Student Handbook v1

Design Thinking Field Guide

Care about real people. Make a real difference. A field guide for one real project.

My name _____

Team _____

Project name _____

Project Map

The Six Stages

1 Empathize	2 Define	3 Ideate	4 Prototype	5 Test	6 Showcase
Find the person What is their struggle?	Name the problem What is it really?	Dream up ideas Quantity first	Build v1 Small and tryable	Let people try Record stuck points	Tell the story Evidence and reflection

It is not a straight line. If you discover you were wrong, return to an earlier step. That is normal.

Hi, I am Ze

Start With A Real Person

For the next little while, you are not just filling in worksheets. You are finding a real person with a real struggle, then figuring out how to make it a little better.

There is no answer key. You have to look, ask, try, and revise. AI can search, organize, brainstorm, and rewrite, but it cannot care about a person for you or make your decisions for you.

This guide gives you a path, tools, and places to write. Every word you record and every sketch you draw becomes part of your project.

By the end, you will not only learn how to use AI. You will learn how to make things different.

Read This First

How to Use This Guide

You do not have to read it front to back. Whatever stage you are on, flip to that stage.

The Six Stages

Use the project map as your navigation. You can always loop back when new evidence changes your mind.

1 Empathize	2 Define	3 Ideate	4 Prototype	5 Test	6 Showcase
Who do I help? What is their struggle?	What is the problem really?	What could I build to help?	Smallest version that works	Where do they get stuck?	What is my story?

Each Stage Has Five Parts

Part	What it is for
Stage Entry	What this stage solves and what you should leave with.
Key Concept	Why this step matters, with school-friendly examples.
Do It	Your turn: tables, fill-in spaces, and AI collaboration prompts.
Common Traps	The mistakes people make most, so you can dodge them early.
Done Check	How to know you are ready for the next stage.

Two Markers

Try Asking AI: a line you can copy and adapt.

You Decide: a reminder not to let AI make this call.

Reference Page

How the Materials Work Together

The handbook carries the learning path. The worksheet booklet gives reusable fill-in pages. The example helps when stuck. The AI card stays on your desk. The teacher guide is for facilitation.

Material	For	When to Use
Student Handbook	Students	Main thread: concepts, examples, and what to do at each step.
Worksheet Booklet	Students	Photocopiable tools you fill in repeatedly.
Worked Example	Students	Flip through when stuck; see one project from start to finish.
AI Ground Rules Card	Students	Desk card for safety, honesty, transparency, and agency.
Teacher Guide	Teacher	Schedule, prompts, assessment. Students do not need it.

Use It This Way

Every tool has a short version in the handbook, so this book alone can carry a full project.

If a page must be filled repeatedly or photocopied, use the full worksheet version.

The example booklet is not an answer key. It demonstrates thinking, not something to copy.

AI Collaboration

AI Is a Helper, Not a Boss

AI can process information for you, but it cannot replace real observation, real interviews, real care, or your judgment.

AI Is Good At

Summarize, translate, rewrite, and simplify.

Generate many ideas and make tables.

Explain concepts you do not understand.

Organize messy information.

You / Real People Must

Actually observe and interview a person.

Care, judge right from wrong, and notice context.

Make important choices.

Check whether a fact is true.

What am I doing while AI works?

Use waiting time to write questions, critique outputs, organize quotes, or sketch.

Did I capture what I learned?

Seen and forgotten equals not learned. Record findings, prompts, and quotes.

Who made this choice?

AI often picks for you. At important forks, decide for yourself.

Decision test: Am I asking AI to handle information, or to make a decision for me? Information is okay; decisions are mine.

Prompt Method

A Good Prompt Is a Task Brief

Who AI Should Be

Give it a role, such as a campus newsletter editor.

What To Do

State the task clearly: summarize, compare, rewrite, list.

Who It Is For

Audience changes wording: 7th graders, teachers, judges.

Stage	Opening prompt
Empathize	I want to help __. Ask me 5 questions to describe this person clearly.
Define	Here is my problem sentence: __. Is it specific enough? Give 3 rewrites.
Ideate	User is __ and problem is __. Suggest 10 ideas, including bold ones.
Prototype	Help me design this as a step-by-step flow; each step does one thing.
Test	Give me a usability test log sheet.
Showcase	Here is my project summary: __. Ask questions about what is unclear.

Key habit: End with: only give me suggestions and questions; do not make the decision for me.

