the market, and why they chose that source. They will interview jar water sellers, tube-well owners, WASA customers, and other role-holders, and they will photograph shops, price boards, containers and delivery carts. At the end, the student will be able to say, with real numbers from their own market: who pays the most per litre for drinking water near this market, and what explains the difference.

02 Why this matters

Walk past almost any market in a Bangladeshi town and you will see at least one jar water shop, a tube well, maybe a small WASA line, and a handcart delivering plastic jars. Families living near that market do not all pay the same price for the water they drink. A household two minutes from the market might fetch free tube-well water in a bucket. A household ten minutes away, behind a row of shops with no tube well, might pay a vendor every other day. Some families filter or boil their own water and pay almost nothing in cash but spend time and gas. Others trust jar water because the bottle is sealed, and pay a price that eats into a tight weekly budget.

This is not a story found in a national report. It is a story found on one lane, one market, one afternoon. Students who do this project will be able to answer a question their own neighbours ask out loud: "Why do I pay more for water than the house next door?" The answer usually involves distance, trust, convenience and habit, not just income. By measuring it carefully near one market, the student produces something a local shopkeeper, a union parishad member, or even a concerned parent could actually use.

03 Background

- Many urban and semi-urban households in Bangladesh buy drinking water from jar water shops or vendors in addition to, or instead of, tube wells and piped water — general descriptions exist in WASH (water, sanitation and hygiene) sector reports [verify].
- Jar water (usually 19-20 litre bottles) is sold both as branded "purified" water and as unbranded, locally filled water; quality and price can vary a great deal between sellers — industry or consumer-protection

reports [verify].

- Tube wells (নলকূপ) remain a major free or low-cost source of drinking water in many neighbourhoods, but not every household lives close enough to one to use it conveniently — DPHE (Department of Public Health Engineering) field reports [verify].
- Distance to a water source is known in WASH literature to affect how much water a household collects and how often, and who in the household does the fetching — WHO/UNICEF JMP (Joint Monitoring Programme) background notes [verify].
- Household water costs can be a notable share of a low-income family's weekly spending, though the exact share depends heavily on the local market and source mix — BBS (Bangladesh Bureau of Statistics) household expenditure survey reports [verify].
- Trust in water quality (clear versus cloudy, taste, smell, brand reputation) often shapes which source a family chooses, sometimes more than price alone — public health and consumer behaviour studies [verify].
- Water vendors and small shop owners often set prices informally, based on distance delivered, container size, or competition from nearby shops, rather than a single fixed city rate — local market studies are rare; this is exactly the kind of fieldwork this project can contribute [verify].
- Seasonal changes (for example, more demand in hot months, or supply problems after heavy rain) can shift prices temporarily; students should note the season of data collection rather than assume prices are constant all year — general WASH seasonal reports [verify].

04 Research question and hypothesis

Primary question: Among households living within a 10-minute walk of [a named local market], how much do they pay per litre for their main drinking water source, and how does this price vary by source type and by distance from the market?

Secondary questions:

1. What reasons do households near this market give for choosing their main drinking water source (price, distance, taste, trust, convenience)?
2. How does the price charged by jar water shops and vendors near this market vary with container size and with how far they deliver?

Hypothesis: Households farther from the market, with fewer nearby free sources (such as a shared tube well), rely more on purchased jar water or vendor delivery and pay a higher price per litre than households close to the market who can use a free or low-cost source nearby.

What a null result would look like: If price per litre turns out to be roughly similar across distance bands and source types near this market, that is also an interesting and useful finding — it would suggest that something other than distance (for example, habit, trust or a fixed local price norm) mainly decides what people pay. The student should report whichever pattern the data actually show, not force a result to match the hypothesis.

05 Who should do this

Team size: 1 to 4 students works well. A team of 2-3 is ideal because the project needs a household survey, several interviews, and careful price-and-distance photography, which is a lot for one person to do safely and well in 13 weeks.

