Lesson 2: Fix the Friction

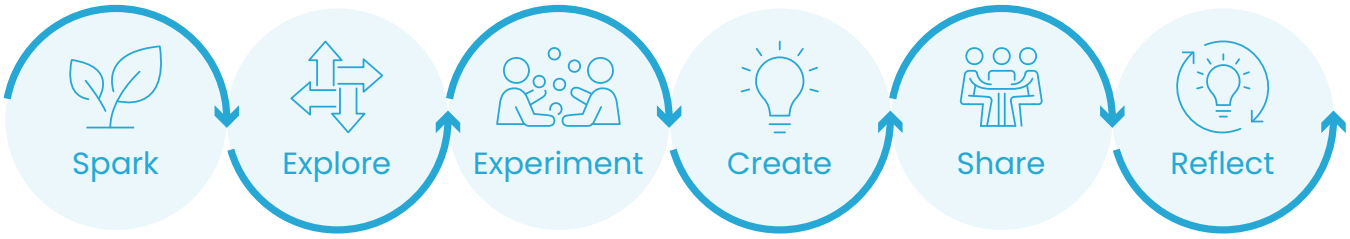
iste+ascd

Created with support from:

Lesson Organization

This lesson has three major parts to it:

1. **Lesson Overview – *Get Oriented***
   Start here for a quick sense of what the lesson is about, why it matters, and how it connects to the Studio framework. You'll find the learning goals, key standards, and facilitation tips for pacing, setup, and context.
2. **Studio Flow – *Teach and Create***
   The main body of the lesson follows the Studio process: **Spark** → **Explore** → **Experiment** → **Create** → **Share** → **Reflect**.



   Each phase includes clear student activities, facilitator moves, and checkpoints to guide learning from curiosity to purposeful creation.
3. **Lesson Support – *Deepen and Extend***
   Wrap up with practical supports: **Artifacts & Assessment** ideas, **Extensions & Connections** for enrichment or next steps, and a link to the **Resources & References Folder** with lesson materials and examples.

Lesson 2 Overview

Focus

Identify and solve small daily frictions in life or school, and design a reusable Prompt Path to guide others through the same process.

Estimated Duration

2 hours (can be split across 2–3 shorter sessions or run as a studio block)

Stage of the Studio Process

Problem-Finding

ISTE Standards Alignment

- **1.1 Empowered Learner** – Students use AI as a supportive thought partner and problem-solving coach, experimenting with prompt design to refine ideas and evaluate outputs. They document effective interactions as part of their reusable Prompt Path, showing agency in how they guide and manage AI to serve authentic needs.
- **1.4 Innovative Designer** – Students apply an iterative design process to identify meaningful frictions, gather feedback, and prototype low-cost solutions. They balance creativity with practicality, testing and refining ideas through empathy interviews, AI classification, and frugal prototyping.
- **1.6 Creative Communicator** – Students express complex ideas clearly and accessibly by creating a five-step Prompt Path that others can follow. They frame their friction, prototype, and reflection through purposeful language and structured communication, ensuring their design process is transparent, ethical, and easy to replicate.

Learning Goals

By the end of this lesson, I will be able to:

- Identify and frame a meaningful, real-world friction
- Gather perspectives to choose a problem worth solving
- Use AI to classify and explore solution ideas
- Build a frugal prototype to reduce or eliminate the friction
- Design a 5-step Prompt Path to guide others through the same process
- Reflect on who benefits from my solution and what ethical considerations are involved

Facilitator Notes

Big Goal of the Lesson

This lesson grounds students in *real-world problem-finding* by focusing on the "little things" that cause friction in daily life. These small annoyances often go unaddressed — yet they hold big potential for empathetic innovation. As students move through the process, they not only develop a solution for a chosen friction but also author a reusable *Prompt Path* — a series of guiding prompts designed to help others work through their own small problems with the help of AI.

How the Lesson Flows

- **Spark:** Identify a personal friction and begin
- **Explore:** Interview or survey others to choose a meaningful friction
- **Experiment:** Use AI to sort/classify frictions and explore biases
- **Create:** Prototype a frugal fix and turn the ideation process into a protoype
- **Share:** Pitch the solution and test Prompt Path usability with peers
- **Reflect:** Evaluate ethical implications and complete

Facilitation Moves

- Works best in small design teams, but can also be done individually
- Designed to model frugal innovation, so no special materials or tools are required
- Prompt Path creation can be scaffolded with sentence starters, mentor texts, or audio recording for emerging writers
- Encourage students to contribute their Prompt Paths to a shared class library or digital wall

Challenge Question

> *"How might we identify and fix small frictions in daily life — and design a prompt path that helps others work through their own problems too?"*

Students will not only solve a friction for themselves, but also **design a reusable prompt series** — a kind of "AI problem-solving coach" — that others can use to tackle their own small problems.