Reference Page

Check Facts and Keep the Ground Rules

AI can state wrong things with confidence. Do not trust numbers, names, rules, or news without checking.

A Middle School Fact Check

Check at least one reliable source: an official site, textbook, or reputable outlet.

Or ask a teacher or someone actually involved to confirm.

One minute of checking beats putting a false fact on stage.

The 5 Ground Rules

No private info

Do not send photos, real names, addresses, ID info, or sensitive data.

No fake interviews

User evidence must come from real people, not AI imagination.

Check facts

Verify facts with a reliable source or a real person involved.

Disclose AI use

In the showcase, say what AI helped with.

The decision is mine

Final choices are made by you or your team.

Stay in the Driver's Seat

While waiting, am I thinking or just watching progress?

Did I record useful findings, revised prompts, and golden quotes?

Was this choice mine, or AI's?

Can I restate, question, and revise AI output in my own words?

Stage Entry

1 Empathize · Find the Real Person

What This Stage Solves

Find a real person and understand what trouble they actually face.

What You Leave With

One specific user; 2-3 interview records with quotes; one sentence: they want... but... so...

Why Do This First?

This is the foundation. If you pick the wrong person or struggle, everything built on top becomes weak.

☐ I can name a specific person or clear group.

☐ I know the scene where the trouble happens.

☐ I am ready to talk to at least 2-3 relevant people.

Stage Sketch

What I am most sure about:

What I still need to confirm:

Before this stage ends, I need:

I want AI to help me check:

Reminder: AI can help write interview questions. Real words must come from real people.

Key Concept + Do It

Start With a Real Person

Do Not Start With an App

Features exist to solve problems. Without knowing whose problem, a feature has no target.

Put Trouble Back in Scene

Time, place, action, people around, and pressure can completely change the problem.

Observe and Interview

Observation shows actions. Interviews reveal reasons. Together they make the problem whole.

Task 1 • Pick the person

Be as specific as you can: a name, role, or very clear group.

The person I want to help:

What they go through:

Task 2 • Go interview

Talk to at least 2-3 people. Ask open questions and record exact words.

Task 3 • Write one sentence

First picture the scene, then write: they want __, but __, so __.

They want:

But:

So:

Try Asking AI

I want to help __. Ask me 5 questions to describe this person clearly, with no jargon.

You Decide

AI may try to choose a user for you. Choosing whom to help is your decision.

Common Traps

Skipping interviews and guessing.

Only asking whether they want your feature.

Recording your summary but not their exact words.

Done Check

- ☐ I actually interviewed 2-3 relevant people.
- ☐ I recorded exact words.
- ☐ I can state the trouble as they want... but... so...

Reference Page

Interview Toolkit

A good interview feels like a chat, not a survey. Ask open questions, listen more than you talk, and record exact words.

Questions You Can Ask

Can you walk me through a typical day?

Last time this happened, how did it go?

How do you handle it now?

Can you say more? How often does this happen? Why did you do that?

Do	Do Not
Ask how it happened.	Ask whether they want an app.
Write exact words.	Only write your summary.
Listen more; talk less.	Talk nonstop.
Dig into details.	Rush to the next question.

5 Whys	Example
Problem	Classmates forget which homework is due.
Why 1	Too many subjects and deadlines.
Why 2	Homework is announced across chats and apps.
Why 3	There is no single place to track it.
Why 4	Classmates rely on memory or scattered notes.
Root cause	They need one simple, unified way to track homework.

Reference Page

Interview Record and Empathy Map

Use this short version in the handbook. For repeated copies, use the full worksheet booklet page.

Field	My Notes
Interviewee and role	_____
Date and place	_____
Core pain point	_____
Exact words	_____
Observed actions	_____
5 Whys root cause	_____
Initial finding	_____

Empathy Map

Says
Their words and quotes.

Does
Actions and behavior.

Thinks
What may be on their mind.

Feels
Emotions: anxious, annoyed, tired?

Stage Entry

2 Define • Narrow the Problem

What This Stage Solves

From a pile of interviews, choose and clearly state one problem worth doing.

What You Leave With

One chosen problem and one formal problem statement.

Why Do This First?

Finding many troubles and knowing which one to solve are different. Without narrowing, you will try to do everything and finish nothing.

☐ I chose only one problem.

☐ My statement has a user, cause, problem, and consequence.

☐ My statement does not sneak in a solution.

