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ICTFUND صندوق الاتصالات وتقنية المعلومات INFORMATION & COMMUNICATION TECHNOLOGY FUND

Intro to Design Thinking

Training Module 1

Understanding Design Thinking



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Welcome Back, Digital Explorers!

In our last mission, you met Byte and discovered something important:

A great invention isn't just a creative idea; a successful solution starts by understanding the people we want to help.



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Byte's Inventions



A new robot



An AI powered App



A smart backpack

May look amazing

But if it doesn't solve a real problem for real people, it won't create the impact we want.

So today, we'll discover the process innovators use to turn problems into meaningful solutions.

This process is called Design Thinking.

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If you could only choose one...

- Build something amazing immediately?

OR

- Spend time understanding people first?



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Your friend says: “My backpack hurts my shoulders”

- Build something amazing immediately? ❌

OR

- Ask questions. ✅
  - When does it hurt?
  - Is the backpack too heavy?
  - Are the straps uncomfortable?
  - Is it heavy because of books?

That’s Design Thinking.

Before solving a problem...

Understand the person first.

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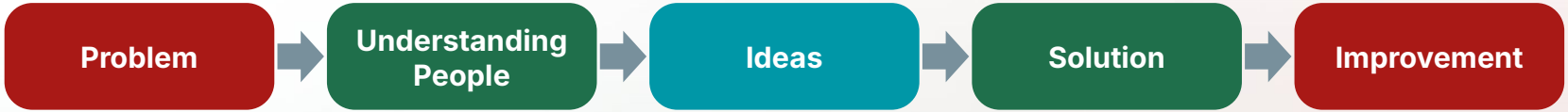
What is Design Thinking?

A human-centered approach: understand people's needs before creating solutions.



It helps innovators answer:

- ▶️ Who are we helping?
- ▶️ What challenges do they face?
- ▶️ What solutions could improve their lives?
- ▶️ How can we make our ideas better?

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Think like a detective

- Investigate the problem before building.
- Great innovators don’t ask “What can I build?” They ask “What do people really need?”



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The Innovation Journey

Every innovator follows five steps to turn a problem into a real solution.

1



Empathize

Become a Detective 🔍

Find out what people really need.

2



Define

Crack the Case 🧩

What is the REAL problem?

3



Ideate

Become an Inventor 💡

Now brainstorm lots of ideas.

4



Prototype

Become a Builder 🛠️

Build quick version. Not perfect, enough to learn.

5



Test

Become an Improver 🔄

Ask: “What works? What doesn’t?” Then improve.

During this program, you’ll become experts in each mission—exploring every step and practicing how innovators use it.

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Captain Noor asks:

A school installs expensive smart boards in every classroom. But students still struggle to learn. What might be the real problem?

A. The screens are too small.
B. Students can't see the board.
C. Lessons aren't engaging.
D. The internet is slow.

There may be more than one good answer!
Design Thinking helps us investigate instead of guessing.

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From Problem to Impact

Just like explorers follow a map to discover new places, innovators follow a process that guides them from problems to impactful solutions.

A problem someone faces → **Understanding the person** → **Creating possible solutions** → **Building something useful** → **Making an impact**

From today, you are not watching innovators, you are becoming innovators.

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Intro to Design Thinking

Training Module 2

Digital Explorers Program



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The Mindset of a Digital Explorer

Knowing the stages of design thinking is not enough.

We need also to have the right mindset of a digital explorer!



As digital explorers, you need to always have the following behaviors:

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The Mindset of a Digital Explorer

Great innovators share five habits of mind.

Ask questions	*“We do not assume we know the problem.”*
Listen to people	*“Users help us understand what matters.”*
Think creatively	*“We explore different possibilities.”*
Improve continuously	*“We learn from feedback.”*
Work together	*“Great solutions come from collaboration.”*

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The Mindset of a Digital Explorer

Habit #1:



Ask questions

"We do not assume we know the problem."

Example: Someone says, "My phone battery dies too quickly."

A Digital Explorer asks:

- *When?*
- *During gaming?*
- *During school?*
- *Is the battery old?*

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The Mindset of a Digital Explorer

Habit #2:



Listen to people *"Users help us understand what matters."*

Example: A child says, "I don't use this learning app."

- *Instead of saying, "You should."*
- *Ask, "What makes it difficult?"*

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The Mindset of a Digital Explorer

Habit #3:



Think creatively *"We explore different possibilities."*

Example: A wheelchair ramp isn't only useful for wheelchairs.

- *Who else benefits?*
- *Parents with strollers?*
- *Delivery workers?*
- *People with luggage? S*
- *omeone with an injured leg*

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The Mindset of a Digital Explorer

Habit #4:



Improve continuously *"We learn from feedback."*

Example: The first paper airplane rarely flies perfectly.

- *Do we throw it away?*
- *No.*
- *We fold it differently. Innovation works the same way.*



Work together *"Great solutions come from collaboration."*

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The Mindset of a Digital Explorer

Habit #5:



Work together

"Great solutions come from collaboration."

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The Design Thinking Mindset

Design Thinking is not only a process—it is a way of thinking. Digital Explorers:



Stay curious



Ask questions



Listen to others



Try new ideas



Learn from mistakes



Improve continuously

Remember: the goal is not the fastest solution—it is the right solution for the right people.

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Your First Innovation Challenge

Your mission: **Find a problem worth solving.**

Now it is your turn: start by answering three questions:

1 Who experiences this problem?

Students, teachers, families, elderly people, communities.

2 What challenge do they face?

Something difficult, slow, confusing, or frustrating.

3 What do you need to learn first?

Learn about the people before creating a solution.



Remember: don’t jump to the solution yet—first, become a problem detective.

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Mission Complete

You have completed your first Design Thinking mission. You learned that innovation does not begin with technology: **it begins with people.**

Every great solution starts with one simple question:

"What do people truly need?"

Your innovation journey begins now!

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Intro to Design Thinking

Live Session



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Agenda

1. Explanation: Intro to Design Thinking
2. Live Practice & Knowledge Check
3. LMS Content Overview
4. Next Steps
5. Live Q&A

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Digital Explorers Academy

In the heart of the UAE, a special academy trains young people to become future innovators.

It is not an ordinary school: no memorizing, no traditional classrooms.

Instead, the academy trained young people to become future innovators.

Every year, students join to learn one skill that matters most: how to solve problems that matter.

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One morning, a group of students received a special invitation.



On their screens appeared a message: "Congratulations! You have been selected to join the Digital Explorers Academy".

Your mission is to discover problems, understand people, and create ideas that can make life better.

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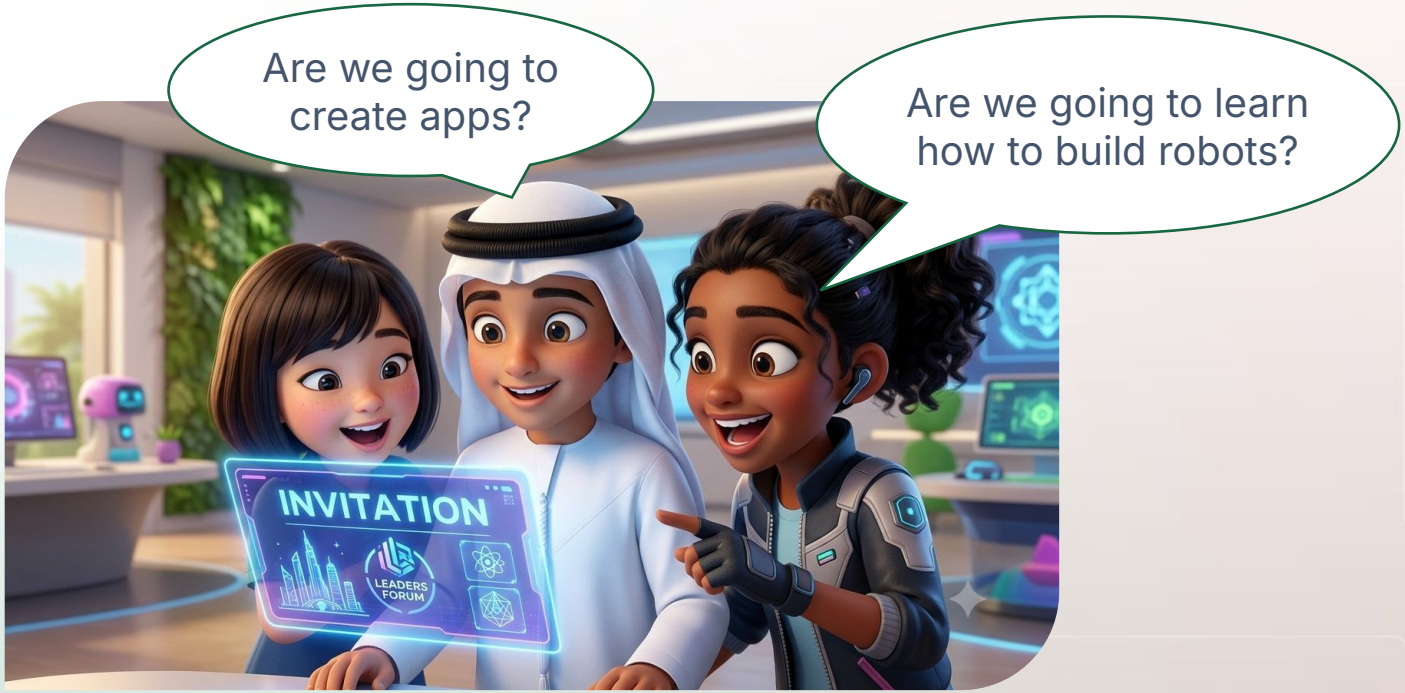
The students were excited.



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They went to the Academy and suddenly, a small robot appeared.



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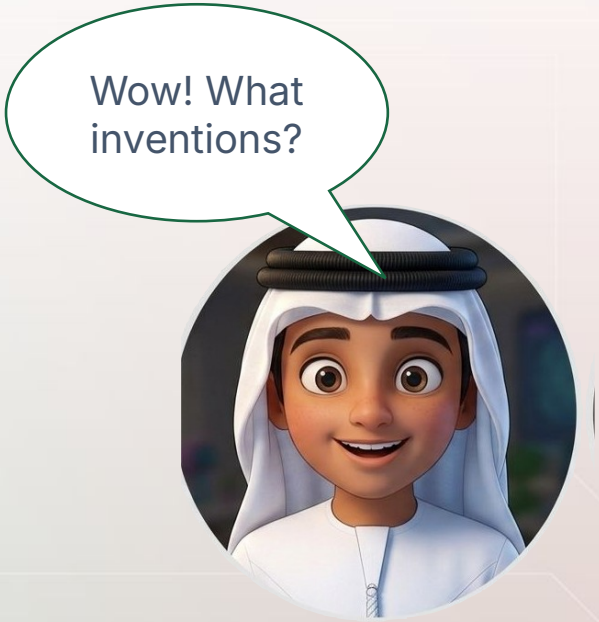
Byte moved proudly across the students.





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I created a smart backpack, a robot teacher, a food delivery drone, and an app that reminds people to drink water.

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You are amazing Byte!

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Then Captain Noor, the academy leader, entered the room.



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Byte looked confused...



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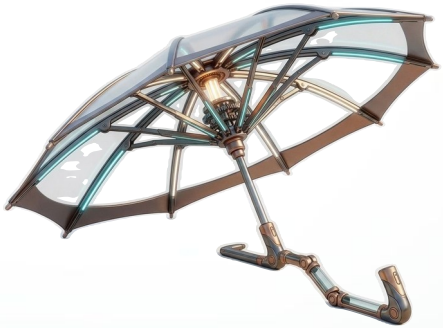
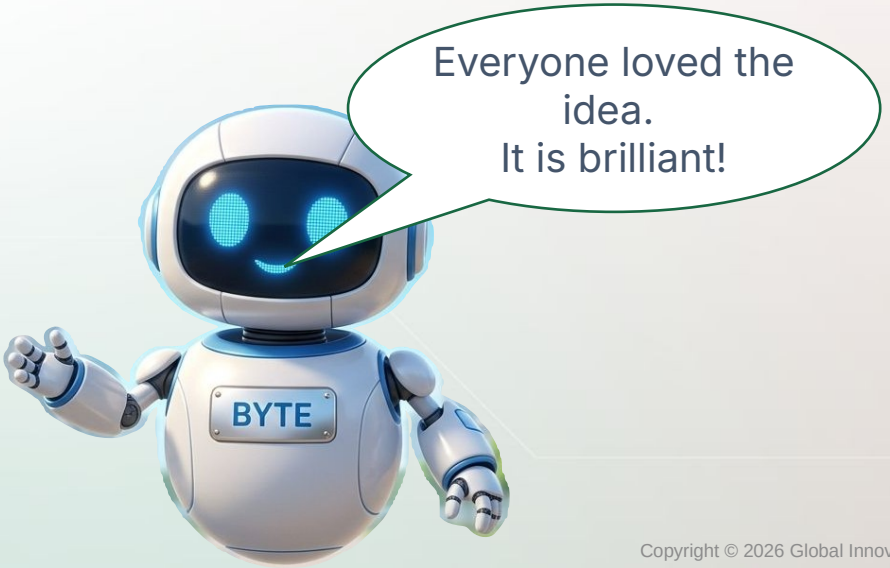


The first invention was an umbrella that could automatically open when it started raining.



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The second invention was an app designed to help students organize homework.

The creators spent months building it. But after students tried it, they discovered: Many younger students could not understand the complicated buttons.

The app had many features. But it was difficult to use.

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- **Captain Noor:** Did these inventions fail because the creators were not creative?
  - No



- **Captain Noor:** Did they fail because technology was not good?
  - No



- **Captain Noor:** So why did they fail?

“Because they did not understand the people using them”

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Great innovation does not begin with technology.
It begins with people.

Design Thinking

Design Thinking is a way of solving problems by understanding people first.
It helps innovators create solutions that are useful, meaningful, and easier to use.

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DESIGN THINKING



1. EMPATHIZE

Understand users' experiences and needs through observation and engagement

Understand People

2. DEFINE

Analyze findings to define core user problems and a clear problem statement

Find the Real Problem

3. IDEATE

Generate a wide range of creative and innovative solutions and ideas

Generate Many Ideas

4. PROTOTYPE

Build simple, tangible representations of ideas to test assumptions

Build and Try

5. TEST

Gather feedback from users on prototypes to refine and improve

Improve Through Feedback

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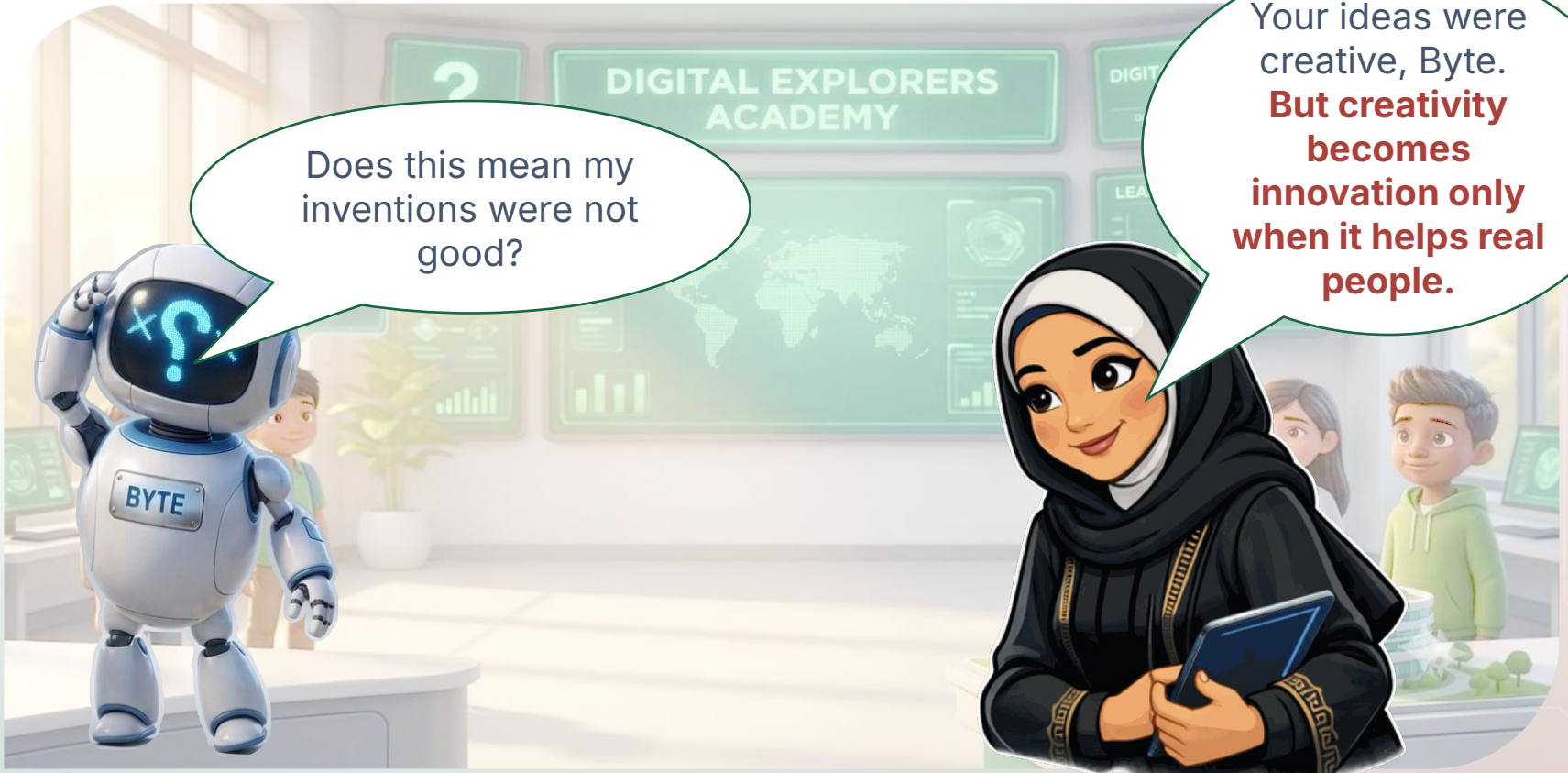

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- The students looked at each other. They were ready.
- Their first mission was about to begin.