Regional fit:

- **Dhaka:** Markets often have several competing jar water shops and a mix of WASA and vendor supply; distance effects may be about convenience and traffic more than lack of free sources.
- **Chittagong:** Markets near hill or port areas may show tube wells at the edges versus WASA and jar water closer to the centre.
- **Noakhali:** In some markets, coastal salinity makes tube-well water unusable for drinking, so jar water and vendor delivery may dominate even very close to the market — a strong contrast worth documenting.
- **Sylhet:** Iron in tube-well water near some markets may push households toward jar water despite having a "free" source nearby; this is a useful nuance to capture in the "why" questions.

Role split for a team of 3-4:

- **Survey lead:** builds and manages the AKTI Survey, tracks response numbers, checks for duplicate or rushed answers.
- **Interview lead:** arranges and records the video interviews, manages consent forms.
- **Photo and map lead:** takes geo-tagged photos, sketches a simple map of the market and the 10-minute-walk area, marks distances.
- **Data lead:** keeps the field diary, enters prices and distances into a spreadsheet, builds charts in the analysis stage.

One student alone: A single student can do this by working in short weekly sessions — for example, two hours surveying households on one lane, one hour on an interview, 30 minutes on photos — spread across the 13 weeks rather than trying to do it all in one visit. The scope stays the same; only the pace slows down.

06 Evidence plan

EVIDENCE TYPE	WHAT IT SHOWS FOR THIS QUESTION	HOW MUCH IS ENOUGH	WHY IT FITS
AKTI Survey (households)	Price paid per container, source type, distance from market, reasons for choice, across many households	At least 40 completed household responses	Gives a countable pattern: price and distance across a real sample, not just a few opinions
Video interviews	How prices are actually set, how they have changed, and how sellers and buyers see fairness, trust and distance	6 to 8 interviews, 3-8 minutes each, across different roles	Explains the "why" behind the survey numbers, from people who set or negotiate prices

EVIDENCE TYPE	WHAT IT SHOWS FOR THIS QUESTION	HOW MUCH IS ENOUGH	WHY IT FITS
Geo-tagged photos	Where jar water shops, tube wells, WASA points and vendor carts actually sit relative to the market and to each other	At least 20 photos covering shops, carts, containers, and the walking area	Shows the real geography behind "distance from market" so readers can see, not just read, the layout
Field diary	Dates, times, weather, who was surveyed or interviewed, and any problems in the field	One entry per field day, at least 10 entries	Keeps an honest, dated record the team can check later and mention when discussing season effects

07 Survey design

Build this survey in AKTI Survey (survey.aktiful.com). Do not collect names, phone numbers or exact addresses — ask only for lane or block area in general terms.

1. What is the name of the market nearest to your home? (Short text)
2. How long does it usually take you to walk from your home to this market? (Single choice: Less than 5 minutes / 5 to 10 minutes / More than 10 minutes)
3. Which area or lane is your home closest to? (Short text — general area name only, no house number)
4. How many people live in your household? (Number)
5. What is your main source of drinking water? (Single choice: Jar water bought from a shop or vendor / Tube well — own / Tube well — shared with neighbours / WASA tap connection at home / Pond sand filter / Boiled or filtered tap water / Other, please specify)
6. If you buy drinking water (jar or vendor), how much do you usually pay for one container? (Number — enter amount in Taka)
7. What size is that container, as far as you know? (Single choice: Small bottle or jug, about 1-5 litres / Medium container, about 10 litres / Large jar, about 19-20 litres / Not sure)
8. How often do you buy drinking water? (Single choice: Every day / 2-3 times a week / Once a week / Less than once a week / I do not buy drinking water)
9. If you use a tube well, is it free to use or do you pay anything (for repairs, electricity, or a fee)? (Single choice: Free / We pay a small fee or share repair costs / I do not use a tube well)
10. Who in your household usually collects or buys the drinking water? (Single choice: Mother or adult woman / Father or adult man / Daughter or son under 18 / Hired help / Vendor delivers to our home / Other)
11. In the last 12 months, has the price or availability of your drinking water changed? (Single choice: Price went up / Price went down / Stayed the same / Became harder to get / Became easier to get / Not sure)
12. Why do you use this source rather than another one available near you? (Multiple choice: Cheaper / Closer to home / Better taste or clearer / I trust it more / Delivered to my home / It is the only one nearby / Other, please specify)
13. On a scale of 1 to 5, how fair do you think the price you pay for drinking water is? (Scale 1-5, 1 = very unfair, 5 = very fair)