Stage Sketch

The recurring pain point is:

The best first problem is:

I will set aside:

I want AI to check:

Reminder: AI can rewrite your problem statement. You choose which problem to bet on.

Key Concept + Do It

Turn Evidence Into One Sentence

Find the pattern

Spread interview notes out and look for what recurs or feels intense.

Impact x feasibility

A good first project is important for the user and possible in your time.

No solution yet

This step states the problem clearly. The solution comes next.

Task 1 • Pick the problem

Place candidate problems in the matrix, then choose one for v1.

For my first version, I will solve:

Task 2 • Write the statement

User, because of root cause, struggles with problem, which leads to consequence.

User:

Root cause:

Problem:

Consequence:

Try Asking AI

Here is my problem statement: __. Does it make the user, cause, and consequence clear? Give 2 tighter versions.

You Decide

AI may recommend one. The trade-off of whose problem and which problem is yours.

Set aside

Important, but not doable now.

Do first

Important and doable.

Quick win

Easy, but less important.

Common Traps

Too big: help all students study better.

Too broad: school management has many issues.

Solution sneaks in: make an app.

Done Check

☐ I picked only one problem.

☐ All four blanks are filled.

☐ There is no solution in the statement.

Reference Page

Narrow It Until It Can Move

Defining is not writing beautifully. It is choosing one concrete problem and stating it clearly.

Impact x Feasibility

Set aside Important, but not doable now.	**Do first** Important and doable.
Do not do Low impact and hard.	**Quick wins** Easy, but less important.

Problem Statement Blanks

User:

Root cause:

Problem:

Consequence:

Three Bad Examples

Too big: make all students study more efficiently.

Too broad: there are many inconveniences in school management.

Sneaked-in solution: build an app.

Stage Entry

3 Ideate • Dream Up Lots of Ways

What This Stage Solves

Generate many ideas around your problem, then choose what the first version will build.

What You Leave With

A page full of ideas and a must-have vs later feature list.

Why Do This First?

Most people stop at the first decent idea and miss better ones. This stage forces you to expand first, then narrow.

- ☐ I wrote at least 8 ideas.
- ☐ I circled 1-2 directions worth trying.
- ☐ I can explain why this direction goes first.

Stage Sketch

My problem statement is:

The boldest idea is:

Most likely v1 idea:

I will set aside:

Reminder: AI is great for divergence. It should not decide which idea is worth building.

Key Concept + Do It

Quantity First, Quality Later

Do not judge yet

Good ideas often hide behind ordinary ones. Pour everything out first.

AI helps hit quantity

AI can fire off directions, but it never interviewed your person.

Useful features save steps

A feature should help the user remember, see, decide, or complete something.

Task 1 • Generate ideas

Five minutes. At least 8 ideas. Write the silly ones too.

1.

2.

3.

4.

Task 2 • Pick v1

Must-have means the project fails without it. Keep no more than 3.

Must-have:

Later:

Try Asking AI

User is __ and problem is __. Give me 10 more directions, including bold or unusual ones.

You Decide

Circle the idea you believe in most, not the one AI ranked first.

Crazy 8s

One minute per box, sketch what an idea looks like.

Must-have

Without it, the core action cannot happen.

Later

Useful, but v1 can live without it.

Common Traps

Stopping at the first decent idea.

Taking AI ideas wholesale.

Putting too many features into v1.

Done Check

☐ I wrote at least 8 ideas.

☐ My must-haves are no more than 3.

☐ Each must-have supports the user's core action.

Reference Page

From Many Ideas to v1

Expand first, then narrow. v1 keeps only what helps the user complete the core action.

Crazy 8s Short Version

1	2	3	4
5	6	7	8

Must-have (max 3)	Later
User cannot complete the core action without it.	Useful, but v1 can wait.
_____	_____
_____	_____

Done Check

- ☐ I wrote at least 8 ideas, several of them my own.
- ☐ I set must-have features, no more than 3.
- ☐ For each must-have, I can say which user action it helps complete.

Stage Entry

4 Prototype · Build the First Version

What This Stage Solves

Turn your solution into a first version people can see and try.

What You Leave With

A demoable first version, even if it is rough.

Why Do This First?

A rough tryable version gives feedback faster than a polished complete thing nobody wants.

- ☐ v1 only builds the main flow.
- ☐ A user can complete one main action.
- ☐ I can explain what I made.

Stage Sketch

The one thing the user completes:

Step 1:

Step 2:

Feedback the prototype gives:

Reminder: AI can help write flow or code, but you must explain why each step works.