Your mission is not to create the fastest solution.
Your mission is to discover what people truly need.

Throughout this program, you will become experts in each mission and learn how innovators use each step.

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- We will have a **practice mission (with our User: Maya)**. She will help us learn the Design Thinking process.

- But throughout the camp, each of you will become an innovator by looking around your own life.

- Start noticing problems at home, at school, in your neighborhood, or even challenges you personally face. By the end of the camp, you might discover that your next great idea solves a real problem that matters to you.

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Think about your daily life.

What is one small problem that annoys you almost every day?

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Think about your daily life.

If you could invent anything, what problem would you want to solve?

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Have you ever said…

“I wish someone would invent _____.”

Fill in the blank.

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What makes Design Thinking different from simply inventing something?

A. Create a new homework app immediately.
B. Ask what makes the app confusing and listen carefully.
C. Tell them to keep using it until they get used to it.
D. Delete the app from their device.

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Which of these is the best Design Thinker mindset?

A. I'll observe first before jumping to solutions.

B. I already know the answer.

C. My first idea is always perfect.

D. Only adults solve problems.

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What makes Design Thinking different from simply inventing something?

A. It helps us guess the problem faster.

B. It helps us avoid talking to users.

C. It makes every solution the same.

D. It helps us understand the real problem before creating a solution.

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Who is the most important person in Design Thinking

A. The teacher

B. The designer

C. The user

D. The computer

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Which Design Thinking stage comes after Ideate?

A. Test

B. Prototype

C. Empathize

D. Define

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Which of these is NOT one of the Design Thinking stages?

A. Memorize
B. Empathize
C. Define
D. Prototype

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Maya's Case is our only problem that we will solve.

A. False

B. True

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You will be working in the TDRA Camp 2026 on authentic problems from your real life that you will identify.

A. False

B. True

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Before tomorrow’s session, pay attention to your surroundings.

What is something that people around you struggle with?

Examples: Parents, Grandparents, Friends, Teachers, Younger brothers or sisters

The goal is simply to observe, not solve it yet.

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Why are we using an LMS (Learning Management System) for this year's camp? (Select ALL that apply.)

A. It keeps all learning materials, quizzes, and assignments in one organized place. ✅
B. It allows you to learn and review content anytime during the camp. ✅
C. It tracks your progress and helps you see what you have completed. ✅
D. It makes it easier to communicate and access the resources you need throughout the camp. ✅
E. It replaces the need for Zoom and Discord. ❌
F. It helps create a smoother and more engaging learning experience. ✅

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MISSION 001

The Curious Case of Maya



Digital Explorers Academy

Today, you become User Detectives.

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Opening Scene

Captain Noor steps into the Digital Explorers Academy command center to brief her squad on their very first mission.

> ***"Today, you are going to become User Detectives."***
>
> **— Captain Noor**

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MISSION ALERT

USER FILE: 001

STATUS: NEEDS INVESTIGATION

Byte: “Finally! A mission! I know exactly what to do — we’ll create something amazing!”

Captain Noor: “Create something amazing... for whom?”

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Amazing... For Whom?

Byte: "For... everyone! Everyone loves cool inventions."

Captain Noor: "Everyone? Would every person use the same thing in the same way?"

Before we build, we must ask a better question.

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Three Objects on the Table

Captain Noor points to three everyday objects and asks the squad to look closer.



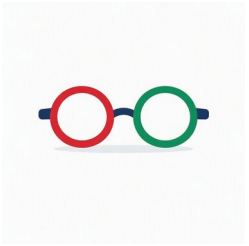
A school backpack

To carry school materials



A football

To practice and play



A pair of glasses

To see clearly

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PAUSE & INVESTIGATE

Would every person use these objects in the same way?

YES **NO**

Discuss with your squad, then decide together.

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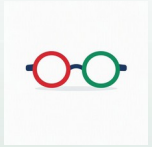
The Object Is Not Enough



A football player needs a football to practice.



A student needs a backpack to carry school materials.



Someone who wears glasses needs them to see clearly.

The object is not enough — we must understand the person using it.

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PAUSE & THINK

So… can we really create one solution for everyone?

Say your answer out loud, then turn the page.

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THE BIG IDEA

Great innovators don’t start with

“What can we build?”

They start with

“Who are we building for?”

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Discovering the User

Every invention, every app, every game, every robot, and every service is created for someone. That special someone has a name.

The User

The person who uses, experiences, or interacts with a solution.

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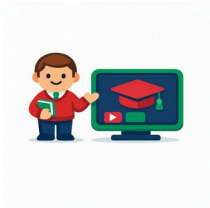
A User Can Be...



Child

Using an educational game



Teacher

Using a learning platform



Driver

Using a navigation app



Patient

Using a health service

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Every User Has a Profile

Behind every user is a profile made of five parts.



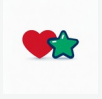
Needs — **What they need help with** *e.g. organizing homework*



Goals — **What they want to achieve** *e.g. finishing on time*



Challenges — **What makes it difficult** *e.g. forgetting deadlines*



Preferences — **What they like or dislike** *e.g. visual reminders over lists*



Experiences — **What they have tried before** *e.g. a notebook planner*

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MISSION 001

Two people can use the same product and still have completely different needs.

So great explorers always ask:

“Who am I building for?”

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Empathize Stage

Training Module 1

Who is the User?



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Captain Noor opens the mission file.



Today, Detectives, we are going to meet someone very important.

The inventor?



Captain Noor smiled. “Someone even more important”

“Every great invention begins with one person… the user.”

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Who Is a User?

A user is the person who uses, experiences, or benefits from a product, service, app, game, robot, website, or system.

- **Every invention exists because it helps someone**, and that person is the user.
- **Innovators don't build because technology is exciting;** they build because someone needs a solution.
- **One solution can have more than one user**, and each user may have different needs.

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Quick Quiz: Who Is the User?

A school backpack

Who is the user?

The student who carries and uses it every day.

An online learning platform

Who is the user?

The students and teachers who use it to learn and teach.

A food delivery app

Who is the user?

The customers ordering food and the delivery workers using the app.

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One Solution, Many Users

The same learning platform serves different users, each with different needs.

USER	WHY DO THEY USE IT?
Students	Complete assignments and learn
Teachers	Create lessons and monitor progress
Parents	Follow their child’s learning

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Same Solution, Different Needs

Do students, teachers, and parents all use the same platform in exactly the same way?

No.

The solution may be the same, but the users are different.

Always remember: different users have different needs.

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Meet Our User: Maya



Now that we know what a user is, let's meet the person behind Mission File 001.

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User File 001: Maya



MAYA · AGE 10

Maya loves:

- Drawing
- Reading adventure books
- Science experiments
- Spending time with her cousins

Maya is curious and loves learning, but recently, she has faced a challenge.

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Maya's Challenge



"I really want to finish on time, but sometimes I don't know where to start."

Every afternoon Maya does her homework, but things don't always go as planned:

- She forgets which assignments she needs to complete.
- She spends a long time looking for notebooks and papers.
- She's unsure which task to begin first.
- She feels frustrated when she realizes she forgot something.

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The User Detective Toolkit

Five tools innovators use to investigate and understand the people they design for.

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The User Detective Toolkit

Great innovators don't ask "What can we build?" first. They ask: **"Who are we designing for, and what do we need to understand?"**

1. Observe Carefully



2. Listen Carefully



3. Ask Questions



4. Avoid Assumptions



5. Open Mind

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Observe Carefully



Observation means paying attention to what people do, not just what they say.

Innovators look for:

- What people do
- How they use things
- What challenges they face
- What happens around them

Think: *What can I see? What behaviours do I notice? What clues can I collect?*

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Listen Carefully



Listening helps innovators understand people's experiences, feelings, and needs.

Good listeners:

- Pay attention
- Do not interrupt
- Notice important details
- Understand before responding

Think: *What is the person telling me? What feelings or needs are behind their words?*

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Ask Thoughtful Questions

Good questions are open-ended and help users explain their experiences.

× Weak questions

"Do you like homework?"

"Is organizing your homework difficult?"

✓ Strong questions

"Can you tell me what happens when you start your homework?"

"What is the hardest part of keeping track of your assignments?"

Think: *Am I asking to learn something new, or assuming the answer?*

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Avoid Making Assumptions



FACT — information supported by observation or reliable evidence.

ASSUMPTION — something we think might be true, but do not know yet.

Innovators do not judge users — they investigate.

Ask: Do I know this is true? How can I find evidence?

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Activity: See, Wonder, or Assumption?

Maya has many papers on her desk. Which category does each statement belong to?

SEE · observe & prove

WONDER · a question or curiosity

ASSUMPTION · a belief that may not be true

A. Maya has many papers on her desk.	SEE
B. I wonder if Maya has a big project.	WONDER
C. Maya is not organized.	ASSUMPTION
D. Notebooks and papers sit by her computer.	SEE
E. I wonder why Maya keeps so many papers.	WONDER
F. Maya doesn't care about a tidy workspace.	ASSUMPTION

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Keep an Open Mind



Users may experience problems differently than we expect, so innovators stay curious.

Remember:

- The user's experience matters more than our first idea.
- There may always be another explanation.
- Investigate before you decide.

Think: *Am I designing for what the user needs, or what I think they need?*

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Mission Reflection: True or False?

1. We already know exactly why Maya forgets her homework. — FALSE

2. Innovators should ask questions to understand the user before building. — TRUE

3. We know Maya sometimes spends time looking for notebooks and papers. — TRUE

4. It's okay to design a solution without learning about Maya's experience. — FALSE

5. "What's the hardest part of homework?" helps us understand Maya better. — TRUE

6. Innovators should understand needs before deciding on a solution. — TRUE

7. We already know which solution will work best for Maya. — FALSE

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Empathize Stage

Training Module 2

Empathy vs. Sympathy



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MODULE 2 · MEET THE TEAM

Byte Meets a Feeling

Captain Noor asks Byte: *“If Maya feels frustrated about homework, what would you say?”*
Byte says: *“Oh no! That is sad.”* **Captain Noor says:** ***“That is sympathy.”***

Captain Noor

Your guide. Reminds the team to understand people before building anything.

Byte

The robot who loves quick fixes — now learning to slow down and ask questions.

Maya

The user. A student who sometimes forgets her homework.

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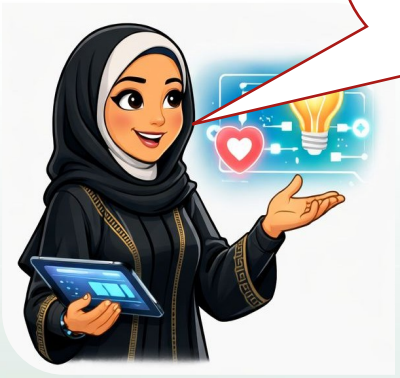



Captain Noor says: “That is sympathy”

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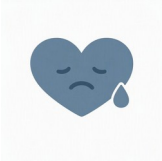
Sympathy vs Empathy



SYMPATHY

Feeling sorry for someone

Sounds like

"Oh no, that's sad."

Focuses on feeling sorry for the other person.



EMPATHY

Understanding another person

Sounds like

"Can you tell me more?"

Tries to understand their thoughts, feelings, and experiences.

Great innovators use empathy, understanding users helps them design better solutions.

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How They Compare

	Sympathy	Empathy
Meaning	Feeling sorry for someone	Understanding another person's experience
Sounds like	*"That's sad."*	*"Can you tell me more?"*
Focus	Feeling sorry for the other person	The other person's feelings

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WHY IT MATTERS

Empathy Powers Innovation



> **"Before creating a solution, we need to understand the person using it."**
> — Captain Noor

1
Understand
Learn who the user really is.

2
Ask Questions
Use open, curious questions.

3
Identify Needs
Find what they truly need.

4
Create Solutions
Design for real people.

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The Empathize Stage



Empathize means understanding the people you're designing for, their experiences, needs, goals, and challenges, before building anything.

Instead of "What can we build?" innovators ask:

- Who are we designing for?
- What does this person need?
- What challenges are they experiencing?

Why it matters: without empathy, a solution can solve the wrong problem, miss the user's real needs, or simply be unhelpful.

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KEY TAKEAWAY



Empathize means taking time to understand the people you're designing for before creating solutions.

Great innovations begin with understanding people — not with building products.

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Great Work, Explorers!

You moved from feeling sorry to truly understanding and learned to know your user before building.

Empathy first
Understand people, not just problems.

Ask, don't assume
Open questions reveal real needs.

Then build
Design solutions for real users.

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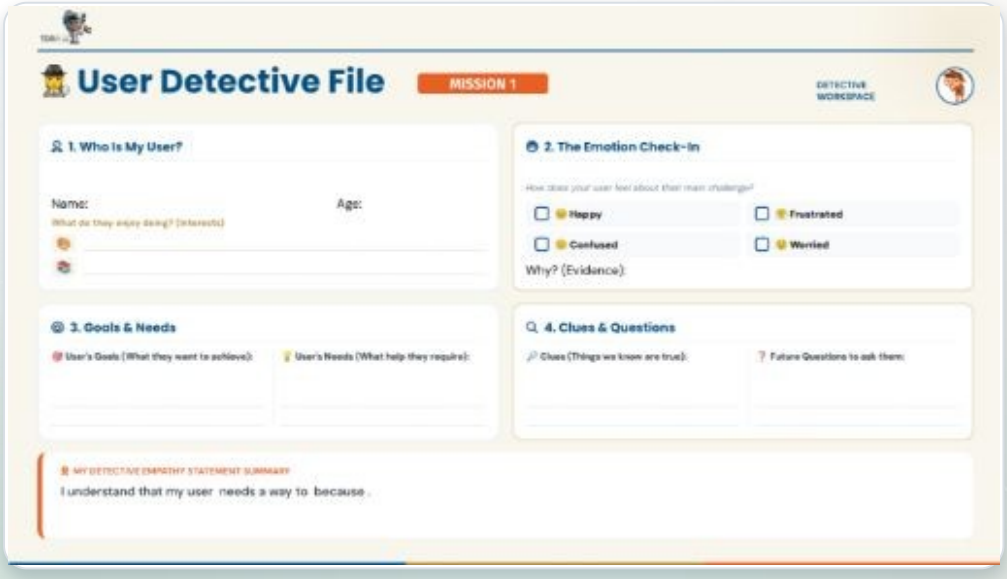
MISSION CHALLENGE 2 · AGES 12–15

User Detective File

Use this template to build a profile of the person you are designing for.



1. **Who is my user?**
   Name, age, and interests.
2. **Emotion check-in**
   How do they feel about the challenge?
3. **Goals & needs**
   What they want and what they require.
4. **Clues & questions**
   What you know and what to ask next.
5. **Empathy statement**
   “I understand that my user needs… because…”

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MISSION 002

Crack the Real Problem

Design Thinking • The Define Stage

Live Session 1 • Instructor-Led • 120 minutes



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MISSION 002 • THE DEFINE STAGE

Mission Briefing

DESIGN THINKING STAGE

Define

DURATION

120 min

LEARNING OBJECTIVES

- Organize the information collected about a user.
- Distinguish between a symptom and the real problem.
- Identify the user’s needs.
- Define a clear, user-centered problem.
- Write a simple “How Might We…” question.
- Explain why a well-defined problem leads to better solutions.