14. Would you switch to a different drinking water source if it were cheaper but a little farther away? (Single choice: Yes / No / Not sure)
15. Roughly how much does your household spend on drinking water in a typical week, including jar water, vendor water or tube-well fees? (Number — enter amount in Taka, 0 if none)
16. Do you treat your drinking water at home in any way (boiling, filtering, adding tablets)? (Single choice: Yes, boiling / Yes, filtering / Yes, tablets or drops / No treatment / Other)
17. On days when it rains heavily, does getting your usual drinking water become harder? (Single choice: Yes, much harder / A little harder / No difference / Not sure)
18. Which month and year are you answering this survey? (Short text, for example "October 2026")
19. Is there anything else about the cost or availability of your drinking water you want to share? (Short text, optional)

Target respondent: One adult (18 or older) per household living within a 10-minute walk of the chosen market, preferably the person who usually manages household water (often the mother or another adult).

Response target: At least 40 completed responses, aiming for a mix of distances (close, medium, far from the market) and source types.

How to recruit: Walk the lanes and blocks around the market in daylight, in pairs if possible. Approach households at the gate or in front of the home, explain the study briefly, and offer to read the survey aloud on a phone if someone prefers not to type. Visit different lanes on different days and times so the sample is not only people who happen to be outside at one hour.

Pilot plan: Test the survey with 3-5 people first (neighbours, relatives, or early volunteers who will not be counted in the final 40). Watch for: questions people misunderstand (for example, confusing container size), questions that take too long, and any question that makes someone uncomfortable. Fix unclear wording, shorten anything that causes hesitation, and confirm that the Taka number fields accept the answers people actually want to give (for example, "no fixed amount" cases) before starting full data collection.

08 Sampling and limits

Who to recruit: Walk a defined area around the market — for example, all lanes within an estimated 10-minute walk in each direction from the market gate. Within that area, use a simple systematic method: survey every third household on each lane, alternating sides of the street, until the target number is reached. Try to cover at least four different lanes or blocks so the sample is not all from one street.

What this sample can claim: The results describe households near this one market, during the weeks the team collected data. They can show a real pattern — for example, "households more than 10 minutes from the market who buy jar water pay more per litre on average than those closer who use a shared tube well" — for this market only.

What it cannot claim: The results cannot be generalised to all markets in the city, region or country. They cannot prove that distance causes the price difference, only that the two appear together in this sample; other factors (income, trust, habit) may also matter.

Obvious bias and how to reduce it: Households with someone home during the day (often women, elders or school-age children) are easier to survey than households where everyone works outside. This could

over-represent certain source choices (for example, home-based treatment). Reduce this by visiting at a few different times of day (morning, late afternoon, early evening) across the data collection weeks, and by recording the time of each response in the field diary so the team can check for patterns later.

09 Interview guide

Interview people in these roles, 6–8 interviews total:

1. Jar water shop owner near the market
2. Water vendor who delivers jars or containers by cart or van
3. Tube-well owner or the household that maintains a shared tube well nearby
4. A mother or other adult who manages household drinking water for her family
5. An elder who remembers how water was bought or fetched near this market years ago
6. A tea-stall or small shop owner near the market who also buys drinking water for the stall
7. A union parishad member or local community leader, if available [verify willingness to be interviewed]
8. A DPHE, WASA or NGO field worker who covers this area, if available [verify willingness to be interviewed]

Interview questions (8–12):

1. Can you describe, in your own words, how drinking water is bought or collected near this market?
2. (To sellers/vendors) How do you decide the price for a jar or container of water?
3. (To sellers/vendors) Does the price change depending on how far you deliver, or on the size of the container?
4. (To households) How much do you usually pay, and has that amount changed in the last year or two?
5. (To households) Why do you use this particular source instead of another one nearby?
6. (To tube-well owner) Who uses this tube well, and is there any cost or rule for sharing it?
7. (To elder) How did people near this market get their drinking water when you were young, compared to now?
8. Have you ever had a disagreement or problem related to the price or supply of drinking water here?
9. What do you think would make drinking water more affordable or easier to get near this market?
10. Is there anything about the price of water here that people often misunderstand?