Key Concept + Do It

v1 Only Builds the Main Flow

MVP means minimum viable

It is not final. It quickly creates something people can try, see, and critique.

Low fidelity is useful

Paper and sketches are fast to make, fast to change, and easier to critique.

One path first

One path that works beats ten paths half-done.

Task 1 • Set the MVP

What must the first version let the user complete?

The user can:

Step 1:

Step 2:

Step 3:

Task 2 • Pick a path

AI-demo, build-it, and paper prototypes can all be valid.

I choose path:

Because:

Try Asking AI

Help me shrink this to the simplest version. Goal: let the user __. Which features can I cut? Which must stay?

You Decide

If AI writes code or content, pause: can you understand it and explain it?

AI-demo type

A tuned prompt plus real output screenshots.

Build-it type

A webpage, mini-app, or no-code prototype for the main flow.

Paper type

Paper screens and sticky notes; a human acts as the computer.

Common Traps

Trying to make v1 too complete.

Looking down on paper prototypes.

Using AI code you cannot explain.

Done Check

- ☐ The user instantly understands who it is for.
- ☐ The user can complete one main action.
- ☐ Unimportant features are cut or hidden.

Reference Page

Choose a Path, Build a Tryable v1

A prototype does not have to be fancy. It must let a user complete one main action and get clear feedback.

Path	How
AI-demo	Tuned prompt plus real output screenshots.
Build-it	Website, mini-app, or no-code tool; only the main flow.
Paper	Draw screens; use a human as the computer during demo.

Prompt Element	My Version
Who AI should be	_____
What to do	_____
Who it is for	_____
What format	_____

Feasibility Check

☐ The problem is specific and happens often.

☐ I have interview evidence.

☐ This is an information or language task with clear input and output.

☐ The solution does not require AI to be perfect; real people would use it.

5

Stage Entry

Test · Let Real People Try It

What This Stage Solves

Let real people use your first version and find what does not work.

What You Leave With

2-3 test records and one improvement you already made.

Why Do This First?

You know your own prototype too well. Testing is not for praise; it is for finding problems worth fixing.

☐ I did not explain the whole time.

☐ I recorded stuck points, actions, and exact words.

☐ I fixed at least one issue that blocked the core action.

Stage Sketch

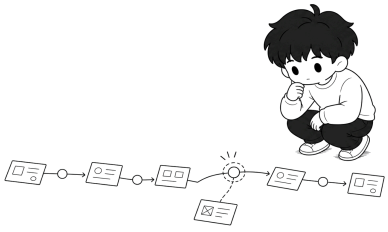
The task users should complete:

Action I need to observe:

Most important stuck point:

Likely next fix:

Reminder: You do not need to implement every comment. Fix the thing that most blocks the core action first.



Key Concept + Do It

Watch Task Completion, Not Preference

Give a task

Do not ask whether they like it. Ask them to try doing the thing.

Do not keep explaining

Once you coach, you stop seeing what real users would experience.

Stuck points are treasure

Pauses, frowns, wrong taps, and rereading instructions are useful evidence.

Task 1 • Test with 2-3 people

Record where they got stuck, what they said, and what you may change.

Who tried:

Stuck where:

Exact words:

Task 2 • Fix one thing

Pick the issue that most blocks completion. Change it, then try again.

Most important finding:

I will change:

Try Asking AI

Here is my test log: __. Help me find the top 3 fixes and what user problem each fix solves.

You Decide

AI will list many suggestions. You choose what helps the user most first.

Watch actions

Where they tap, stop, reread, or hesitate.

Record quotes

Write real sentences, not only your summary.

Change one thing

Start with the biggest blocker to the core action.

Common Traps

Explaining the whole time.

Only asking whether they like it.

Changing every comment at once.

Done Check

☐ At least 2-3 real people tried it once.

☐ I observed before explaining.

☐ I improved at least one thing based on feedback.

Reference Page

Test Log and Iteration Choice

Testing is not for praise. It shows where the first version fails. Improve the biggest blocker first.

Who tried	Stuck where	Exact words	What I will change

Fix This First

Most important finding:

I will change it by:

Feedback I will not change yet and why:

While Testing

Do not explain first; watch whether they can use it.

Record pauses, wrong taps, frowns, and rereading.

Feedback does not mean do everything. Fix the biggest blocker first.