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LIVE SESSION 1

The Missing Piece

Captain Noor opens User File 001 in the Innovation Command Center — and Byte learns the mission isn't about the answer yet.

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STORY • INNOVATION COMMAND CENTER

Yesterday, You Became User Detectives

BYTE

“So now we know the answer — the solution!”

CAPTAIN NOOR

“Not yet. Before we create anything, we must answer a more important question.”

TODAY’S BIG QUESTION

What is Maya’s real problem?

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LISTEN TO THE USER

Maya's Interview

IN MAYA'S OWN WORDS

- *"I want to finish my homework before dinner."*
- *"Sometimes I spend 15–20 minutes looking for my notebook."*
- *"I forget where I wrote my homework."*
- *"Sometimes I remember an assignment after I get into bed."*
- *"I wish I knew exactly what I needed to do first."*

DETECTIVE'S NOTE

Good innovators collect many clues before making a decision.

Ask the class: What did Maya tell us?

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A Symptom Is Only a Clue

WHAT WE SEE — THE SYMPTOM

“I have a headache.”

WHAT MIGHT BE UNDERNEATH?

Maybe they need water • need rest • are tired • or something else entirely.

Sometimes what we see first is only a clue. Great innovators look deeper.

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ACTIVITY • WHAT'S UNDERNEATH?

Detective Challenge: Find the Hidden Problem

SITUATION 1 • WE SEE

A student arrives late every day.

UNDERNEATH

- No morning routine.
- Hard to prepare their things.
- Does not know the schedule.

SITUATION 2 • WE SEE

A child will not join a group game.

UNDERNEATH

- Does not know the rules.
- Unsure how to join.
- Needs encouragement.

SITUATION 3 • WE SEE

Maya forgets her homework.

UNDERNEATH

- Needs a better organization system.
- Needs help remembering tasks.
- Needs a clearer way to prioritize.

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FROM WHAT WE SEE → WHAT THE USER NEEDS

Welcome to the Define Stage

1 · Empathize
Understand Maya.

→

YOU ARE HERE
2 · Define
Frame Maya's real problem.

→

3 · Ideate
Create ideas.

Empathize helped us understand the user. Define helps us synthesize the findings and frame the problem.

If we define the wrong problem, we create the wrong solution.

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LIVE CHALLENGE • MAYA'S MYSTERY FILE

Observation, Problem, or Solution?

CLUE 1 • OBSERVATION

"Maya spends 15 minutes searching for her notebook."

What we see — a fact, not the problem.

CLUE 2 • PROBLEM / NEED

"Maya needs a better way to organize her homework."

This is the real target.

CLUE 3 • SOLUTION

"Let's create a homework app!"

A jump to the answer — too soon in Define.

Move from what you see to what the user really needs.

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ENTER THE DEFINE LAB

The best solutions begin with the right questions.

Enter the Define Lab. Collect the clues. Find the real problem.

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Define Stage

Training Module 1:
From Clues to Persona



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Yesterday, you collected information about Maya.

Today, you receive new clues.

But great User Detectives know that clues are only useful when we understand what they tell us.

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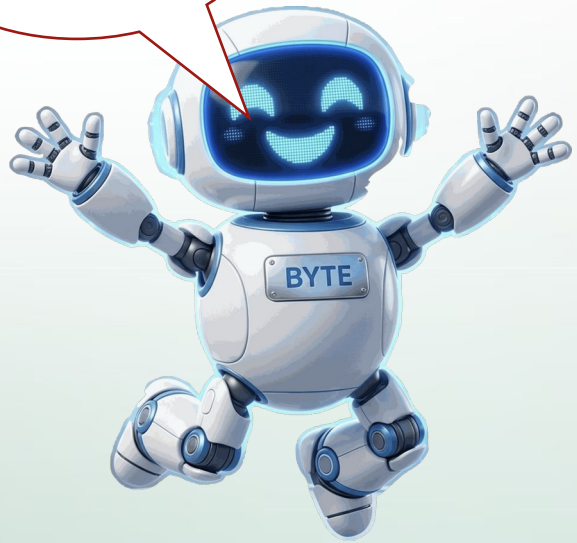
So we just read the clues and find the answer?



Not yet.
First, we need to organize what we discovered



Every clue tells us something about the user

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What is a Clue?

Uncovering the User's Story

Clues are the pieces of information, observations, and facts we collect.



But remember Captain Noor's advice: **clues are only useful when we understand what they tell us.**

They are the building blocks we use to solve the mystery of how to help our users succeed.

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The Detective's Toolbox: 5 Clue Categories

To organize our findings, we use five special categories to sort our clues:

Goals

What does Maya want to achieve?

Needs

What does Maya need help with?

Challenges

What makes things difficult for Maya?

Feelings

How does Maya feel?

Interests

What does Maya enjoy?

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Hands-on Activity: Sorting Maya's 8 Clue Cards

Let's look at Maya's specific clue cards and place each in the correct category:

Maya wants to finish homework early.

Maya loses papers.

Maya enjoys learning.

Maya feels frustrated when she forgets something.

Maya wants to be organized.

🎯 Goals

🚧 Challenges

⭐ Interests

😊 Feelings

💡 Needs

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Step 2: Connecting the Dots to Spot Patterns

But innovators do not stop at collecting clues. They look for patterns.

A pattern appears when we look at multiple clues together and ask:

What do these clues tell us?

By grouping related clues, we start to see a bigger picture instead of just isolated facts. This is how we move from simply gathering information to actually understanding the user's situation.

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Pattern Practice: Maya's Homework Habits

Let's practice spotting a pattern. Look at these three specific clues:

- **Maya loses papers.**
- **Maya forgets assignments.**
- **Maya spends time searching for materials.**

What pattern do you notice? When we connect these dots, the pattern shows...

Maya may have difficulty organizing her homework.

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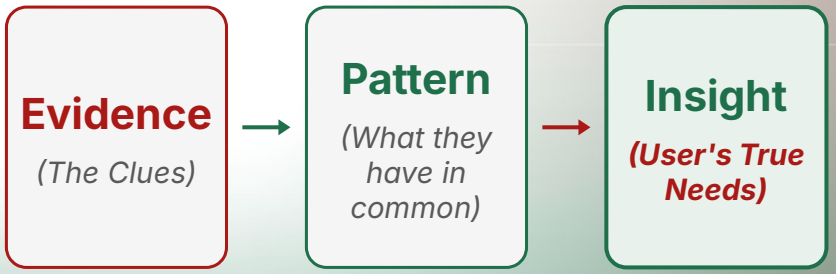

Step 3
Unlocking Insights for the Detective Report

What is an Insight?

An **insight** is what we learn from connecting different clues together.

It is the deep understanding of what the user truly needs to succeed.

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The Detective Report Challenge

Finding Maya's Real Needs

It is time to complete Maya's Detective Report! By filling out these three steps, we transform raw clues into a clear understanding of how we can help Maya achieve her goals.

EVIDENCE **Clues:** What clues did we find?

PATTERN **Commonality:** What do these clues have in common?

INSIGHT **Need:** What does Maya really need?



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Define Stage

Training Module 2:
Finding the Real Problem



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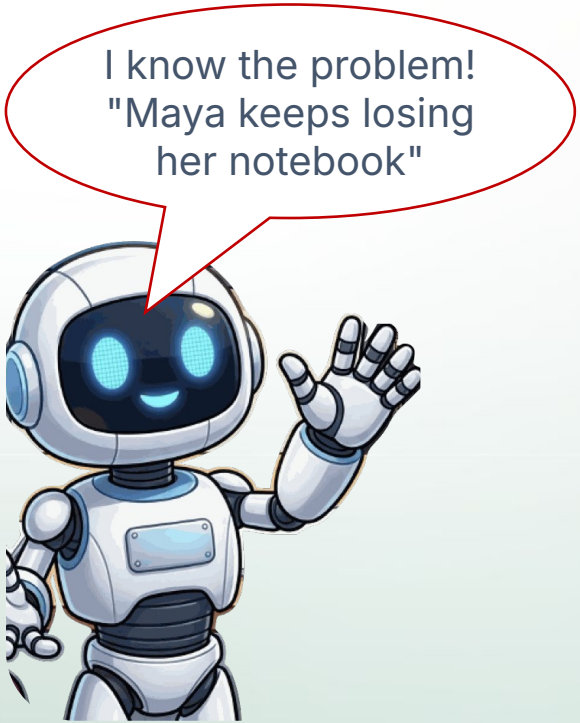

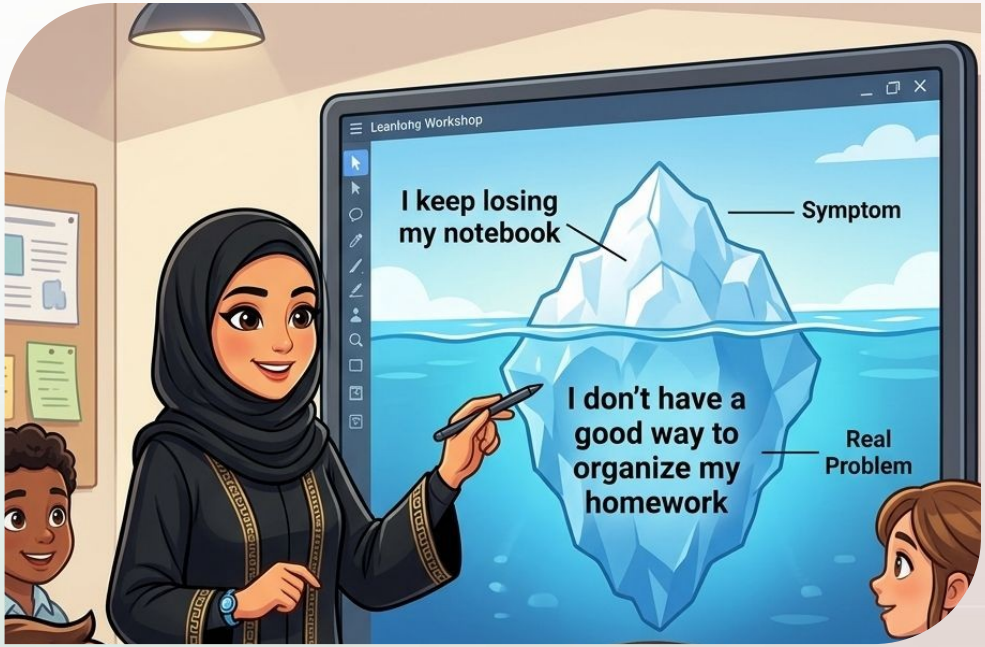

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The Iceberg Analogy: Visible Symptoms vs. Hidden Root Problems

Above the water (Visible Symptom): "I keep losing my notebook." This is the visible part of the iceberg.

Below the water (Hidden Root Problem): "I don't have a good way to organize my homework." This is the larger, hidden challenge.





"Sometimes what we see is only the symptom. The real problem is underneath."

By understanding this, we can start to look past the obvious and search for the hidden root causes.

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Defining Our Tools

Symptom

What we observe happening.

It is the visible evidence, the immediate action, or the surface-level occurrence that catches our attention.

Problem

The user's underlying need or challenge.

This is the root cause, the hidden barrier, or the missing system that actually creates the symptom we observed.

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Detective Practice: Common School and Home Examples Analyzed

Example 1: Messy Room

Observed Symptom

"My bedroom is messy".

If we stop there, we might just tell someone to clean their room.

Possible Real Problem

"I don't have a place to organize my things"

Example 2: Forgetting Homework

Observed Symptom

"I forget homework"

Possible Real Problem

"I don't have a system for keeping track of assignments"

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The Detective Thinking Framework

What We Know vs. What We Wonder

Good detectives do not stop at what they see. They ask: What could be happening underneath?

✓ WHAT WE KNOW	? WHAT WE WONDER
Facts & Symptoms These are the undeniable, observable facts and symptoms.	**Questions & Hypotheses** These are the questions we ask about the underlying causes and missing systems.

DEEPER PROBLEM

By explicitly writing out what we know versus what we wonder, we create a logical bridge that leads us directly to identifying the **Possible deeper problem**.

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Define Stage

Training Module 3:
Discovering User's Needs



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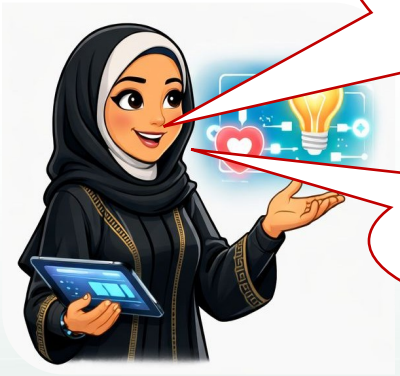

We know Maya's challenges.
Now we need to discover something important

What does Maya really need?

A homework app!



Captain Noor smiles. "Maybe. But an app is a solution. Before choosing a solution, we need to understand the need"

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Need vs. Solution

The Need

A need is the root requirement or the goal the user is trying to achieve.

Before deciding if a homework app is right, we must deeply understand Maya's core organizational issues.

The Solution

Something we create to help the user.

Byte's suggested "homework app" is a solution.

Innovators must always pause and ask “why” before deciding “what” to build.

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Examples of Needs and Solutions

The Need

Example 1: "I need to stay organized."
(This is the goal the user wants to achieve)

Example 2: "I need reminders."
(This is the fundamental requirement to avoid forgetting things)

The Solution

Example 1: "A homework planner."
(This is the specific tool created to help achieve that goal)

Example 2: "A reminder app."
(This is a specific piece of technology built to provide those alerts)

Notice how the need describes the desired outcome, while the solution describes a specific item or method used to reach that outcome.

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Let's Test Our Understanding!

Read the statements about Maya and decide if it describes a fundamental Need or a specific Solution.

Statement 1: *"Maya needs a way to remember her assignments"*

NEED

Answer: This is a Need, because it describes a goal she is trying to achieve.

Statement 2: *"Maya needs a digital planner"*

SOLUTION

Answer: This is a Solution, because a digital planner is a specific product created to help her organize.

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Define Stage

Training Module 5:
"How Might We..." Question



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Now we have enough clues to finally define Maya's problem

- **A problem statement is a clear, concise description of the issue that needs to be addressed by a problem-solving team.**

- Writing a problem statement is like drawing a map before going on a journey. It keeps you focused on the right path.



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Now we have enough clues to finally define Maya's problem



- Instead of guessing what might help Maya, we will use the clues we gathered to build a specific statement that explains her exact situation.

- This prevents us from getting distracted by ideas that don't actually solve her core issue.

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Every strong problem statement is built on three simple structural pillars

To make sure our problem statement is strong and useful, we use a simple, three-part structure. This framework ensures we don't miss any critical details about the situation. The three core pillars are:

1. The User

Who is experiencing the challenge?

We must always start with the person at the center of the story.

2. The Need

What does the user actually need?

This focuses on the missing capability or tool, not a specific product.

3. The Why

Why is this important?

This uncovers the deeper motivation and the emotional or practical reason behind the need.

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Example: Maya's Case



1. The User

Who is experiencing the challenge?

Maya who is struggling with organizing her homework

2. The Need

What does the user actually need?

A better way to organize and remember homework.

3. The Why

Why is this important?

For Maya, this is important because she wants to finish homework on time without feeling frustrated.

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We can combine the three pillars to craft Maya's final problem statement.

Now that we have analyzed the User, the Need, and the Why, let us combine them into a single, powerful sentence.

> ***"Maya is a 10 year old student who is having difficulty with homework, She needs a better way to organize and remember her homework. This is important because she wants to finish her work on time without feeling frustrated."***

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Comparative Activity

Decide which statement is a good problem statement:

STATEMENT A

"Maya needs a homework app to remember assignments."

STATEMENT B

"Maya needs a better way to organize and remember assignments because she wants to complete homework more easily."

Statement B is better because it focuses on Maya's need instead of choosing a solution.

Solutions can limit us: When we write "Maya needs a homework app", we jump straight to a solution. What if she doesn't have a phone? By deciding early, we blind ourselves to other great solutions.

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Define Stage

Training Module 5:
Creating the Problem Statement



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The “How Might We” Question

A How Might We question turns a problem into an opportunity to explore ideas.

- **"HOW"** suggests that there are multiple ways to solve the issue.
- **"MIGHT"** implies that our ideas are just possibilities, removing the pressure to find a perfect solution immediately.
- **"WE"** emphasizes that innovation is a collaborative effort.

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Case Study: Maya's Homework Challenge

USER PROFILE: MAYA

"Maya needs a better way to organize and remember her homework"



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Converting a Problem into an Opportunity

Static Problem

"Maya needs a better way to organize and remember her homework"

Left as a statement, this simply states a fact without inviting solutions.