Consent script (read aloud before recording):

English: "Hello, my name is [student name] and I am doing a water research project with Rainflower Youth Research. I would like to ask you some questions about drinking water near this market. First, I would like to ask: are you willing to take part in this interview? [wait for answer] Second, are you willing for me to record this on video? [wait for answer] Third, if we use this project in our paper or report, are you willing for your answer to be shared publicly, described only by your role, with no name, phone number or address shown? [wait for answer] If you are under 18, we will also need a parent or guardian's agreement before we continue. Thank you, you can stop at any time or ask us not to use your answer."

Bangla: "আসসালামু আলাইকুম, আমার নাম [ছাত্র/ছাত্রীর নাম] এবং আমি রেইনফ্লাওয়ার ইয়ুথ রিসার্চের একটি পানি বিষয়ক গবেষণা প্রকল্পে কাজ করছি। আমি এই বাজারের কাছে খাবার পানি নিয়ে আপনাকে কিছু প্রশ্ন জিজ্ঞাসা করতে চাই। প্রথমে জানতে চাই: আপনি কি এই সাক্ষাৎকারে অংশ নিতে রাজি আছেন? [উত্তরের জন্য অপেক্ষা করুন] দ্বিতীয়ত, আমি কি এটি ভিডিওতে রেকর্ড করতে পারি? [উত্তরের জন্য অপেক্ষা করুন] তৃতীয়ত, যদি আমরা এটি আমাদের প্রবন্ধ বা প্রতিবেদনে ব্যবহার করি, তাহলে আপনার উত্তর কি জনসমক্ষে শেয়ার করার অনুমতি দেবেন, শুধু আপনার ভূমিকা উল্লেখ করে, নাম, ফোন নম্বর বা ঠিকানা ছাড়াই? [উত্তরের জন্য অপেক্ষা করুন] যদি আপনার বয়স ১৮ বছরের কম হয়, তাহলে আমাদের আগে একজন অভিভাবকের অনুমতি প্রয়োজন হবে। ধন্যবাদ, আপনি যেকোনো সময় থামতে পারেন বা আমাদের আপনার উত্তর ব্যবহার না করতে বলতে পারেন।"

Recording tips: Record in a quiet spot near the market, away from loud traffic or vendor calls. Hold the phone horizontally (landscape). Keep the interview between 3 and 8 minutes. At the very start, say the date and the person's role out loud (for example, "October 9, 2026, interview with a jar water shop owner"). If someone prefers not to show their face, record their hands, the shop, or the water containers instead while they speak.

10 Photo and observation plan

Turn on location tagging before starting: on most phones, go to Settings > Camera (or Privacy) > Location, and turn Location/GPS on for the camera app.

1. The market entrance or main signboard, to anchor the study area. Shows the starting point for all distance measurements.
2. A jar water shop storefront, including any visible price list or signboard. Shows advertised prices, if any.
3. Close-up of a price list or hand-written price board, if one exists (no faces needed). Shows exact prices in the seller's own words.
4. A water vendor's handcart or delivery van near the market. Shows how water travels from shop to home.
5. A tube well near the market, with surroundings visible. Shows a free or low-cost alternative source and its condition.
6. A household's water storage containers (jars, buckets, drums) at the doorway, with permission. Shows how families store what they buy or collect.
7. A simple hand-drawn or phone-photographed map showing the market and the approximate 10-minute-walk boundary, with marks for shops, tube wells and surveyed lanes. Shows the geography behind the "distance" variable.
8. A general street view of a lane close to the market (within 5 minutes' walk). Shows the "near" comparison group's setting.
9. A general street view of a lane farther from the market (closer to 10 minutes' walk). Shows the "far" comparison group's setting.
10. A jar or container being filled, carried or delivered (with consent, no clear face if preferred). Shows the physical act of obtaining water.
11. Any WASA pipe, meter or tap visible near the market or on a surveyed lane. Shows the piped-water option where it exists.
12. The field diary page for that day, photographed as a record (optional but useful for the evidence package).