Stage Entry

6 Showcase · Tell Your Story Clearly

What This Stage Solves

Turn your whole journey into a story other people understand and remember.

What You Leave With

A one-page project summary and a 5-7 minute showcase storyline.

Why Do This First?

If you cannot explain it clearly, an earlier step may not be fully thought through. Telling clearly is designing one more time.

☐ I can explain where the problem came from.

☐ I show prototype or testing evidence.

☐ I disclose what AI helped with without exaggerating.

Stage Sketch

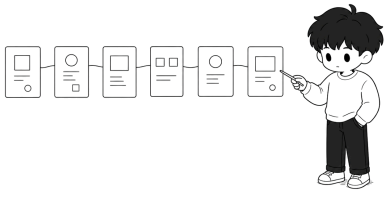
The specific person who opens the story:

The strongest evidence:

One demo moment:

Next-step reflection:

Reminder: AI can polish, but the trade-offs, evidence, and reflection must come from you.



Key Concept + Do It

Tell the Story From Problem to Change

Not a feature list

People want to hear who you helped and how life got a little better.

Use a clear storyline

Problem -> evidence -> solution -> live demo -> reflection and next steps.

Disclose AI use

Say what AI helped with and what your team decided or made.

Task 1 • Fill the summary

Clarify the person, problem, first version, test finding, next step, and AI use.

The person I help:

Their problem:

AI helped with:

Task 2 • Plan the storyline

5-7 minutes, can split roles. Plan the story before making slides.

Opening:

Evidence:

Demo:

Reflection:

Try Asking AI

Help me expand this storyline into a 5-minute outline only. I will deliver it myself.

You Decide

Do not read AI's script word-for-word. Use your own words and real details.

Problem

Whom do you help? What did they face?

Evidence

How do you know it is real? Show quotes.

Reflection

What did testing reveal? What comes next?

Common Traps

Opening with features.

Reading AI's script verbatim.

Being afraid to name shortcomings.

Done Check

☐ My showcase follows problem, evidence, solution, demo, reflection.

☐ I stated what AI helped with.

☐ The demo is tested and everyone knows their part.

Reference Page

Project Summary and Storyline

A showcase tells a story, not a feature list: from real problem to real change.

One-Page Project Summary

The person I help:

Their problem:

My first version helps by:

Testing showed:

Next I want to change:

AI helped with; we decided ourselves:

Section	Speaker	One-line point
Opening · a specific person	____	____
Problem + evidence	____	____
Solution + live demo	____	____
Reflection + next steps	____	____

Team	Star	Step
____	____	____
____	____	____

Reference Page

Hackathon / Classroom Route

When time is tight, still move through all six stages. The common mistake is spending too long thinking and leaving too little time to build and test.

Time	Stage	What to do
0:00-1:00	Empathize + Define	Quick-interview 2-3 people and set the problem statement.
1:00-1:30	Ideate	Brainstorm, then cut to must-haves.
1:30-4:00	Prototype	Build v1, main flow only.
4:00-4:45	Test	Have 2-3 people try, then fix the biggest blocker.
4:45-6:00	Showcase	Write the story, rehearse, and present.

Role	Responsible For
Captain / Timekeeper	Watch progress, prompt decisions, move the team forward.
User Researcher	Lead interviews and guard who the user is.
Solution Designer	Lead ideation, feature trade-offs, and sketching.
Builder	Lead making v1.
Storyteller	Lead storyline, rehearsal, and presenting.

Golden Rule

Do not cut all testing time.

A rough thing tried by real people beats an untested thing that looks complete.

The team shares one project summary. If someone cannot restate it smoothly, stop and realign.

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Glossary and Final Reminder

You do not need to memorize these words. You should be able to explain them in your own words while working.

Term	One-line Meaning
Design thinking	A method that starts from who needs what, then thinks before building.
Empathize	Understand a real person's situation and feelings.
Pain point	Something repetitive, time-consuming, annoying, or confusing.
Root cause	The deeper reason behind a problem, found with the 5 Whys.
Problem statement	One sentence naming who, cause, problem, and consequence.
Prototype	An early version that can be seen and tried.
MVP	The simplest version that lets a user complete one main action.
Main flow	The one path where the user completes the core thing.
Iterate	Change a little based on feedback, then try again.
AI collaboration	Let AI help ask, organize, rewrite, and diverge, but not decide.

You are not just learning how to use AI. You are learning how to make things different. Go find that real person, and make a real difference.