It does not spark innovation or invite active problem-solving.

Dynamic Opportunity

"How might we help Maya organize her homework more easily?"

The new HMW question directly addresses Maya's core challenge while opening the door to exploration, inviting the team to think of many potential pathways.

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The Three Rules of a Good "How Might We" Question

- **Rule 1: Multiple Answers possible:** Does not give only one answer (avoids obvious solutions).
- **Rule 2: Funnel of Ideas:** Encourages a wide funnel of diverse brainstormed thoughts.
- **Rule 3: User-Centered:** Keeps the user (Maya) at the absolute center of the inquiry.

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Interactive Activity: Choose the Better Question

Compare both options below against our rules.

Which one gives more opportunities to brainstorm ideas?

Option 1

"How might we create a homework reminder app for Maya?"

Option 2

"How might we help Maya remember and organize her homework tasks?"

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Ideate Stage

Training Module 1:
What is Ideation?



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Welcome to the Ideation Stage!

Ideation is the stage where innovators generate many possible ideas before choosing one (brainstorming).



During ideation:

- We explore many possibilities.
- We do not choose the first idea immediately.
- We improve ideas by building on each other's thinking.

During brainstorming, we are not looking for the perfect idea immediately.

The goal first is to create many ideas. Then we improve and choose the strongest ones.

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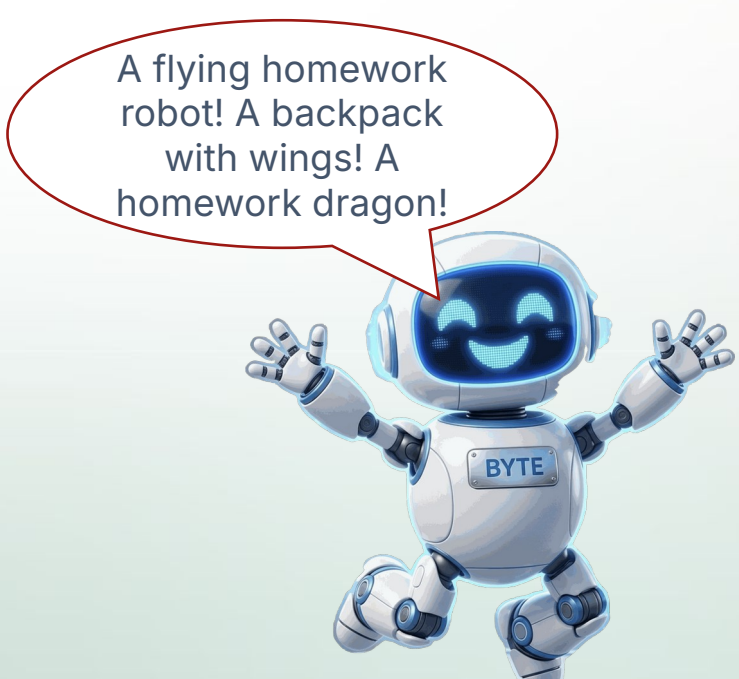
Byte started thinking about Maya's challenge, and since he has a great imagination, he began shouting ideas enthusiastically:





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Rule #1: Every idea is welcome

No thought is too small or too strange.

Every idea gives us something to explore and investigate further.



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Rule #2: Do Not Judge Ideas

- Maintain a positive and constructive atmosphere.
- Instead of dismissing ideas with *"That will never work"*...
- Say **"Interesting... how could we improve it?"**



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Rule #3: Build on Others' Ideas

Innovation is a team effort.

Instead of stopping ideas, help them grow by saying: “I like your idea. What if we also add...?”



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Rule #4: Think BIG!

- Do not limit your imagination.
- Unusual ideas, like Byte's flying homework robot or a backpack with wings, often lead to highly creative solutions.



Great ideas often begin as small or unusual ideas.

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Activity: Brainstorming Detective

Decide if each statement follows the rules:

- “That is a bad idea” **(Judges/hurts)**
- “What if we improve your idea?” **(Builds/helps)**
- “We already tried that, so stop” **(Stops/hurts)**



Remember: Innovators do not judge ideas during brainstorming, and they do not stop ideas; instead, they help them grow and look for ways to improve them.

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Ideate Stage

Training Module 2:
One Problem, Many Solutions



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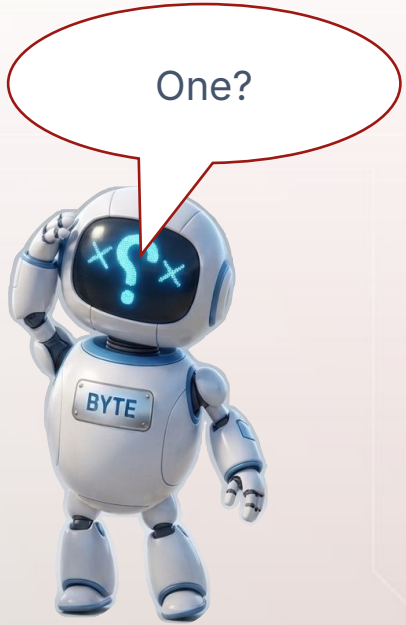
How many solutions do you think exist?



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Instead of looking for a single right answer, let's find out.

We open our minds to endless possibilities and pathways.

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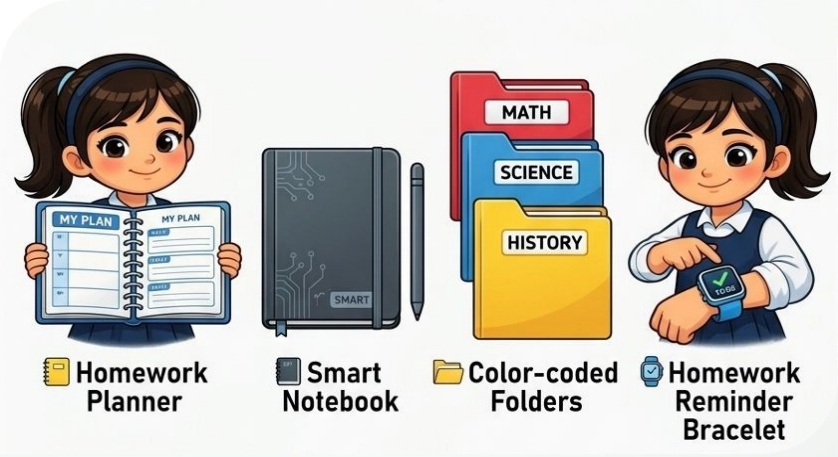

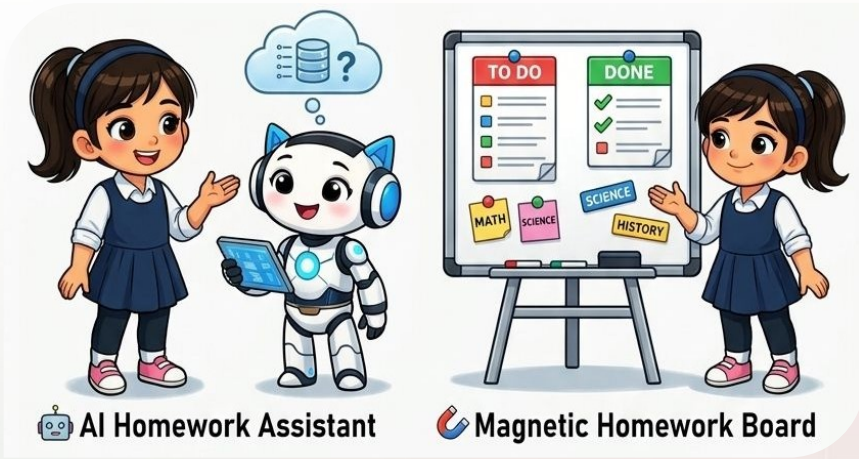

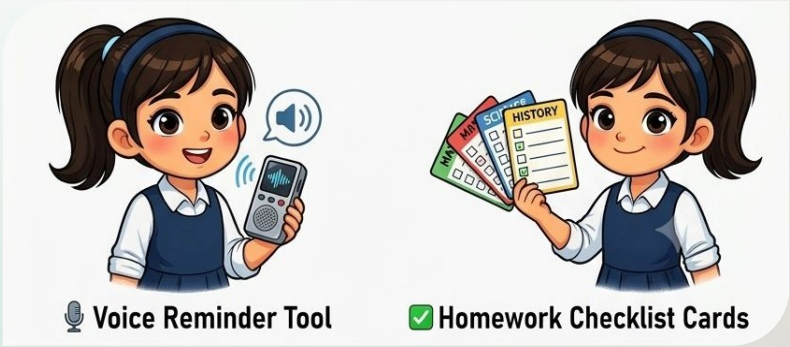

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Which one of the below solutions is correct?

Actually, many of them could work.

In Design Thinking, we do not search for only one answer. We explore different possibilities and then choose the idea that best helps the user.

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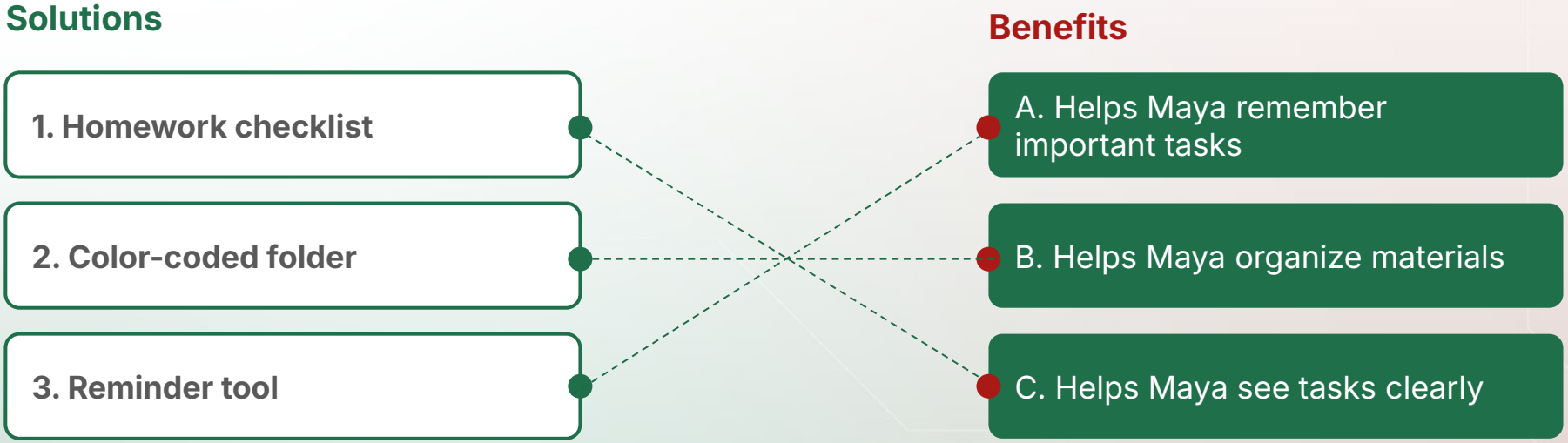
Many Ways to Solve One Problem!

Let us match the solutions to the benefits!



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Reflection Question

Do We Solve Challenges the Same Way?

Do these solutions solve the same challenge in the same way?

☐ Yes ☒ No

Different people have different needs, preferences, and ways of working!

Some people need loud alarms, while others just need a quiet, colorful folder. This is exactly why Design Thinking requires us to come up with many solutions, so we can find the perfect fit for the unique user.

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Always remember, in brainstorming:

01 Quantity over Quality

Right now, having 20 okay ideas is better than having 1 perfect idea. We want volume!

02 Defer Judgment

There are NO bad ideas in brainstorming. Do not criticize your own ideas or your teammates' ideas.

03 Encourage Wild Ideas

Think crazy! What if a robot did the organizing? What if homework was a video game? Wild ideas often lead to the best real solutions.

04 Build on Others

Use the phrase 'Yes, and...'. If someone says 'Let's use a calendar', you say 'Yes, and let's make it a giant calendar that covers the whole wall!'

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Ideate Stage

Training Module 3:
Creative Thinking Techniques



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Sometimes innovators have ideas, but they do not know how to make them better.

Creative thinkers use tools that help their ideas grow.

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Creativity Tool 1: SCAMPER

The Core Philosophy

Creative ideas do not always appear from nowhere.

Often, we improve an existing idea by systematically changing its parts to prompt new ways of thinking.



Systematic Questions Include:

- **Substitute & Combine:** Swap or merge components.
- **Modify & Reverse:** Change scales, designs, or orders.

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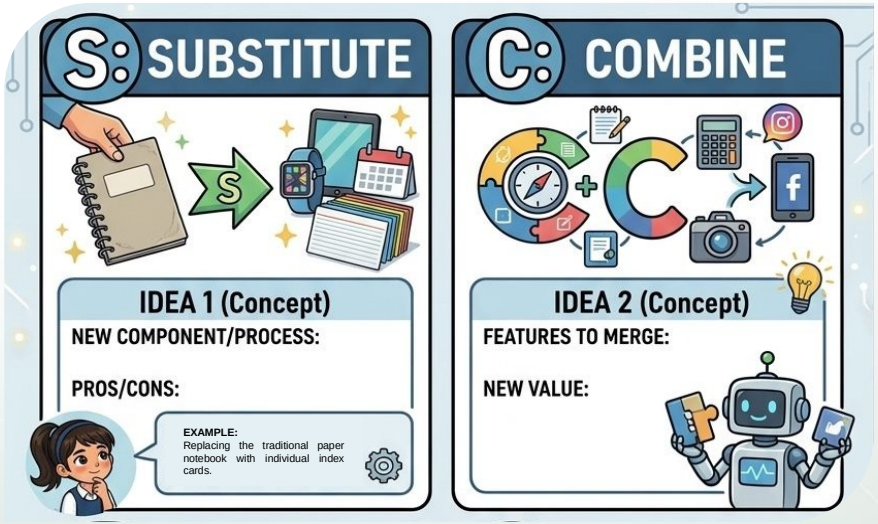

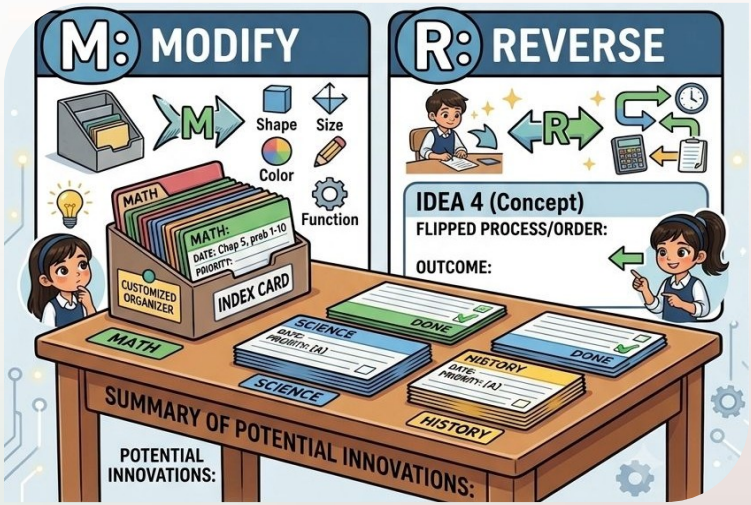

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SCAMPER: Substitute

Can We Replace (Substitute) Something?

The first step in the SCAMPER technique is to ask:

Can we replace something?

This involves looking at current materials, processes, or components and substituting them with alternatives to see if it improves the outcome.



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SCAMPER: Substitute

Can We Replace (Substitute) Something?

Maya's Assignment Tracker:

Instead of a traditional paper notebook, what if Maya substituted it with index cards?

This simple material change offers a more flexible and effective way to organize daily tasks.



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SCAMPER: Combine Ideas

Can We Combine Two Ideas?

Merging separate concepts, tools, or features can create a single, more powerful solution that addresses multiple needs at once.

Example: Smart Homework Organizer

- **Traditional Planner:** Offers scheduling capabilities.
- **Active Reminders:** Provides real-time notifications.

Combined Solution: A comprehensive, significantly improved tool for managing student tasks.



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SCAMPER: Modify & Reverse

Modify: Can we change or improve something?

Reverse: Can we do something differently?

The Modify and Reverse steps in the SCAMPER technique push innovators to alter the fundamental nature of their ideas.



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SCAMPER: Modify & Reverse

Modify: Can we change or improve something?

Reverse: Can we do something differently?

Modify: Can we change or improve something?

For instance, when evaluating a standard planner, we can ask how to make the planner easier to use, perhaps by altering its layout or interface.

Reverse: Can we do something differently?