By the end of the lesson, each team will have:

- A **prototype or concept** for fixing one friction.
- A **Prompt Path:** a step-by-step prompt set written for someone else, guiding them through the same process (naming a problem, exploring perspectives, using AI to classify, brainstorming fixes, and checking equity/privacy).

Studio Flow

Spark

Purpose: Show that innovation begins by noticing small, everyday problems—and begin drafting the first step of the Prompt Path.

Intended Outcome: Students clearly name one small friction (scoped, specific, solvable) and produce a usable **Prompt Path: Step 1** ***(Problem-finding)*** written for someone else.

Challenge Activity

- **Quick-write (2–3 min)**
  - List 3–5 "little annoyances" at school or home (e.g., tangled charger cart cables, crowded dismissal doorway, confusing assignment titles in LMS, itchy clothing tags).
  - Add two notes beside each: **frequency** (daily/weekly) and **impact** (low/med/high).
- **Pair-share to converge (4–6 min)**
  - Swap lists; partners ask **clarifying questions**: Who is affected? When does it happen? What have you already tried?
    - Circle one friction that is (a) common or consequential, (b) **fixable in days—not months**, and (c) testable with a quick prototype.
- **Coach with AI (3–5 min)**
  - Students open a chat and use a working prompt to sharpen the problem statement (teacher models first):
    - *"Act like a problem-finding coach. Ask me short, clarifying questions until I can describe one small, specific friction I want to fix this week. Keep me focused on scope, who's affected, and when it happens."*
  - Students copy the **most helpful questions** they received (not the whole transcript).
- **Mini-challenge: Write Prompt Path – Step 1 (for others).**
  - Convert the best parts into a clean, reusable Step 1 any peer could follow. Optional: Offer three formats so every team can succeed:
  - **Core version:**
    - *"Act like a problem-finding coach. In ≤6 questions, help me: (1) name one small daily friction, (2) state who it affects and when it happens, (3) keep scope small enough to test within a week."*

- **Scaffolded version:**
  - *"You are my problem-finding coach. Ask one question at a time to help me describe: WHAT the problem is, WHO it bothers, WHEN/WHERE it happens. Stop me if it gets too big and suggest a smaller version."*
- **Concise version:**
  - *"Coach me to define a 1-sentence friction statement (who/when/where). Push for specificity and testability."*

Artifact

- Personal **Friction Statement** (1–2 sentences) with frequency and impact notes.
- **Prompt Path: Step 1** that includes finalized text ready for the class Prompt Library.

Facilitator Moves

- **Model scope**: "Could we pilot a fix in 1 class period or 1 week? Could a $0–$10 prototype show value?" If not, shrink it.
- **Language support:** Display sentence frames: "My friction is ___ when ___ because ___." Allow oral dictation before writing.
- **Quality bar anchor chart:** What makes a strong Step 1?
  - Second-person ("coach me…"), one outcome per step, plain verbs, time-boxed, avoids solution-leading, invites clarifying questions.
- **Equity lens early:** Prompt students to note **who is affected** (not just themselves). Encourage picking frictions that help more than one person or that surface less-heard voices (e.g., new students, custodial staff).

References

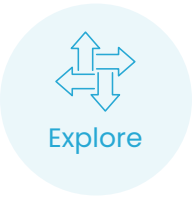
- Sticky notes or digital document, timer, sample Step1 prompts ; scope checklist, (optional) Fashion starter-pack examples for relatable frictions

Checkpoint

Each student/team submits:

1. A clear, scoped **Friction Statement**, and
2. A polished **Prompt Path: Step 1** added to the shared **Prompt Library.**
   Teacher verifies: specific who/when/where, testable in ≤1 week, Step1 prompt meets the quality bar.

Explore



Purpose: Deepen empathy and broaden perspective by considering not just *your* friction, but the frictions others face — and which of those are worth solving. This phase helps students understand that the best innovations often begin with *someone else's* small but meaningful challenge. It also produces the next step in the Prompt Path, helping others interview, survey, and evaluate friction ideas using empathy.