Photo log: For every photo, write in the notebook: photo number, date, time, place type (for example, "jar water shop," "household doorway," "tube well"), and one line on what it shows.

Rules: Do not photograph people's faces without asking first; if in doubt, photograph hands, containers or surroundings instead. Do not photograph children without a parent's clear permission. Do not go inside anyone's home; take doorway or courtyard photos only, with the household's agreement.

11 Optional measurements

These are OPTIONAL. The study works fully without them, using survey prices and interview explanations as the main evidence.

- **OPTIONAL — Container volume check:** Measure the approximate volume of a sample jar or container with a tape measure, to double-check that "19-20 litre jar" claims are roughly consistent across shops. Helps make price-per-litre calculations more accurate.
- **OPTIONAL — Timing a purchase or fetch:** Time how long it takes (in minutes) for a household member to buy or fetch one container of water, from leaving home to returning. Adds a time-cost dimension alongside the cash price.
- **OPTIONAL — Counting jars sold:** With a shop owner's permission, count how many jars they sell in a one-hour period on a market day. Gives a rough sense of demand, not a precise sales figure.
- **OPTIONAL — TDS meter or test strips:** If available, a Total Dissolved Solids (TDS) meter can give a number describing how much dissolved material is in a water sample; test strips can show pH or similar measures. These only describe water on that day; they never prove water is safe or unsafe to drink, and students should say so clearly if they use them. Do not taste or drink any sampled water.

12 Timeline

STAGE	WEEKS	WHAT THE STUDENT DOES FOR THIS TOPIC	SUBMITTED AT END OF STAGE
1. Choose and plan	1-2	Pick the market, define the 10-minute-walk area, sketch a rough map, list nearby water sources seen on a first walk-through	One-page plan with chosen market, boundary description and draft research question
2. Permission, checklist, pilot	2-3	Prepare consent scripts, get parental agreement forms ready, build the AKTI Survey, pilot it with 3-5 people, adjust wording	Coordinator checklist (method, safety, honesty) passed; piloted survey link
3. First sample and advisor review	3-4	Collect the first 8-10 survey responses and 1-2 interviews; note any problems	Short sample summary and advisor review
4. Full data collection	5-8	Reach 40+ survey responses across several lanes; complete 6-8 interviews; take 20+ geo-tagged photos; keep field diary updated	Completed survey dataset, interview recordings, photo set, diary

STAGE	WEEKS	WHAT THE STUDENT DOES FOR THIS TOPIC	SUBMITTED AT END OF STAGE
5. Analyse	9-10	Calculate price per litre for each source; compare by distance band and source type; draw charts; code interview themes	Draft tables and charts with short written notes
6. Write	11-12	Write the full paper following the outline in Section 17	Full draft paper
7. Final review and submit	13	Coordinator checklist review, revise, compile evidence package	Final paper plus evidence package submitted to Rainflower

13 Analysis plan

What to count:

- Number of households by main drinking water source (from Q5)
- Price per litre for each household that buys water: price paid (Q6) divided by estimated container volume (Q7, converted to litres)
- Number of households by distance band (Q2: under 5 min / 5-10 min / over 10 min)
- Frequency of reasons given for source choice (Q12)
- Average weekly spending on drinking water (Q15) by source type and distance band

Comparisons to make:

- Price per litre: jar/vendor water versus tube-well fee-based water versus "free" tube well (should be near zero)
- Price per litre by distance band (near / medium / far from market)
- Fairness rating (Q13) by source type
- Reasons for choice (Q12), compared between near and far households

Charts to draw:

- Bar chart: average price per litre by main source type
- Bar chart: average price per litre by distance band
- Stacked bar chart: reasons for source choice, compared between near and far households
- Simple map or diagram: locations of shops, tube wells and surveyed lanes relative to the market (can be hand-drawn and photographed)

Worked example (example, not a result):

Suppose the team collects 40 responses. Example, not a result:

DISTANCE BAND	AVERAGE PRICE PER LITRE (BDT)	MOST COMMON SOURCE
Under 5 minutes	0.80	Shared tube well

DISTANCE BAND	AVERAGE PRICE PER LITRE (BDT)	MOST COMMON SOURCE
5-10 minutes	1.50	Mix of tube well and jar water
Over 10 minutes	2.40	Jar water / vendor delivery

If real data looked like this, the student could write: "In this sample, households more than 10 minutes from the market paid roughly three times as much per litre as households within 5 minutes, and relied mainly on purchased jar water rather than a tube well." Real numbers may show a different pattern, including no clear difference — report what is actually found.

14 Ethics and safety

Three permissions, asked separately: for every survey respondent and interviewee, ask (1) will you take part, (2) may this be recorded (for interviews), and (3) may this be shared publicly, described by role only. Record the answers to all three, even if the answer to any is "no" — a "no" to sharing publicly simply means that response stays in the private evidence package only.

Parental agreement: Anyone under 18 who is surveyed or interviewed needs a parent or guardian's agreement first. Carry a simple paper or phone-based consent form for this; do not survey or interview a minor without it, even if they seem willing.

Physical safety for this study: Visit the market and surrounding lanes in daylight only. Go in pairs where possible. Stay in public areas — market lanes, shop fronts, doorways with permission — and do not enter anyone's home, a factory, or any water facility (pump house, WASA station) without explicit permission from the person in charge. Avoid uneven ground near tube wells or open drains when photographing. Tell a family member or guardian where the team is going and when they expect to return, every field day.

Data privacy: No full names, phone numbers or home addresses appear anywhere in the paper. Survey responses stay anonymous (only general lane/block area, not house numbers). Interviewees are described only by role (for example, "a jar water shop owner near the market"). Raw survey data, interview recordings and the photo log stay in the private evidence package shared only with the coach, coordinator, advisor and Rainflower; only anonymised summaries, quotes (with permission) and selected photos (with consent) appear in the public paper.

Data retention: Keep raw data (survey export, recordings, photo files, diary) until the project is graded and the final paper is accepted; after that, follow Rainflower's guidance on how long to keep or when to delete raw files.

15 Expected outcomes and limitations

This project should help answer, with real local evidence:

- Does price per litre near this market actually rise with distance, as the hypothesis suggests, or is the pattern weaker or absent?
- Which source type is most common close to the market, and does that change farther away?

- Do households and sellers agree on why prices differ, or do they give different explanations?
- A null result (little difference in price by distance) would still be useful: it would suggest that trust, habit or a fixed local price norm matters more than distance alone near this market.

Limitations (stated in advance):

1. The sample covers only households within a 10-minute walk of one named market, during the weeks of data collection; results do not describe the whole city or country.
2. Self-reported prices and container sizes may not be perfectly accurate; households may round numbers or estimate container volume loosely.
3. The sample may over-represent households where someone is home during the day, which could skew which sources appear most common.
4. Prices can shift with season, local events, or even negotiation on a given day; the team will record exact dates and discuss how the season of data collection may have affected prices and water availability.

16 Paper outline

- **Abstract** (150–200 words): the market studied, the method, and the main pattern found in price and distance.
- **Introduction**: why water price near one market matters locally; the research question; brief background with [verify] sources.
- **Methods**: the market and boundary chosen, survey design and sample size, interview roles and count, photo and diary approach, dates of data collection.
- **Results**: tables and charts from Section 14; report numbers plainly, with no interpretation yet (for example, "32 of 40 households' main source was jar water or vendor delivery").
- **Discussion**: what the price-distance pattern (or lack of one) might mean, drawing on interview explanations; compare near versus far, source versus source.
- **Limitations**: the four points from Section 16, adapted to what actually happened in the field.
- **Conclusion**: a short, honest answer to the research question, with one sentence on who locally might find this useful (a union parishad member, a shop owner, a concerned parent).
- **AI-use statement**: exactly how AI was used (for example, grammar checking, formatting tables) and confirmation that AI did not write results, conclusions or invent data.
- **Ethics statement**: confirmation that three permissions were obtained, parental agreement was used for minors, and no identifying details appear in the paper.
- **References**: list of source types consulted, each marked [verify] if not personally checked in full.