This involves flipping the normal sequence or roles. For example, instead of Maya actively checking her homework list, could the list remind her? This role reversal transforms a passive tool into an active assistant.

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How “Yes, And…” Works in Practice

Student A (Starting Concept)
"What if Maya had a smart notebook?"

Student B (Builds on the idea)
"Yes, and it could remind her what homework she needs to complete."

Student C (Adds even more value)
"Yes, and it could show important tasks using different colors."



Through this step-by-step process of accepting and adding, each person helped the initial idea become stronger and much more detailed.

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Ideate Stage

Training Module 4:
Choosing the Best Ideas



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Byte looks at the giant idea board.



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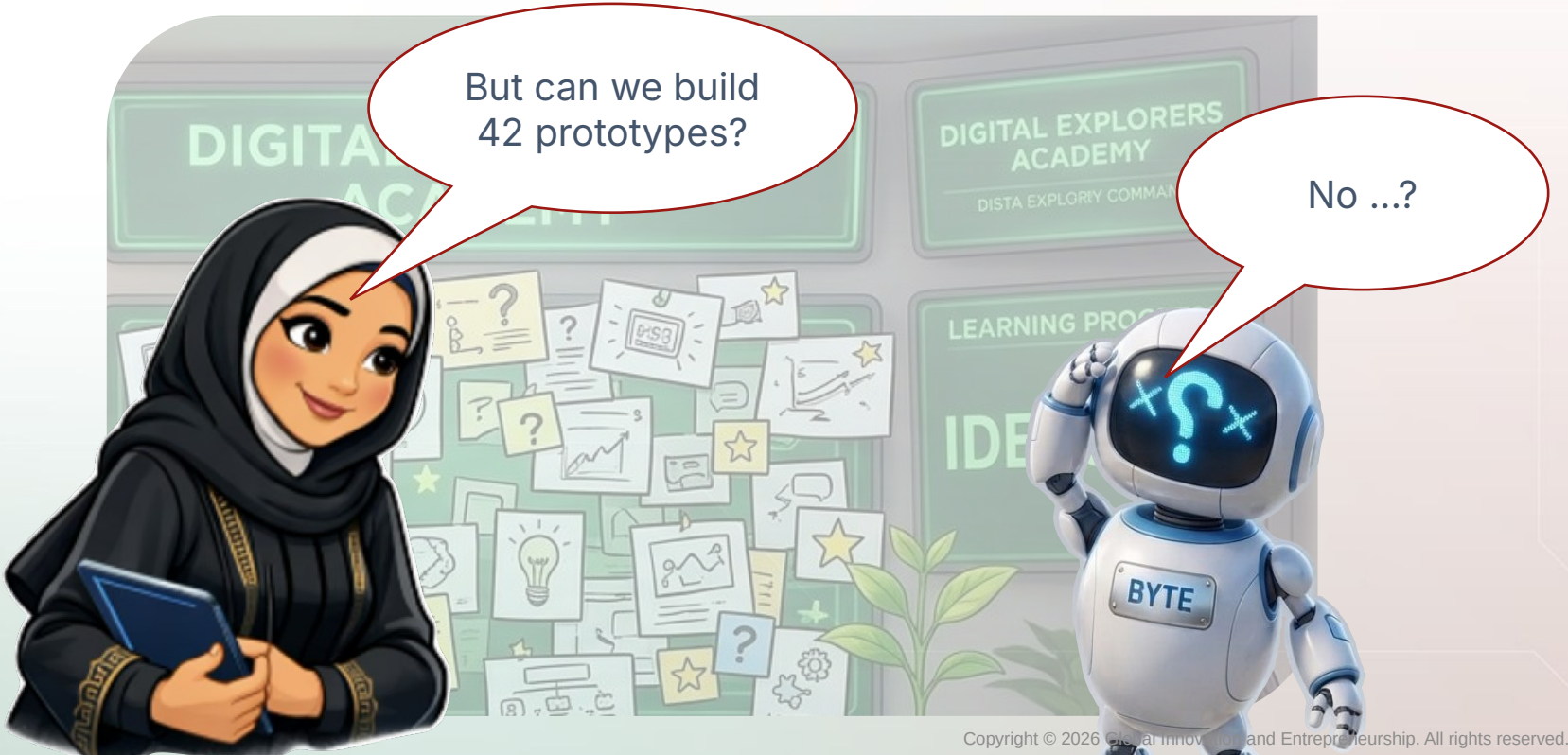

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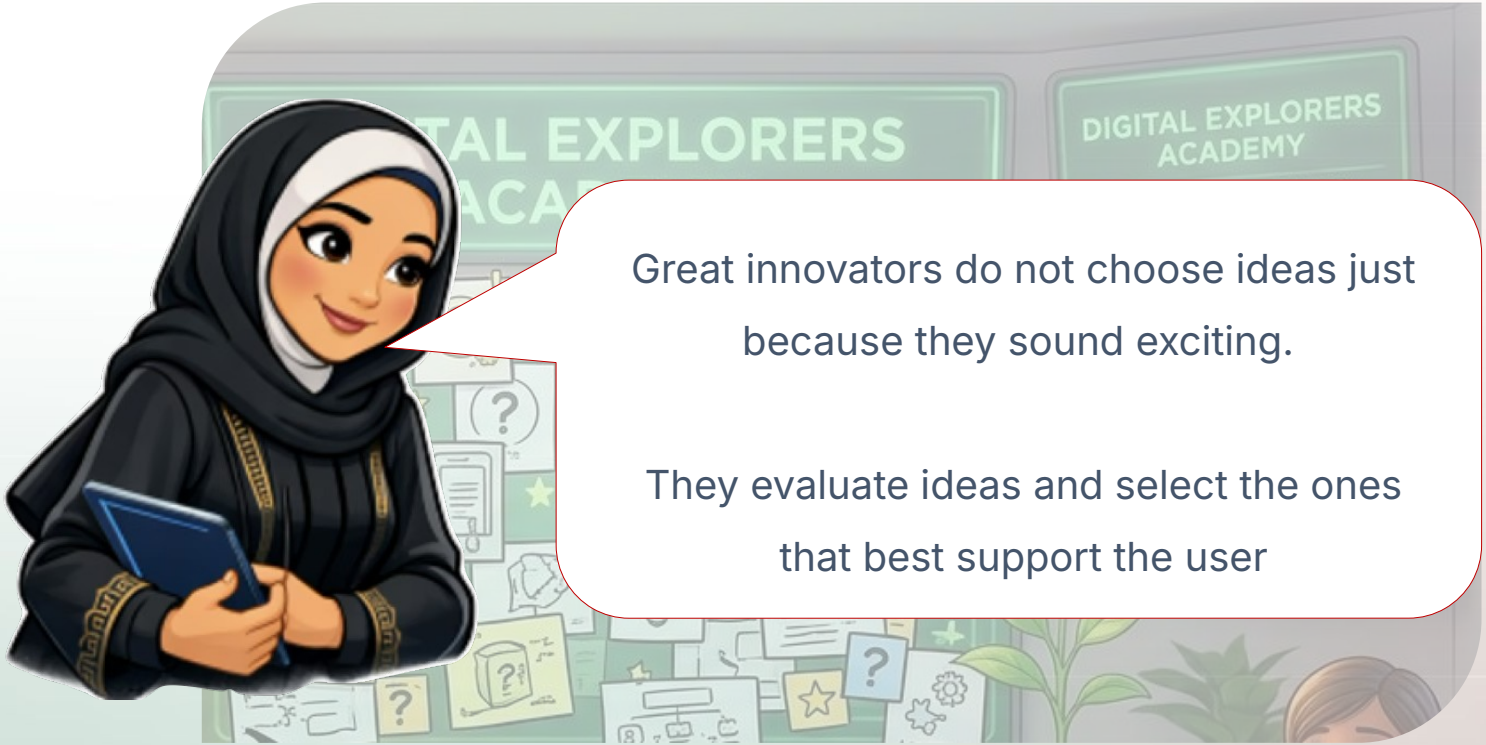

Great innovators do not choose ideas just because they sound exciting.

They evaluate ideas and select the ones that best support the user

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How Do Innovators Choose Ideas?

To move from a massive list of 42 possibilities down to a single, actionable prototype, innovators rely on a structured evaluation process. You must consider three critical evaluation questions to guide your selection.

User Helpfulness

Ensuring that the chosen idea is helpful to the specific user.

Practical Feasibility

Ensuring that the idea is practical for the team to create.

User Desirability

Ensuring that the idea is desirable for the user to adopt.

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Question 1: Does It Help the User?

Solving User's Core Problem

Focuses entirely on the user's core problem: Does it help them?

Example: In Maya's case, you must ask whether the idea actually solves Maya's direct need, ensuring the solution addresses the challenge at hand rather than introducing unrelated features.



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Question 2: Can We Build or Test It?



Feasibility & Resources

Determine if you can create a simple version of the idea with the materials you currently have.

An idea might be brilliant, but if it requires impossible resources, it cannot move forward.

Example: A homework checklist can be tested quickly and easily with basic materials, ensuring the concept is feasible to prototype in the real world.

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Question 3: Would the User Want to Use It?

Willingness to Adopt

Would the user want to use it? Even if an idea solves the need and can be built, you must ask if the solution would be genuinely useful and enjoyable for Maya to interact with daily.



If a solution is too frustrating, the user will abandon it.

This question ensures the final idea is user-friendly and appealing.

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KEY TAKEAWAY

True Innovation is About Effectiveness & Practicality

The best idea is not always the biggest or most complicated. The winning concept is simply the idea that best helps the user and is worth testing.

THE APPROACH

Innovators do not search for a perfect idea from the very beginning; instead, they choose an idea that solves a real problem, and then they commit to testing and improving it over time through simple prototypes.

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MISSION 002

Technical Tracks

Live Session – Day 6



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Agenda

1. Review & Celebrating Day 5 Top Performers
2. Explanation: Technology Track (Artificial Intelligence (AI)) & Ideate Stage
3. LMS Content & Assignment Overview
4. Live Q&A

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Eng. Muhammad Al-Bitar

Managing Director, MENA Robotics

AI Innovators

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Welcome Back Detectives!



So far, you discovered Maya's real problem! You discovered that Maya doesn't simply forget homework;

She needs a better way to stay organized.

Congratulations! You've officially completed the Define stage

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Captain Noor receives another message.



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Byte becomes excited





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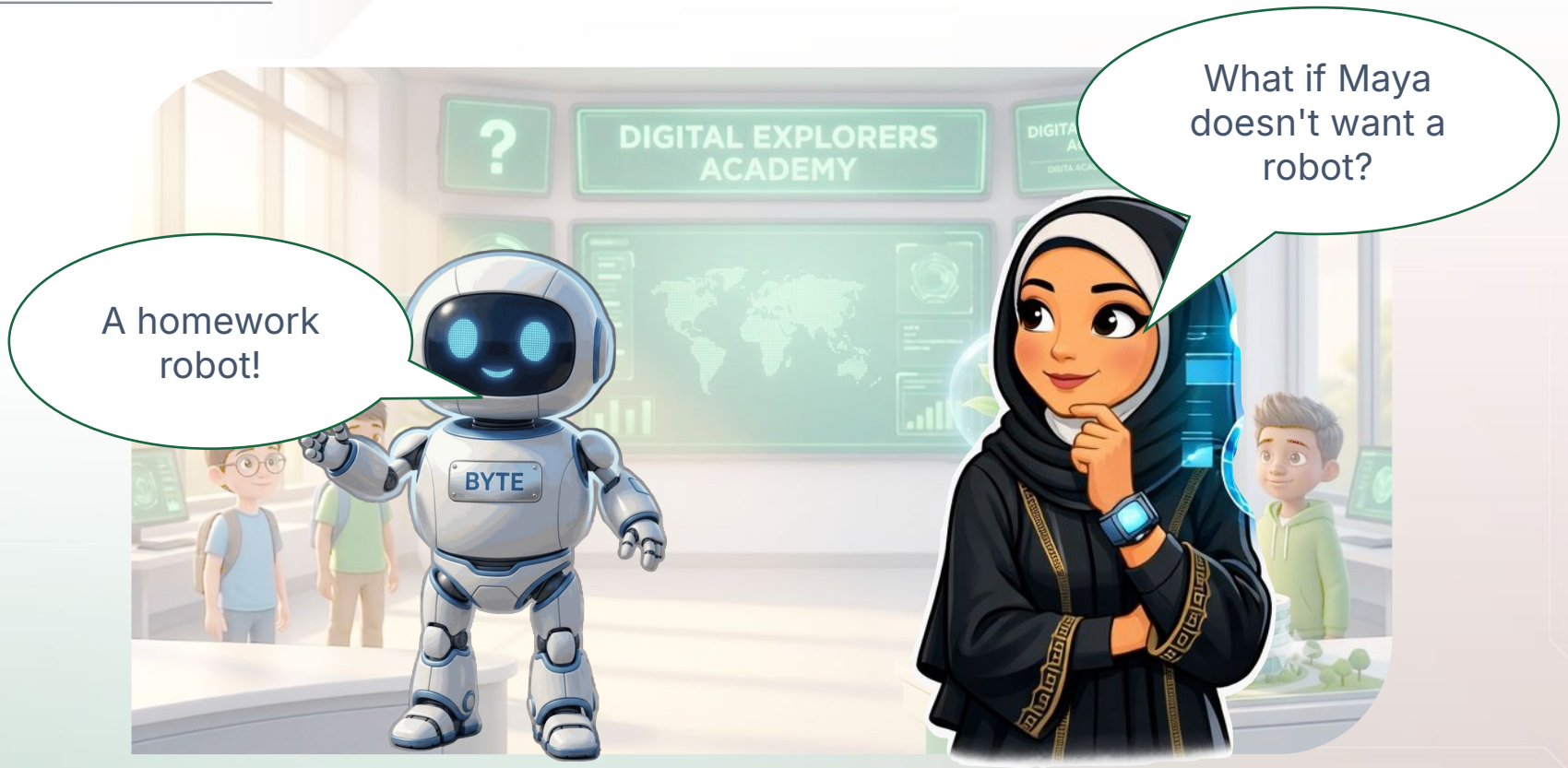

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Byte looked confused...



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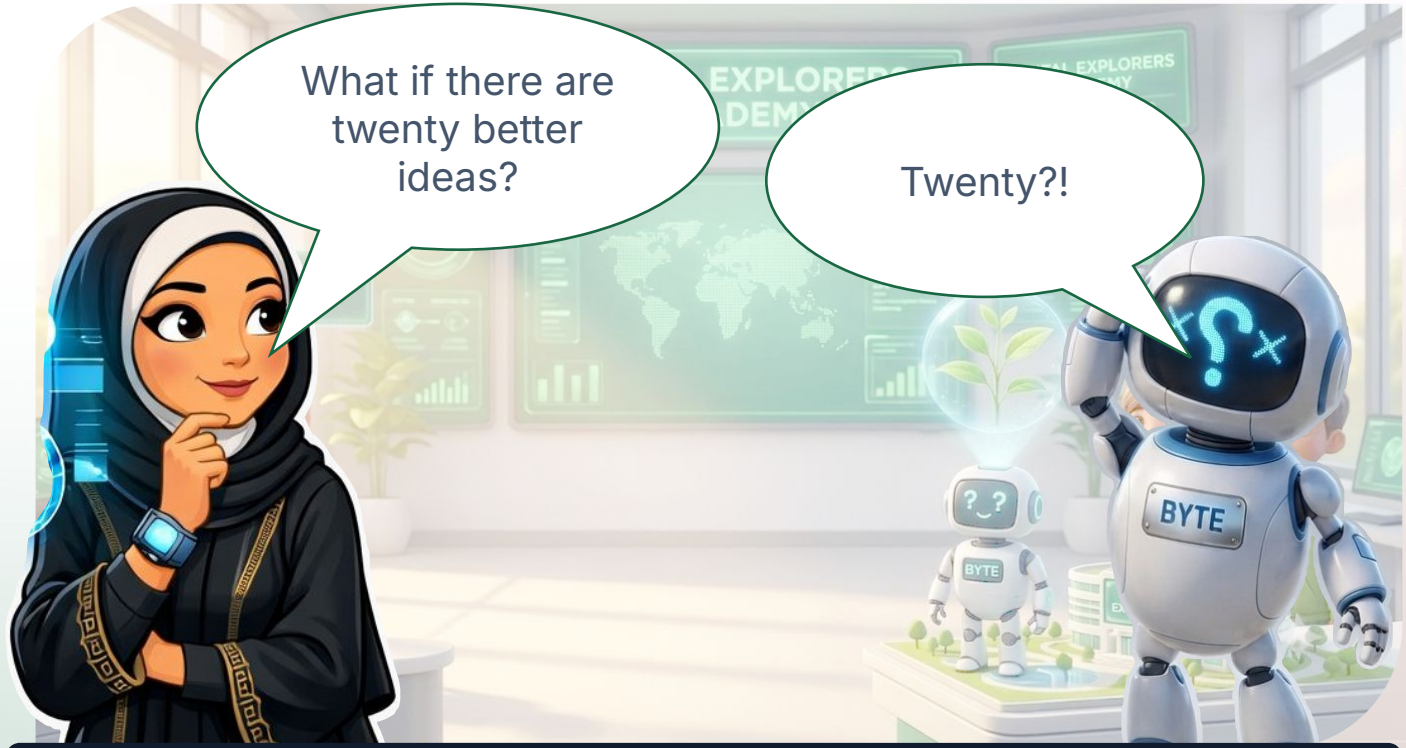

Great innovators never stop at their first idea.