Intended Outcome: Students gather outside perspectives on small daily problems and make a thoughtful decision about *which* friction to address considering multiple perspectives. They also write **Prompt Path: Step 2**, designed to guide someone else through a process of identifying frictions that matter — not just to them, but to others.

Mini-Challenge Activity

Students choose one of two paths — both are valid ways to *listen before solving*:

Option A: Empathy Interviews

1. **Conduct a 1:1 interview** with at least one peer.
   Ask:
   - "What's a small thing that frustrates you daily?"
   - "When and where does it happen?"
   - "Who else does it affect?"
   - "Have you tried anything to fix it?"
2. **Compare your friction to theirs** using a simple T-chart or sticky notes:
   - Which one affects more people?
   - Which one would be easier to prototype?
   - Which one matters more to solve right now?

Option B: Mini-Survey of the Community

1. **Design a short friction survey** (3–4 questions) using sticky notes, a Google Form, or verbal polling. Questions might include:
   - "What's one small annoyance in your daily life at school or home?"
   - "How often does it happen?"
   - "Who else is affected?"
   - "If this were fixed, on a scale of 1-5, what would the impact be

2. **Summarize results** using a simple data visualization (bar graph, tally chart, heatmap).
    - Which frictions showed up most?
    - Are some frictions under-represented or from voices that often go unheard?

Write Prompt Path: Step 2 After collecting and analyzing the data, each team turns their process into a usable prompt that *others* could follow. Scaffolded options are below.

- **Core version:** *"Act like an empathy guide. Help me gather friction ideas from others, compare them with mine, and choose the one that is small, meaningful, and worth solving — especially if it helps people beyond just me."*
- **Scaffolded version**: *"You are an empathy buddy. Ask me to talk to others or do a short survey about daily problems. Then help me choose one that (1) happens often, (2) affects others too, and (3) I could actually fix."*
- **Concise version**: *"Help me gather and evaluate frictions using three lenses: (1) frequency, (2) reach, and (3) testability. Then prompt me to choose one and explain why."*

Artifacts

- Interview notes or survey data (chart, tally, summary)
- Team decision on which friction to solve and why
- **Prompt Path: Step 2**, clearly written and added to Prompt Library

Facilitator Moves

- Frame this as design justice. Whose voices are centered in our work? Whose aren't usually heard?
- Help students compare "high visibility" frictions (e.g., noisy cafeteria) with more invisible but impactful ones (e.g., accessibility issues, scheduling confusion for ELL students).
- If surveys are digital, preview results together with the class.
- Push teams to justify their choice of friction — not just based on "what bugs me," but on potential reach **and** need.
- Model language like:
    - "We chose this friction because it affects more than one group."
    - "Even though it seems small, it creates big slowdowns."
    - "This hasn't been solved because no one notices it, but it matters."

References

- Sample interview guide
- Survey templates or digital examples

Checkpoint

Teams must submit:

1. Evidence of listening (at least one interview or survey summary)
2. A clear rationale for the friction they chose to solve
3. A completed and polished Prompt Path: Step 2, ready to guide others through this step

Experiment

Purpose

Introduce students to how AI can be used as a classifier or pattern detector — and just as importantly, where it falls short. This phase helps students understand how AI "sees" problems and patterns, so they can use it as a thought partner, not a decision-maker. Teams will also draft Prompt Path: Step 3, guiding others to use AI to surface patterns, question them, and make informed choices.

Intended Outcome

Students apply AI to sort or cluster frictions, compare the results to their own judgment, and begin to think critically about AI's utility and limitations. They also produce a usable Prompt Path step that supports others in doing the same.

Mini-Challenge Activity

1. **Warm-Up Discussion (optional, 3–5 min):** Ask: "When you've used recommendation tools (YouTube, Spotify, shopping), how do you think they decide what to show you? Do they always get it right?" This sets the stage for understanding how AI classification is based on pattern detection — not human understanding.
2. **Feed your friction ideas into AI (5–10 min):** Students input a short list of 3–6 daily frictions into an AI text generator. Prompt example:
    - "Here are some small daily problems. Please group them into categories. For each group, explain the pattern or reason you used."
    - Encourage students to rephrase or refine the prompt if the first attempt is weak.
    - Have them highlight what surprised them, what made sense, and what felt off or was missing.