Figures and tables to include: map or diagram of the market and surveyed area; table of sample size by distance band and source type; bar chart of price per litre by source type; bar chart of price per litre by distance band; table or chart of reasons for source choice.

Word range: 1,800 to 3,000 words for the main paper (excluding references and the AI-use/ethics statements).

17 Budget

ITEM	REASON	COST (BDT)
Local travel (bus/rickshaw) to market and surrounding lanes, 10 field days	Reaching the market area repeatedly over several weeks	2,000
Mobile data top-up	Running AKTI Survey in the field, uploading photos and video	800
Printing consent forms and parental agreement forms	Paper copies for households without easy phone access	400
Notebook and pens	Field diary and photo log	250
Phone charging / power bank rental (if needed)	Long field days recording video and photos	300
Small thank-you items for interviewees (for example, a few taka of tea or snacks)	Local courtesy for time given, especially to vendors and shop owners	500
OPTIONAL: TDS meter or test strips, if used	Only if the team chooses to add the optional measurement in Section 12	1,200
Contingency (unexpected small costs)	Covers minor surprises	550
Total (without optional kit)		**4,800**
Total (with optional kit)		**6,000**

Estimated hours: about 90 hours of work for the whole team across all 13 weeks. Breakdown: planning and permissions (10 hours), piloting and first sample (10 hours), full data collection — survey, interviews, photos (40 hours), analysis (15 hours), writing (12 hours), final review (3 hours).

18 Before-you-start checklist

- [ ] Chosen market named and its 10-minute-walk boundary roughly sketched
- [ ] Draft AKTI Survey built and piloted with 3-5 people
- [ ] Consent scripts printed or saved on phone, in both English and Bangla
- [ ] Parental agreement forms ready for anyone under 18
- [ ] List of 6-8 interview roles identified, with at least first contacts made
- [ ] Phone location tagging turned on and tested with a sample photo
- [ ] Field diary notebook ready, first entry started
- [ ] Family or guardian told of the field work plan and schedule
- [ ] Coordinator checklist reviewed and passed before first full field visit
- [ ] Budget items confirmed and any advance funds collected
- [ ] Team roles assigned (survey, interview, photo/map, data), if working in a team

19 Glossary

- **WASH:** Water, Sanitation and Hygiene — a general term for this field of study.
- **Tube well (নলকূপ):** A hand-pump or similar well that draws water from underground.
- **Jar water:** Drinking water sold in large plastic containers, usually 19-20 litres, by shops or vendors.
- **WASA:** Water Supply and Sewerage Authority, the government body supplying piped water in some cities.
- **DPHE:** Department of Public Health Engineering, a government body involved in rural and some urban water supply.
- **Pond sand filter:** A simple filter system that cleans pond water by passing it through layers of sand.
- **Price per litre:** The amount paid for water divided by the number of litres received, used to compare different container sizes fairly.
- **Distance band:** A grouping of households by how far they live from the market (for example, under 5 minutes, 5-10 minutes, over 10 minutes walk).
- **AKTI Survey:** The free online survey tool (survey.aktiful.com) used to collect and manage responses.
- **Geo-tagged photo:** A photo that automatically records the location (GPS coordinates) where it was taken.
- **Field diary:** A dated notebook record of what the researcher did, saw and found each day in the field.
- **TDS meter:** A small device that measures Total Dissolved Solids in water, giving a number that describes water, not proof of safety.
- **Consent:** A person's clear agreement to take part, be recorded, or have their answer shared, given separately for each.
- **Union parishad:** The lowest level of local government in rural Bangladesh.

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