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One Problem ...

Many Possible Solutions!





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1 · Empathize

Helped us understand the user

2 · Define

Helps us synthesize findings and frame the problem

Technologies:

- 🤖 Artificial Intelligence
- 🌐 Internet of Things
- 🔒 Cybersecurity
- 🌊 Ocean Robotics
- 🚀 Space Exploration



3 · Ideate

Create ideas

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Live Activity 1

Hands-Free Book Carrying Challenge

Let's put this into practice with a brainstorming challenge:

How many ways can you carry a book without using your hands?

There isn't only one answer to this problem. Some examples include:

- Using a backpack
- Carrying it in a bag
- Tucking it under your arm
- Balancing it on your head
- Placing it inside a box
- Attaching it to a bicycle



See? This is exactly how innovators think—they look for multiple diverse answers to a single challenge.

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The Rules of Brainstorming:

Quantity Over Quality

RULE 01

Aim for quantity over quality.

As you enter the Idea Factory, you must follow the core rules of brainstorming. Your mission is simple: Create as many ideas as possible.

If we judge ideas too early, we stop the flow of creativity. Every idea, even a "homework robot", is a valid starting point during the Ideate stage.

Core Mindset

"Don't judge. Just imagine."

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Collaborative Ideation: Building on the Ideas of Others

A key objective of the Ideate stage is learning to **build on the ideas of others**.

Innovation is rarely a solo activity. When someone shares an idea, even if it seems wild or impractical at first, your job is to see how you can add to it, change it, or combine it with another idea to make it even better.

This collaborative approach multiplies our creative power and leads to solutions that no single person could have invented alone.



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Evaluating Options: Selecting Your Most Promising Ideas

The Ideate Transition

QUANTITY

1. Generate

Just Imagine

Focus on creating a massive pool of creative, unrestricted concepts without judgment.

QUALITY

2. Select

Careful Review

Differentiate options and select the most promising ideas using simple criteria.

Differentiating the Skills

While generating ideas is about quantity and imagination, the second part of the Ideate stage requires a different skill.

Once we have a massive pool of creative concepts, we must select the most promising ideas using simple evaluation criteria.

Goal: Transition from 'just imagine' to finding solutions that best address Maya's real challenge of staying organized.

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Today... You'll enter the Ideate Stage. Your mission is simple. Create as many ideas as possible. But remember... Don't judge. Just imagine.

Yesterday, you discovered Maya’s challenge. Today, you become true idea creators. Get ready to fill the factory with your brilliance!

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Q1 - What is the primary goal of the Ideate stage in the Design Thinking process?

A. To generate a wide range of potential solutions.
B. To build a high-fidelity working prototype.
C. To synthesize findings and frame a problem.
D. To gather deep emotional insights from users.

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Q2 - Which core mindset is essential for a successful brainstorming session?

A. Analyze. Don't create.

B. Don't judge. Just imagine.

C. Correct. Don't combine.

D. Simplify. Don't expand.

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Q3 - During the initial phase of ideation, why is 'quantity over quality' prioritized?

A. ~~To avoid the need for evaluation criteria.~~
B. To produce a massive pool of creative concepts.
C. To ensure every idea is technically feasible.
D. To speed up the prototyping and testing phase.

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Q4 - What does 'collaborative ideation' primarily involve?

A. Working in isolation to avoid being influenced.
B. Competing to find the single best idea.
C. Rejecting wild ideas to focus on practical ones.
D. Building on and combining the ideas of others.

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Q5 - Which action represents the 'Ideate Transition' from quantity to quality?

A. Immediately building every idea that was shared.
B. Ignoring the user's challenge to think bigger.
C. Generating more ideas when the pool is full.
D. Selecting promising ideas using simple criteria.

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Q6 - Technologies like Artificial Intelligence or IoT should be viewed as the final solution rather than tools.

A. False

B. True

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Q7 - Great innovators stop after finding their first good idea to save time and resources.

A. False

B. True

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Build the First Version

Mission 004: Prototype Workshop

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The Power of Prototyping

Workshop Learning Objectives

Workshop Overview

A 120-Minute Session

This workshop is designed to help you master the prototyping stage of your innovation journey.

During our **30-45 minute synchronous live session**, we will cover core objectives to build your hands-on innovation skills.

Key Learning Objectives

- Explain exactly what a prototype is and understand the core reasons why innovators create prototypes in the first place.
- Understand that prototypes are intentionally simple versions of an idea created specifically for testing purposes.
- Learn how to choose an appropriate prototype format that best fits your specific idea.
- Create a basic prototype based entirely on a user's specific needs.
- Discover how to use direct feedback to actively improve your ideas.
- Understand that making mistakes and implementing changes are a fundamental, expected part of the innovation process.

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Mission Briefing

MISSION UPDATE — MISSION 004 — STATUS: IDEA SELECTED

The mission begins in the Innovation Command Center. As Captain Noor enters, the screen flashes. Suddenly, Byte appears carrying a massive, complicated machine.

Captain Noor: *(surprised)* "What is that?"

Byte: *(smiles proudly)* "My prototype!"

Captain Noor: *(curious, examines the machine)* "What does it do?"

Byte: *(proud smile fading slightly)* "Actually... I'm not sure yet."

Captain Noor: *(laughs)* "Byte, did you build something before knowing what Maya needed?"

Byte: *(looks down)* "Maybe."



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eat innovators don't build first. They understand first."

Following Byte's mistake of building a massive machine without knowing its purpose, Captain Noor delivers a critical lesson about the design thinking process.

This rule is the foundation of successful prototyping. You must resist the urge to immediately start constructing complex solutions before you fully comprehend the problem you are trying to solve. Understanding the user's needs, their challenges, and the specific context of their problem must always precede the building phase. Building without understanding leads to inventions that, while perhaps impressive like Byte's machine, fail to actually help the user.

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Connecting to Maya: Our Core Challenge

Captain Noor opens Maya's official file to reveal the team's primary objective. She explains the transition from our previous work to today's mission: **"Yesterday, you created ideas. Today, you will bring one idea to life."**

However, there is a crucial constraint to remember: **"But you don't need to build the final product."**

Consider this scenario: If you wanted to build an entirely new game, would you immediately create the whole, finished game? The answer is no. Instead, you must think about what small, simple version you could create first, such as a drawing, a small physical version, a basic model, or a quick test version.

Our Core Challenge

"How might we help Maya organize and remember her homework more easily?"

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Introducing Prototyping: What is a Prototype?

In the world of innovation and design thinking, we define a **prototype** as a simple version of an idea that helps us test and improve it.

A prototype is **not a finished product**. It is not perfect, and it is not meant to be permanent. Instead, it is a rough draft or an early model designed specifically to bring an abstract idea into the physical world so that it can be evaluated.

The main purpose of creating this simple version is **to learn**. By making something tangible, innovators can quickly see what works, what fails, and what needs to be changed before spending significant time or resources building the final, polished version.



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Prototype Formats & Creative Examples

Prototypes can take many different forms depending on what kind of idea you are trying to test. You do not need expensive materials or advanced technology to create an effective prototype.

A new app

You do not need to write code. Instead, you can simply draw the digital screens on pieces of paper.

A new robot

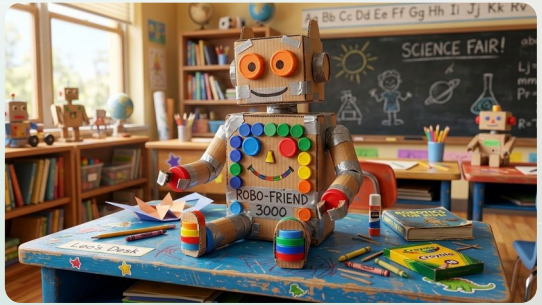
You do not need metal or motors. You can build a basic physical model using cardboard and tape.

A new game

You do not need to design the entire system. You can create a sample round to test the basic rules.

A new service

You do not need to build a business. You can act it out through roleplay to see how the service would work.



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Activity: The Fast Prototype Challenge

The 5-Minute Challenge

You have **exactly 5 minutes** to create a prototype for a **better pencil**.

Option 1: Draw It
Sketch your new pencil design on paper.

Option 2: Describe It
Write out the specific features and improvements.

Option 3: Act It
Use your hands or props to demonstrate how someone would use it.



Rapid Prototyping Goal
The goal is speed and getting the idea out of your head and into the world.

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Reflection: What Did We Learn from Quick Prototyping?

Now that the 5-minute timer is up and you have completed the Fast Prototype Challenge, it is time to reflect on the experience.

Discussion Question

"What did you learn by creating a quick version instead of only discussing the idea?"

- When we only talk about ideas, they remain perfect in our heads. But when we are forced to draw, describe, or act them out quickly, we immediately discover the practical challenges.
- We learn that prototypes can have entirely different levels of detail, and that even a 5-minute rough draft can reveal flaws or inspire new improvements that we never would have discovered just by talking.

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Simple vs. Detailed Prototypes

It is important to understand that prototypes evolve over time. They can have very different levels of detail depending on where you are in the innovation process.

Early Stage

Simple Prototypes

Early prototypes are usually very simple because innovators are still actively learning about the problem and the user.

Example: *A rough pencil drawing of an app screen on paper.*

Later Stage

Detailed Prototypes

Once you have learned more and refined your idea, your detailed prototype becomes highly realistic.

Example: *An interactive digital app that people can actually tap and click.*



⭐ **Golden Rule: Start simple. Improve after learning.**

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Iterative Design: Feedback, Testing, and Mistakes

The prototyping phase is not just about building; it is about learning through an iterative cycle. As outlined in our learning objectives, a key part of this process is using feedback to improve your ideas.

1. User Feedback

When you create a simple version of an idea for testing, you are actively inviting feedback from users. This feedback highlights what works and what fails.

2. Embracing Mistakes

It is crucial to understand that mistakes and changes are a natural, expected part of innovation. Every mistake made on an early, simple prototype is a valuable lesson.

3. Rapid Refinements

Early failure prevents a much larger mistake on the final product. By testing quickly and gathering feedback, innovators can confidently make changes and improve their designs.

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...ototype Fast. Learn Faster."

As we close today's live session, remember the core lesson of the Prototype Workshop.

Captain Noor's Thought

"Today, you are not trying to create the perfect invention. You are creating something that helps you learn."

The Goal of Prototyping

Perfection is not the goal; learning is. Do not spend hours trying to make your first version flawless. Instead, build it quickly, test it immediately, and gather feedback.

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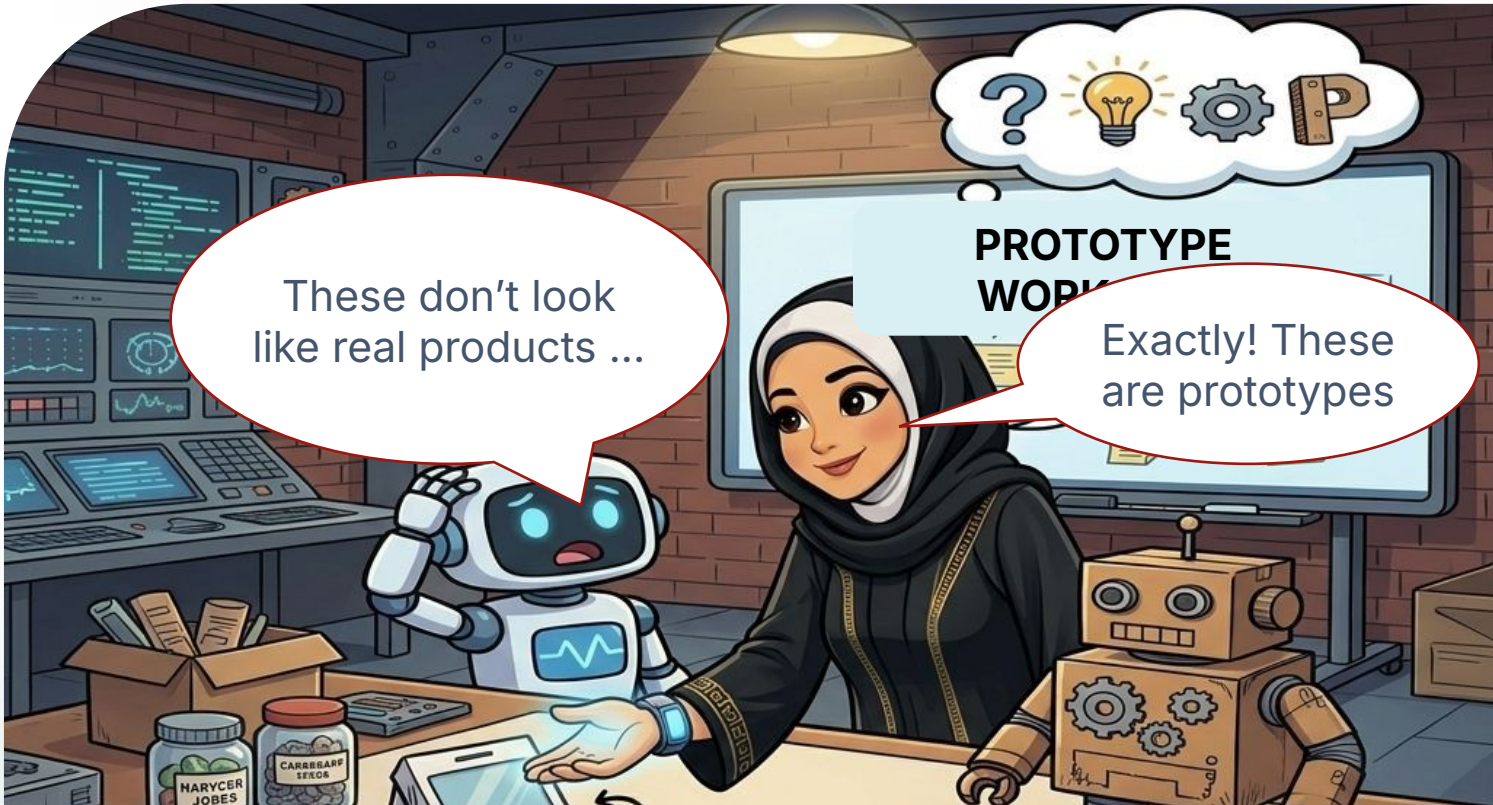
Prototype Stage

Byte looks around the room at the paper phone, the cardboard robot, and the drawing of an app, and feels incredibly confused.