3. **Human vs. AI: Compare Patterns (5–8 min)**
    - Students do a quick human sort: How would they group the same frictions?
    - Where do their categories match the AI? Where do they differ — and why?
    - What might the AI be missing because it can't experience emotion, context, or bias?
4. **Mini-Challenge: Write Prompt Path** – Step 3 Students now turn their process into a reusable prompt step to help someone else test AI classification.
    - **Core version:**
        - *"Act like a pattern finder. Take a list of daily problems and group them into categories. For each group, explain the pattern you used — and note anything that might be biased or unclear."*
    - **Scaffolded version:**
        - *"You are a sorting assistant. Put these small problems into groups. Tell me why each group makes sense. Then remind me to check: Did the AI miss anything a human might notice?"*
    - **Extended version:**
        - *"Sort these frictions into patterns using AI. Then coach me to test your groupings against my own. Highlight where AI classification may be biased, shallow, or useful — and prompt me to reflect on when human sense-making is needed."*

Artifacts

- AI-generated classification via screenshot, copy/paste, or summary
- Human-generated sort
- Short comparison or reflection
- Finalized **Prompt Path: Step 3**

Facilitator Move

- Encourage curiosity. AI might group based on semantics, not lived experience — that's a teachable moment.
- Push students to question AI outputs: *"Why did it group those? Does that make sense to you? Would someone feel excluded or misunderstood by that grouping?"*
- Offer guiding sentence stems:
    - "One thing AI noticed that I hadn't is…"
    - "AI missed the context of…"
    - "A human might group this based on ___ instead."

- Make this a “critique AI” moment, not a “trust AI” one.

References

- Access to an AI chatbot tool
- Sample prompts
- Optional: Friction classification example from a past group
- Optional: Bias in recommendation systems (short clip or headline example)

Checkpoint

Teams must submit:

1. The original AI classification output
2. A human-created alternative sort
3. A reflection comparing the two
4. A complete, ready-to-use Prompt Path: Step 3 for the shared Prompt Library

Create

Purpose: Empower students to design a simple, frugal, and testable solution that addresses their chosen friction. This is where their empathy, insights, and classification work become something tangible. At the same time, they will translate their own creative process into **Prompt Path: Step 4**, which scaffolds ideation and prototyping for others.

Intended Outcome: Students prototype a solution to a meaningful friction using frugal innovation principles and document the process as a Prompt Path step that others can use to generate and evaluate ideas with AI.

Challenge Activity

1. **Creative Ideation with AI**: Use AI as a brainstorming partner. Input the clearly stated friction and try several prompts. Encourage students to experiment with tone, specificity, and constraints. Sample prompt:
   - *“Here’s a small problem we want to fix: [paste friction]. Suggest at least 3 low-cost, creative ways to solve it. Include pros and cons of each. Focus on ideas we could test quickly.” Teams should record or highlight useful suggestions, noting which ones feel actionable and which ones fall flat.*
2. **Prototype a Frugal Fix**: Turn the best idea(s) into a rough prototype. This can be a:
   - Paper sketch or storyboard
   - Physical build using recycled or classroom materials

- Mockup
- Flowchart of how it would work The emphasis is not on polish — it's on feasibility, creativity, and empathy.

3. **Write Prompt Path – Step 4** Now that they've ideated and built, students write a prompt that could help someone else go through the same creative process. Encourage them to include not just idea generation, but also reflection prompts about feasibility, creativity, and inclusivity.
   - **Core version**:
     - *"Act like a creative coach. I'll tell you about a small problem. Suggest 2–3 low-cost ways to fix it, including one wild idea. For each, explain pros/cons. Help me choose one to prototype."*
   - **Scaffolded version**:
     - *"Be my idea buddy. When I tell you a small problem, give me simple, low-cost ideas to fix it. Tell me what each idea is good for. Then help me choose one I can try out this week."*
   - **Extended version**:
     - *"Prompt me to generate solution ideas that meet three criteria: (1) low-cost or scrappy, (2) fast to test, and (3) helpful for more than just me. Then help me reflect: Does my prototype make the friction better without creating new problems?"*

Artifacts

- Sketch, diagram, physical model, or slide-based prototype
- AI ideation notes (which prompts were used, which ideas were useful)
- Finalized Prompt Path: Step 4 added to Prompt Library

Facilitator Moves

- Remind students of the **frugal innovation mindset**: How can constraints unlock creativity? Use examples like cardboard phone holders, pencil stabilizers, or tape-labeling systems.
- Encourage multiple idea paths: not all fixes need to involve tech or AI.
- Push students to *build something*, even if it's rough — no "just ideas" at this stage.
- Model iteration language: "This is version 1. What would make it better?"
- Encourage voice-checks: "Who would use this? What might they say?"