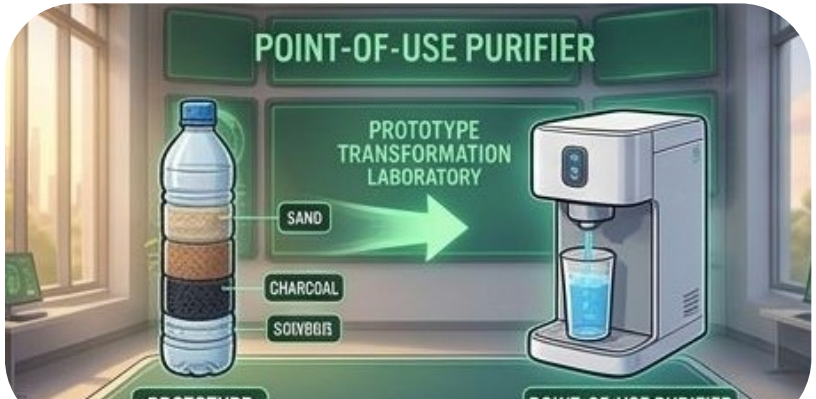
Byte scratches his head and examines these rough, taped-together models ma

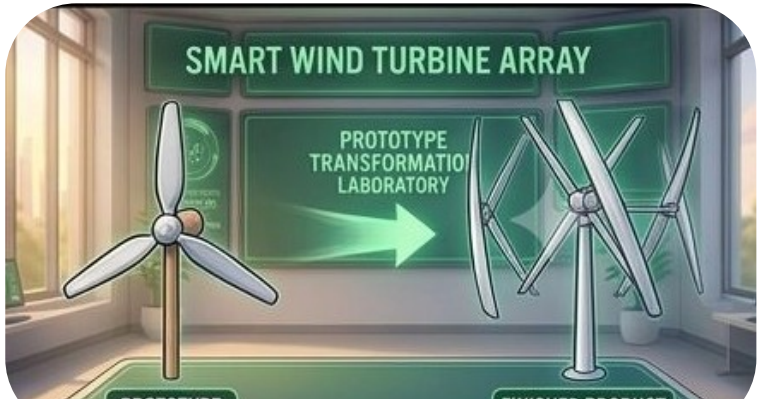




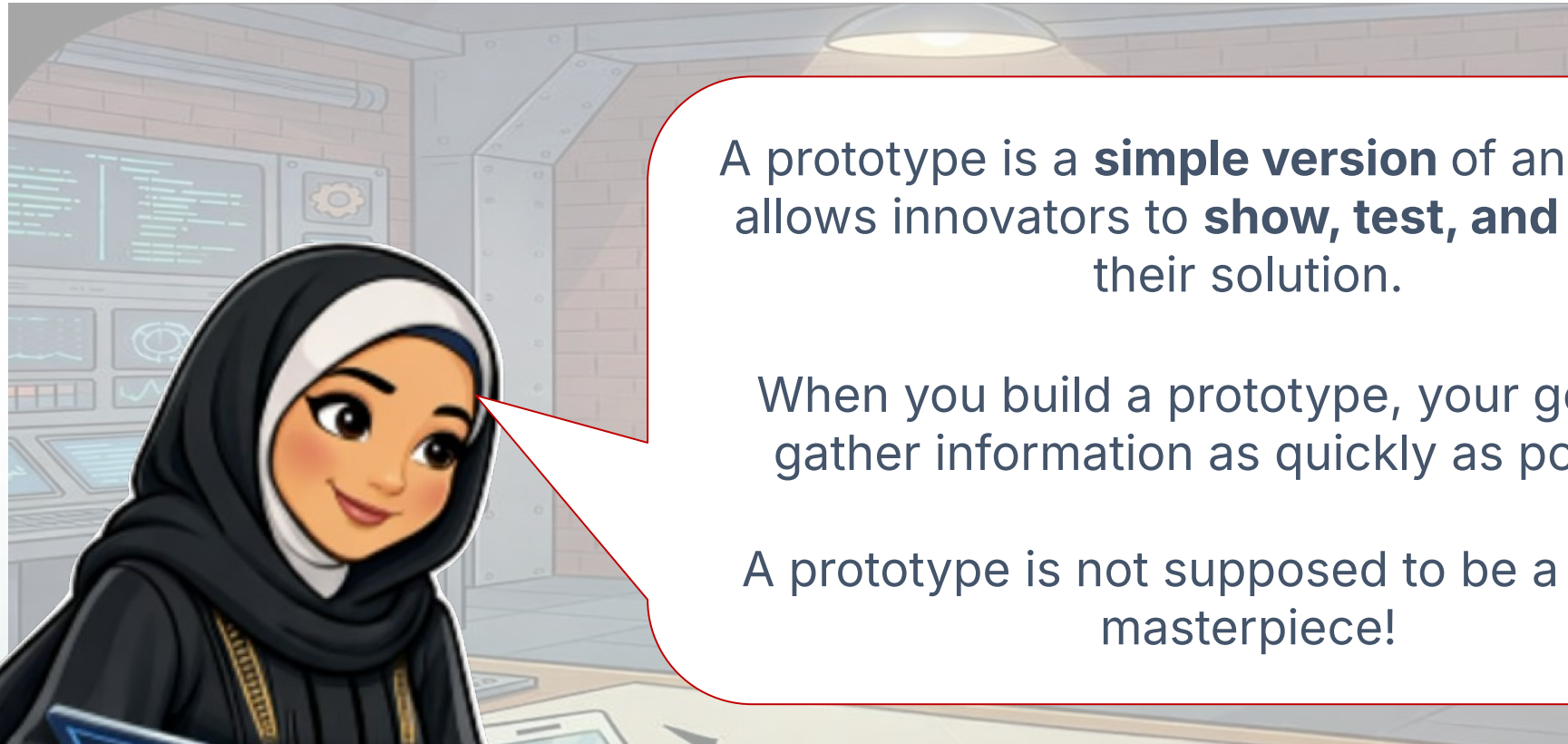

These don't look like real products ...
Exactly! These are prototypes
PROTOTYPE

All products start with a prototype.









A prototype is a **simple version** of an
allows innovators to **show, test, and**
their solution.

When you build a prototype, your g
gather information as quickly as po

A prototype is not supposed to be a
masterpiece!

A prototype helps us answer questions:

Does the idea work?

This checks if the prototype physically

Do people understand it?

This checks if users can easily figure out how to

Does it solve the user's problem?

This checks if the product actually helps

Quick Quiz:
Which One is a Prototype?

A. A finished prod

B. A simple model

C. A random draw

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Prototype Stage

Training Module 2:
Types of Prototypes



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What is Rapid Prototyping?

- A process of quickly creating a simplified, early version of an invention or idea.
- Instead of spending months or years trying to build a perfect final product right away, designers and engineers build quick, rough models to see if their concept actually makes sense in the real world.
- It is all about taking the invisible thoughts out of your head and turning them into something tangible that you can see, touch, or interact with.
- It is a fundamental part of the design thinking process.



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Sketch Prototypes

Explaining Ideas Quickly

- Simplest and fastest ways to start the design process.
- It consists of a simple drawing of an idea on paper or a whiteboard.
- It takes almost zero time and no special skills or materials to create.
- *Example: A drawing of Maya's homework organizer app.*



Useful when we want to explain an idea quickly.

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Paper Prototypes

Testing How Things Work

- A functional, paper version of a product.
- Instead of just looking at a drawing, users can actually "use" the paper model.
- *Example: Drawing app screens on paper and pretending to click buttons.*



Useful when testing how something works and observing how a user navigates through a system.

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Physical Model Prototypes

Showing Shape and Design

- When your idea is a tangible object rather than a software program, you need a physical model prototype.
- Made with simple, everyday materials that you can hold in your hands like cardboard, paper, legp, and recycled materials
- *Example: A desk organizer built from cardboard and Lego bricks to show how Maya would physically sort and store her homework.*



Useful when you need to show the shape, size, or overall physical design of an invention.

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Role-Play Prototypes

Testing Experiences and Services

- Not all inventions are physical objects or digital apps; sometimes, you are designing a service or a human experience.
- In these cases, a role-play prototype is the best tool. This involves physically acting out how a solution or service works in real time.
- *Example: One student acts as Maya. Another acts as a homework assistant.*



Useful when testing experiences and services because it helps designers build empathy, understand human emotions, and figure out the exact steps required to make an interaction smooth, helpful, and user-friendly.

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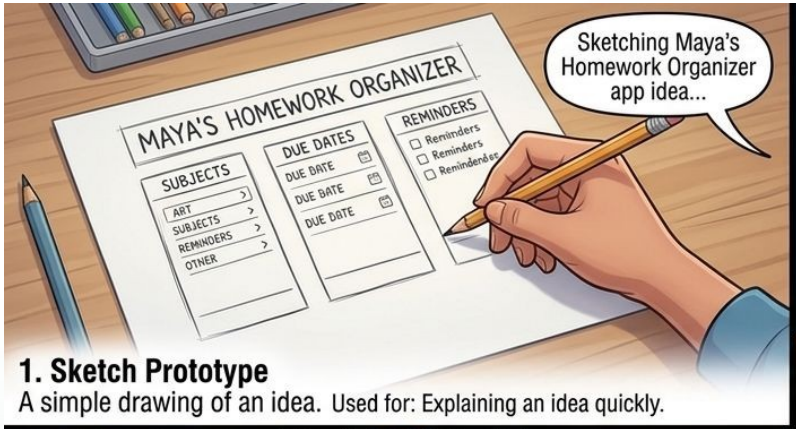
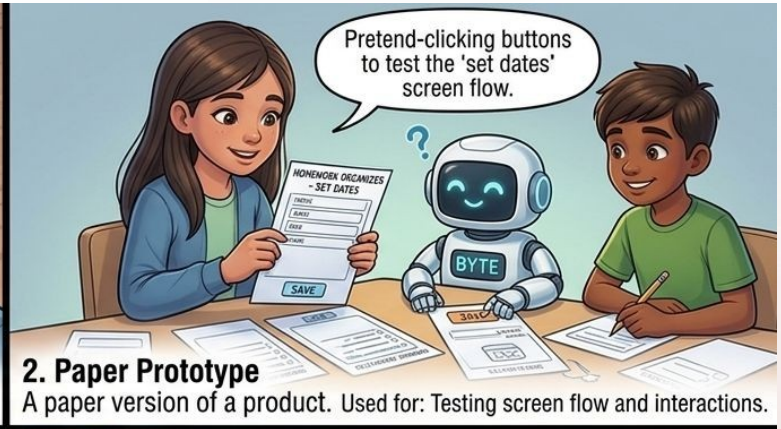
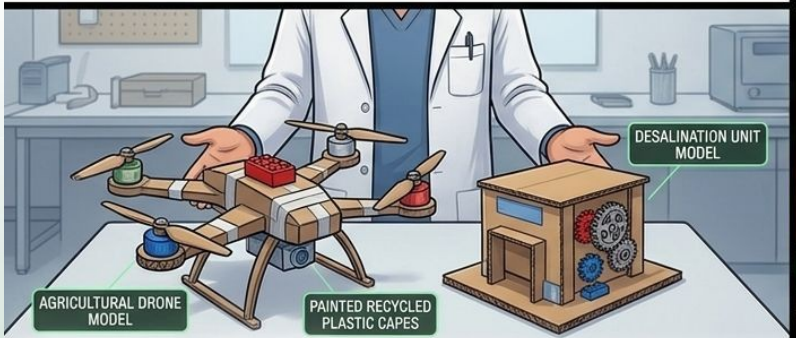


1. Sketch Prototype
A simple drawing of an idea. Used for: Explaining an idea quickly.



2. Paper Prototype
A paper version of a product. Used for: Testing screen flow and interactions.



3. Physical Model Prototype
A model made with simple materials (Cardboard, Paper, Lego, Recycled materials).
Used for: Showing the shape and form.



4. Role-Play Prototype
Acting out a solution's function. **Used for:** Testing experiences and services.

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Digital Prototypes

Designing for the Screen

- Created using computer software to simulate how a final digital product will look and behave on a screen.
- *Examples of digital prototypes include an app wireframe (a digital blueprint of the layout), a website mockup (a colorful, detailed picture of the site), or a fully clickable screen design where users can navigate between pages using a mouse or touchscreen.*



Useful when designing for the screen to test colors, fonts, button placements, and digital navigation flows before handing the project over to software developers for actual coding.

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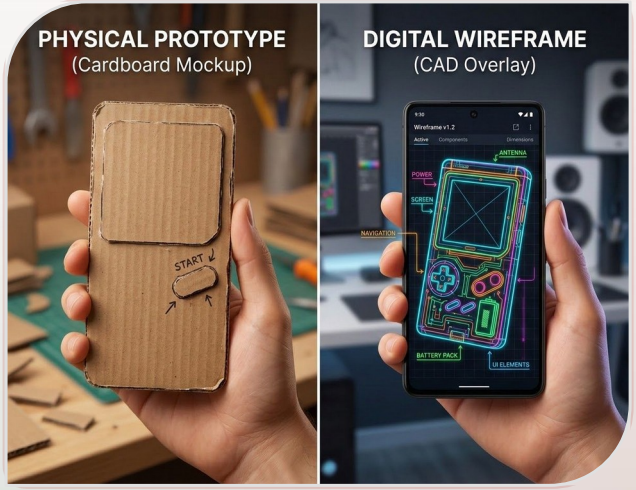
Comparing Prototypes

Physical Models vs. Digital Mockups

- **Physical models** (like those made of cardboard or Lego) are essential when your solution is a tangible object. They help you test spatial relationships, weight, ergonomics, and how a human hand might interact with a device.
- In contrast, **digital mockups** (like clickable app screens) are necessary when your solution lives on a computer or smartphone. They help you test visual layouts, digital navigation, and user interface logic.
- Sometimes, complex projects require both!



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Prototype Stage

Training Module 3:
Prototype Rules



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Byte proudly presents a giant golden robot.



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That is a very long time for a prototype!

Remember, a prototype is not created to be perfect. It is created to help us learn.

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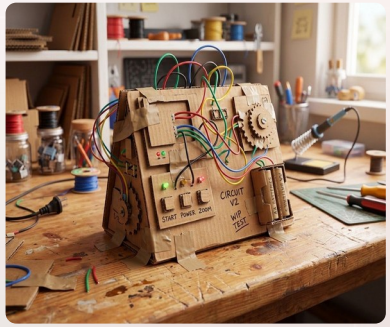
Prototypes Are Built to Learn, Not to Be Perfect

- A prototype is not supposed to be a finished masterpiece. A good prototype is often messy, made of cardboard, tape, or rough code, and that is exactly how it should be.
- When you build a prototype, your goal is to gather information as quickly as possible. *Does this wheel turn? Is this material too heavy? Will people actually understand how to use this button?*
- By building something rough and testing it immediately, you learn what works and what fails before you spend time and resources on the final version.



Captain Noor's Golden Rule
"Lower your expectations for perfection and raise your expectations for learning"

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The Four Golden Rules of Prototyping

01
Keep It Simple
ensures that you do not get bogged down in unnecessary details or decorations.

02
Speed Wins
teaches you to build your ideas as fast as possible so you can start testing them immediately.

03
Feedback Loop
highlights the absolute necessity of showing your work to other people to gain fresh perspectives and discover hidden flaws.

04
Embrace Mistakes
transforms the way you view failure, turning every broken model or failed test into valuable data.

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01

Keep It Simple

If you are designing a new video game, do not worry about the graphics or the music first; just use simple squares and circles to see if the rules of the game are actually fun.

If you are inventing a new tool, use cheap, accessible materials like cardboard, paper clips, rubber bands, and duct tape. You do not need 3D printers or expensive metals to test a concept.

The goal is to create a **"low-fidelity"** model. This means it looks rough but functions just enough to test your main hypothesis.



Example: A low-fidelity cardboard game controller

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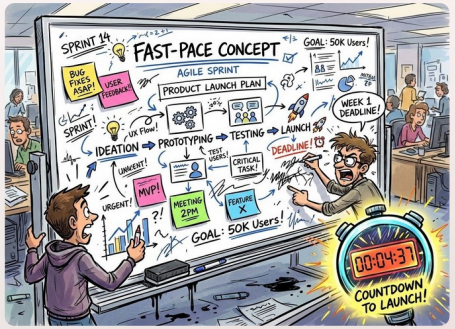
02

Speed Wins

In the world of innovation, time is your most valuable resource. The faster you can take an idea out of your head and put it into the real world, the faster you will discover if it is actually a good idea.

This concept is known as **“Rapid Prototyping”.** It involves setting a strict time limit, like 30 minutes or one hour, to build a working model of your concept.

If you build quickly, you can test quickly. And if you test quickly, you can find out what is broken and fix it before the day is even over!



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03
Feedback Loop

A prototype is completely useless if you are the only person who ever sees or uses it. As the creator, you are naturally blind to your own design flaws because you already know how it is supposed to work.



THE CYCLE: BUILD → SHARE → LISTEN → IMPROVE → REPEAT

✓ **Put it in other hands:** Test your creation with friends, teachers, or family members.

✓ **Watch closely:** Do not explain how to use it. If they get confused, your design needs improvement.

✓ **Active Learning:** Seek out honest constructive criticism to map out your next improvements.

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04

Embrace Mistakes

The final and most important golden rule is to **“Embrace Mistakes”**. In regular school tests, a mistake means you get a lower grade. But in the world of prototyping, a mistake is actually a victory, because it provides you with new, valuable data. Every time a prototype breaks, falls apart, or fails to work, it is teaching you exactly what not to do next time.

The first prototype will almost certainly be terrible, and we should be okay with that!

Celebrate the failures because each failure eliminates a bad option and pushes them closer to the correct solution. If you are terrified of making a mistake, you will be too scared to try wild, creative, and innovative ideas.



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Scenario 1: Week-long Polish vs. Swift Collaboration

Which of these is the Good Prototype Behavior?

Inventor A (The Polisher)

"I spent one entire week making my prototype look absolutely perfect, painting it and hiding all the tape, before I finally showed it to anyone."

Inventor B (The Collaborator)

"I spent just one hour making a very simple, rough version out of cardboard, and then I immediately asked three of my friends to test it and give me feedback."