References

- Examples of frugal innovation (images or videos, if available)
- Optional tie-in: Fashion Pack could support fixes related to comfort, style, accessibility
- Prototyping supplies (paper, markers, cardboard, tape) or access to digital tools

Checkpoint

Each team should have:

1. A clear physical or digital prototype
2. Documented feedback on AI-generated ideas
3. A thoughtful and usable **Prompt Path: Step 4**, written for peer reuse

Share

Purpose: Give students the opportunity to present their friction fix *and* test their Prompt Path in a real-world setting. Sharing allows them to articulate the thinking behind their prototype and to see if their Prompt Path is clear, actionable, and transferable for others.

Intended Outcome: Students will pitch their prototype and walk peers through their Prompt Path. They will also collect feedback on whether their Prompt Path helps others start solving their own frictions.

Activity

1. **Team Pitches (2–3 min each)**: Each team presents to the whole class or other small groups:
   - Their chosen friction and why it matters
   - A quick demo or walkthrough of their prototype
   - Their Prompt Path, step-by-step (read aloud or projected)

Encourage them to frame it like this:
Here's the problem we tackled. Here's our frugal fix. And here's a Prompt Path you could follow if you wanted to solve a similar problem.

2. **Prompt Path Peer Testing**: Audience members select one team's Prompt Path and try using the first 2–3 steps for their own friction. They can do this independently or in pairs.
   - Were the instructions clear?
   - Did the prompts help you move forward?
   - Where did you get stuck?

3. **Quick Peer Feedback Loop**: Each team gets 1–2 short written or verbal comments on:
    - What worked well in the Prompt Path
    - What could be more clear or helpful
    - Suggestions for improving tone, clarity, or flow
4. **Mini-Challenge: Revise Prompt Path for Usability (optional)** Based on peer feedback, teams revise their Prompt Path slightly for clarity or flow. They can improve structure, tone, or add scaffolding questions.

Artifacts

- Team pitchPeer feedback on Prompt Path
- Revised Prompt Path (if applicable)

Facilitator Moves

- Encourage teams to show their prototype even if it's scrappy — the goal is clarity and intention, not polish
- Highlight teams that used AI in unique or unexpected ways
- For Prompt Paths, help students think like UX writers: Is this step helpful *for a new user?* Would they know what to do next?
- Offer sentence stems for peer feedback:
    - "This step helped me because…"
    - "I didn't understand what to do when…"
    - "It would help if you added…"

References

- Slide template or visual outline of pitch structure
- Feedback form, sticky notes, or digital artifacts
- Prompt Path examples from earlier teams or past years (if available)

Checkpoint

Each team completes:

1. A live or recorded pitch including friction, fix, and Prompt Path
2. At least one peer has tested 2–3 steps of their Prompt Path
3. Team collects feedback and (optionally) updates their Prompt Path for clarity

Reflect

Purpose: Encourage students to step back and critically evaluate both their solution and their Prompt Path. This is a moment to consider multiple perspectives, voice, and unintended consequences. Students will finalize their work by adding a final step to their Prompt Path that prompts future users to reflect as well.

Intended Outcome: Students articulate what they've learned about solving real-world frictions, how AI supported (or failed to support) the process, and how equity and responsibility showed up in their design. They complete **Prompt Path: Step 5**, guiding others to reflect and revise based on ethics, inclusion, and feedback.

Activity

1. **Personal Reflection (individual or team-based, written or verbal)**: Prompt students to reflect on their process:
   - Who was helped by our solution?
   - Who might have been left out?
   - Did we consider privacy, fairness, or bias?
   - Where did human decision-making matter most?

   Encourage students to discuss or journal on:

   "If someone else used our Prompt Path — would it push them to ask the hard questions too? About ethics, equity, sustainability?"
2. **Mini-Challenge: Write Prompt Path – Step 5** This final step helps others reflect on the impacts and responsibilities of their work. It encourages a thoughtful pause before declaring a problem "solved."
   - **Core version:**
     - *"Act like a reflection coach. Ask me to think about whether my solution is fair, inclusive, and respectful. Who might be excluded? Could it create any privacy or equity issues? How could I improve it?"*
   - **Scaffolded version:**
     - *"Be my reflection buddy. Help me check if my idea could hurt or ignore anyone. Ask: Who is this really helping? Could it cause problems I didn't think of? What could make it better for everyone?"*
   - **Extended version:**
     - *"Prompt me to reflect on the ethical, equity, and sustainability impacts of my solution. Include questions about who benefits, who is left out, and*

whether human judgment was applied at key points. Encourage me to iterate based on feedback."

3. **Optional: Team Debrief** Teams create a summary artifact showing:
    - The original friction
    - The prototype
    - One ethical or equity concern they noticed
    - One revision or insight they'd carry forward

Artifacts

- Reflection journal, slide,poster, or verbal share-out
- Finalized Prompt Path: Step 5
- Full Prompt Path (Steps 1–5) compiled and submitted as a single asset

Facilitator Move

- Frame reflection as *forward-looking*, not just backward-looking — what would we do differently next time?
- Encourage honest reflection, not perfection. Celebrate unexpected learnings.
- Offer scaffolds:
    - "Our idea worked for ____ but could be better for ____."
    - "We didn't think about ____ at first, but now we would ____."
    - "Our Prompt Path works well if you're ____, but needs revision if you're ____."

References

- Sample reflection prompts or sentence stems
- Optional guiding frameworks: digital citizenship, inclusive design, Ubuntu lens
- Excerpts from the Studio rubric on responsible AI and ethical reflection

Checkpoint

Each team or student has:

1. Completed Prompt Path: Step 5
2. Submitted a full 5-step Prompt Path that can be reused by others
3. Documented or shared a meaningful reflection on equity, ethics, or learning from the process

Lesson Support

Artifacts & Assessment

Student Artifacts

By the end of this lesson, students will have created:

- A clearly defined friction statement (with frequency and impact noted)
- Evidence of peer interviews or survey data used to inform problem selection
- AI classification outputs and human-sorted comparison
- A frugal prototype (sketch, model, mockup, or storyboard)
- A complete **5-step Prompt Path** designed for others to follow
- A personal or team reflection on responsibility, multiple perspectives, and iteration

Assessment Focus: These dimensions from the Studio Challenge rubric are best aligned with this lesson:

1. **Connection to Community Problem & SDG**
   - Clear definition of a small but meaningful problem
   - Evidence of empathy and understanding of others' experiences
2. **Responsible & Ethical Use of AI**
   - Thoughtful application of AI to problem-finding and ideation
   - Awareness of bias, privacy, and limitations
3. **Innovation & Creativity**
   - Original or resourceful approach to solving a friction
   - Application of frugal innovation principles in the prototype
4. **Design Quality & Accessibility**
   - Prompt Path is usable, well-structured, and inclusive
   - Prototype shows feasibility and potential for real-world testing
5. **Reflection & Process**
   - Honest consideration of what worked, what didn't, and who was (or wasn't) included
   - Iterative revision based on peer feedback or insights

Rubric-based assessment can be supported with peer reviews, self-assessment checklists, or team share-outs.

Extensions & Connections

Extension Challenges

- **Prompt Path Remix**: Teams exchange Prompt Paths and try to use them on a *new* friction. Afterwards, they revise each other's prompts and give feedback.
- **"Extreme Frugal" Challenge**: Redesign the prototype using *only recycled or classroom materials* in 10 minutes.
- **Different Audience Lens**: Choose a new user group (e.g., younger students, school staff) and adapt the Prompt Path to fit their context.

Connections to Broader Studio Work

- This lesson can be a pre-challenge activity that builds design thinking muscles before larger projects.
- The 5-step Prompt Paths can become a shared Studio Toolkit or printed reference for others to use during future innovation challenges.
- Could feed into a full-class inquiry into *"Whose problems get solved in school systems and whose don't?"*

Relevant Studio Callouts

- **Frugal Innovation (Jugaad)** – Resourcefulness over resources
- **Ubuntu** – Whose well-being is supported? Who belongs in this solution?
- **Two-Eyed Seeing** – Combine data-driven patterns (AI) with human perspectives (interviews)

Resources & References

To support flexible use and continual improvement, all lesson resources are housed in shared online folders. This approach allows us to update materials as new tools and examples emerge or suggestions are made. This also ensures they align with your school or district's preferred platform. Each link below will take you to a list of the editable templates, example artifacts, and any supporting media referenced in the lesson.

Access the full set of resources through your preferred platform:

- Google Documents Resource List
- Microsoft Documents Resource List