Which of these is the Good Prototype Behavior?

Inventor A fell into the trap of wasting time on perfection, meaning if the core idea is flawed, they just wasted a whole week. Inventor B followed **Rule 2 (Speed Wins)** and **Rule 3 (Feedback Loop)** by creating something quickly and collaborating with others to learn what needs to be improved right away.

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Scenario 2: Iterative Pivot vs. Fear of Testing

Which of these is the Good Prototype Behavior?

Inventor C

"My first prototype completely fell apart when I tested it. It didn't work at all, so I used what I learned to completely change my idea and try a new approach."

Inventor D

"I have a prototype, but I really do not want anyone to test it because I am afraid they might find problems or tell me that it is broken."

Inventor C is the clear winner! Inventor C is following **Rule 4 (Embrace Mistakes)** by failing forward. They took a broken prototype and used it as data to pivot to a better idea.

Inventor D is letting fear hold them back, ignoring the vital **Feedback Loop** because they are too attached to being 'right' rather than learning what is actually functional.

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Always rely on the Four Golden Rules:

- **Keep It Simple:** Use cheap materials and focus on the core idea.
- **Speed Wins:** Build fast so you can test fast.
- **Feedback Loop:** Share your rough work with others and listen to their advice.
- **Embrace Mistakes:** Treat every failure as valuable data that guides you to the right answer.



You are now ready to take your wildest ideas, build them quickly, break them cheerfully, and improve them continuously. Now, go out there and start building!

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Prototype Stage

Training Module 4:
Creating User's Prototype



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Captain Noor returns to Maya's challenge.

Problem: Maya needs a better way to organize and remember her homework.



Today, you will turn that idea into something Maya can see, use, or experience.

But remember...

A prototype is not the final solution.

It is a simple version that helps us learn

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The Three Critical Questions Before Starting

1. What idea am I prototyping?

Clearly define the specific solution you are trying to build. Don't try to build everything at once.

2. What type of prototype?

Decide on the format: sketch, paper screen, physical model, or a role-play scenario.

3. What do we want to learn?

Are we testing if the idea is fun, easy to use, or if it actually helps Maya remember homework?

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Example 1: Homework Reminder App

If your idea is a Homework Reminder App, you do not need to know how to code to build a prototype. You can use paper!

- **Screen 1:** Design a view showing “Today’s Homework” so Maya knows her immediate tasks.
- **Screen 2:** Design a view highlighting “Important Deadlines” for upcoming projects.
- **Screen 3:** Design a view displaying "Completed Tasks" to give Maya a sense of accomplishment.



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Example 2: Smart Homework Folder

If your idea is a physical object, your prototype should be a tangible model that Maya can hold and interact with.

Create a simple, **low-fidelity model** using basic craft supplies: use cardboard to represent the main structure, and add clearly labeled sections or tabs for different school subjects (like Math, Science, Reading). This lets Maya practice putting papers in the sections and tell you if it works!



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Captain Noor's Golden Mindset Rule

A prototype does not need to be perfect.
Focus on learning, not perfection!

Captain Noor's Advice

Do not worry about making it look beautiful or flawless. It only needs to show your idea clearly enough for Maya to try it and tell you what she thinks.

Focus on Learning

Remember, the prototype is not the final answer. It is simply a way to ask Maya an important question about your idea. Focus on learning, not perfection. Build it fast, test it, and learn how to make it better!

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Mission 5: Meet the Real User

Design Thinking Stage: Test

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The 'Test' Phase

Welcome to the 'Test' phase of the Design Thinking process. In this critical stage, we take the ideas and prototypes we have built and put them in front of real users. This stage is not just about showcasing our work; it is a rigorous process of validation and discovery.

We allocate 120 minutes to deeply understand how our target audience interacts with our solutions. Testing allows innovators to observe real-world interactions, uncover hidden flaws, and validate whether the core problem is actually being solved.

It is a fundamental shift from creating in isolation to engaging with the real world, ensuring our designs are functional, accessible, and truly beneficial to the people who need them.

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Mission Learning Objectives

Our comprehensive learning objectives for this 120-minute mission are designed to make you effective testers and innovators. By the end of this session, you will be able to:

01. Clearly explain exactly why innovators must test their prototypes with real people.

02. Understand the critical importance of actively collecting user feedback.

03. Learn how to ask the right questions that encourage users to openly share their experiences.

04. Develop the analytical skills to distinguish between helpful, actionable feedback and unhelpful comments.

05. Learn how to directly apply this feedback to improve a prototype, recognizing that true innovation is a continuous cycle of learning, iterating, and improving.

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Innovation Command Center

PROTOTYPE READY

THE CLASSROOM NARRATIVE

Byte enters carrying the team's newly finished prototype, feeling incredibly proud of the accomplishment.

Byte: "Captain Noor! We finished it!" *(assuming the hard work is entirely behind them)*

Captain Noor: *(Smiles at the great work but shakes her head, knowing the journey continues)*

Byte: "So we are done?" *(confused, pointing out that the building phase is complete)*

THE MISCONCEPTION

Believing that finishing the physical creation means the project is successful. Building the prototype is only the beginning!

SHIFTING OUR MINDSET

As we enter the User Review Room, we must shift our perspective from **builders** to **testers** to truly validate our work.

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Building Is Not the Finish Line

Putting Prototypes to the Test

As Captain Noor wisely tells Byte: **"Building is not the finish line."** Completing a prototype is merely reaching a milestone, not the final destination of the design process. The act of building only proves that we can construct our idea; it does not prove that our idea is the right solution.

The real question we must constantly ask ourselves is: **"Does it actually help the user?"** A prototype sitting on a desk has no value until it is placed in the hands of the person it was designed for.

Testing is the critical bridge between our assumptions and reality, ensuring our hard work translates into meaningful impact rather than just a finished object.



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Connecting with Our Primary User: Maya

The Core Mission

Captain Noor opened Maya's file to remind us of our mission: to help her organize her homework. We have built a solution, but only Maya can tell us if it actually helps.

The user is the most important person in testing. We cannot guess her reactions. Directly involving Maya yields authentic insights into her workflow, struggles, and preferences.

Testing ensures our solution is tailor-made for her needs.



Interactive Prototyping & User Feedback

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Imagine you have just created a brand new game...

Which Approach Would You Take?

Option A

Give the game to yourself, play it, and decide it is absolutely perfect without outside input.

❌ *When we design for ourselves, we are blinded by our own biases and assumptions.*

Option B (Correct Approach)

Let other people try playing the game and actively ask them what they think about the experience.

✅ As designers, we are not designing for ourselves; we are designing for users. By opening our creations to others, we discover how different people interact with our work, ensuring the final product is universally intuitive, engaging, and successful for its intended audience.

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Welcome to the Feedback Challenge

Let's look at our prototype: a homework organizer designed for students. We have three different reactions from users:

- **Student A:** "I don't like it."
- **Student B:** "I like it because the colors are nice."
- **Student C:** "I think it would help me more if I could see my deadlines first."

Which feedback actually helps the designer?

The answer is **Student C**. While Student A provides an opinion and Student B offers superficial praise, Student C identifies a specific functional need regarding seeing deadlines, giving a clear path forward.



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What Makes Feedback Truly Valuable?

Good, constructive feedback is characterized by three essential traits defined in our Feedback Challenge.

01

Specific

Vague comments provide no direction, whereas pointing out exact features or missing elements gives clear guidance.

02

Helpful

The information provided should directly relate to the user's experience and functionality of the design.

03

Focused on Improving

Constructive feedback is not about tearing down the designer's hard work or offering empty compliments; it is a focused, collaborative effort to identify weaknesses and brainstorm actionable enhancements that elevate the prototype to the next level.

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...pares to open the doors to the User Review Room, she leaves us with a critical

'Maya is ready to see your prototypes. But remember... Testing is not about proving your idea is perfect.'

It is natural to want validation for our hard work, but seeking perfection blinds us to necessary improvements. The true goal of testing is entirely about discovering how to make the prototype better. It is an investigative process where we actively seek out flaws, misunderstandings, and areas of friction.

By embracing imperfections and listening closely to the user's struggles, we unlock the insights required to transform a basic prototype into an exceptional, user-centric solution.

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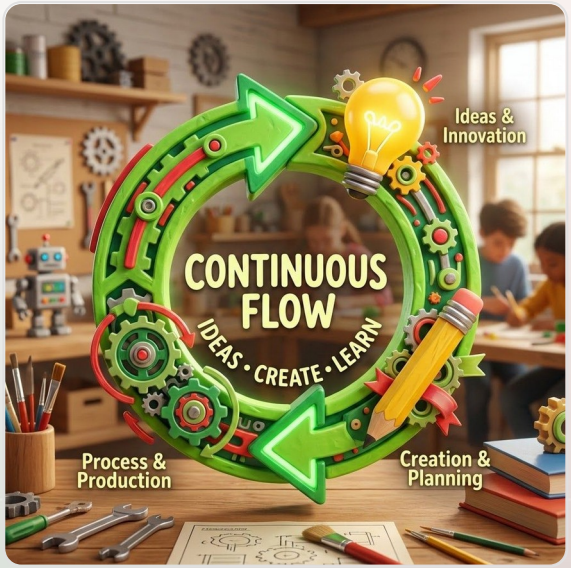
The Continuous Learning Cycle

The **testing phase** reveals a fundamental truth about design: **innovation is never a straight line**; it is a continuous, dynamic cycle of learning and improvement. When we gather specific, helpful feedback from users like **Maya**, we do not simply file it away. We take those insights and immediately cycle back to the **ideation and prototyping phases**.

We adjust, refine, and rebuild based on **real-world evidence**. This **iterative loop** of building, testing, learning, and rebuilding is the engine of true innovation. Every cycle brings our solution closer to perfectly matching the user's needs. Embracing this **continuous learning cycle** ensures that our final designs are not just creative, but **genuinely effective and deeply impactful**.



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Mission 5 Reflection

Our Journey

As we conclude Mission 5 and our 120-minute exploration of the Test phase, let's reflect on our journey.

We have learned that building is never the finish line and that the user's voice is the most critical element of design.

We discovered how to differentiate between vague opinions and highly specific, actionable feedback that drives improvement.

Reflective Questions

As you leave the Innovation Command Center today, consider these reflective questions:

- How will you approach your next prototype differently knowing that it is not meant to be perfect?
- How can you ensure you are always designing for the user, rather than your own preferences?

Remember, every piece of feedback is an opportunity to learn, improve, and drive continuous innovation.

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Test Stage

Training Module 1:
What is Testing?



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Captain Noor enters the User Review Room.



You have created a prototype.

Now it is time to learn from the person you designed it for.

But remember...Testing is not about proving that your idea is perfect.

It is about discovering how to make it better.

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What is Testing?

Testing is formally defined as the process of sharing your prototype with users and actively collecting feedback to improve your idea.

This is not a passive event; it is an active investigation.



To be a successful User Detective, you must first understand exactly what your mission entails.

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What Innovators Discover

- **What works well:** Discover exactly what works well, so they can keep those successful elements.
- **What does not work:** Identify what does not work, which highlights areas needing immediate attention.
- **User needs:** Reveal what users genuinely need, which might be different from original assumptions.
- **Next improvements:** Clarify exactly what should be improved in the next iteration.

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How Do Innovators Test Their Ideas?

Testing is more than asking questions. Great innovators learn by carefully paying attention to the user's experience. During testing, innovators:

- 👀 **Observe** what the user does, watching their interactions closely.
- 👂 **Listen** to what the user says, paying attention to their spoken thoughts and frustrations.
- ❓ **Ask** thoughtful questions to truly understand their experience and the reasoning behind their actions.
- 📝 **Take notes** about what you discover, ensuring that no valuable clue is forgotten.

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Sometimes users tell us exactly what they think.

But sometimes, they show us things they never say.

This is why observing the user is critical.

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What Should We Observe?

Example: Maya's Case

While Maya tries the prototype, innovators might notice:

- Does Maya hesitate before using it?
- Which part does she use first?
- Does she look confused at any point?
- Which feature seems the most helpful?
- Does she skip or ignore anything?

Every action is a clue.

The more carefully we observe, the more we learn.

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Test Stage

Training Module 2:
Meeting the User, Asking Good Questions



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Captain Noor prepares the students.



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If we only ask, "Do you like it?" we may not learn very much.

Good innovators ask questions that help users explain their experiences.



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What Makes a Good Testing Questions?



Good questions help us understand the user's thoughts, experiences, and needs.

They encourage the user to explain what happened, how they felt, and what could be improved.

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Four Pillars of Good Testing Questions

Open-ended
The question should invite a detailed response rather than a simple "yes" or "no."

Curious
The question must stem from a genuine desire to understand the user's perspective and discover how they interact with the design.

Respectful
The question should honor the user's time and honest opinions without making them feel judged.

Focused on learning
Every question should be strategically aimed at uncovering new information that can be used to improve the prototype.

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Deep Dive: Open-Ended vs. Closed-Ended Questions

Understanding the difference between open-ended and closed-ended questions is vital for successful user testing.

✕ Closed-Ended Questions

Asking if someone likes an idea or if a prototype is good typically results in one-word answers.

They shut down the conversation and prevent the user from sharing deeper insights.

✓ Open-Ended Questions

These questions act as a gateway to discovery. They actively encourage the user to explain what happened during their interaction, how they felt, and what specific elements could be improved.

This empowers innovators to gather complete thoughts and detailed experiences, providing the rich, actionable feedback needed to perfect a design.

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The Question Transformation Guide

✕ Closed-Ended (Avoid)

- ✕ "Do you like my idea?"
- ✕ "Is it easy to use?"
- ✕ "Did everything work?"
- ✕ "Is my prototype good?"
- ✕ "Would you use it?"

✓ Open-Ended (Try This!)

- ✓ "What do you like about this idea?"
- ✓ "What part was the easiest to use?"
- ✓ "Was anything confusing?"
- ✓ "What would you change to make it better?"
- ✓ "Which part would you use the most? Why?"

These transformed questions encourage detailed responses and actionable insights rather than simple polite agreement.

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The goal is not to hear, “Great job!”; the goal is to learn something new.

Seek Insights, Not Compliments
And the best way to learn is to listen carefully.

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Test Stage

Training Module 3:
Understanding Feedback



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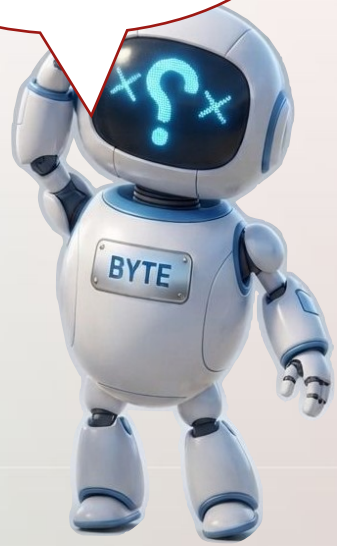
Byte receives Maya’s feedback.

I like the homework organizer, but I wish I could see my most important tasks first.



She doesn’t like my idea!



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Captain Noor smiles.



That is not what Maya said.

Maya gave us information that can help us improve.

Feedback is not failure. Feedback is information.

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When users give feedback, they help innovators discover:

- What is working well.
- What is confusing.
- What users need.
- What should be improved.

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Deep Dive: Why General Comments Don't Help

✕ Not Helpful Statement

"This is bad"

The statement is the **lack actionable detail**.

Feedback is supposed to be a **clue**. The statement "This is bad" does not explain **what needs to change**.

Without knowing what is specifically confusing, missing, or broken, an innovator **cannot translate** the comment into a meaningful improvement.

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"Great innovators do not defend their ideas.

They listen, learn, and improve.

✕ **The defensive instinct**
Arguing or justifying why you designed it a certain way prevents you from absorbing insights.

✓ **Active listening posture**
Successful creators adopt a posture to **"listen, learn, and improve."**

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Feedback is not failure. Feedback is information.



- **What is working well:** Identifying the successful parts of the project that should be kept.
- **What is confusing:** Pinpointing areas where the user struggles to understand the design or instructions.
- **What users need:** Revealing missing features or requirements that are necessary for the user's success.
- **What should be improved:** Highlighting specific elements that require modification to enhance the overall experience.

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Turning Feedback into Improvements

User Feedback	What We Can Learn	Possible Improvement
"The buttons are confusing"	**Users do not understand the options**	**Add clearer labels or simpler buttons**
"I cannot find todays homework"	**Important information is difficult to find**	**Add a Todays Tasks section**
"I want to know what to do first"	**Users need better guidance**	**Highlight priority tasks**

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Test Stage

Training Module 4:
Improve and Iterate



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Captain Noor displayed the Design Thinking Cycle.



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Byte looks surprised...



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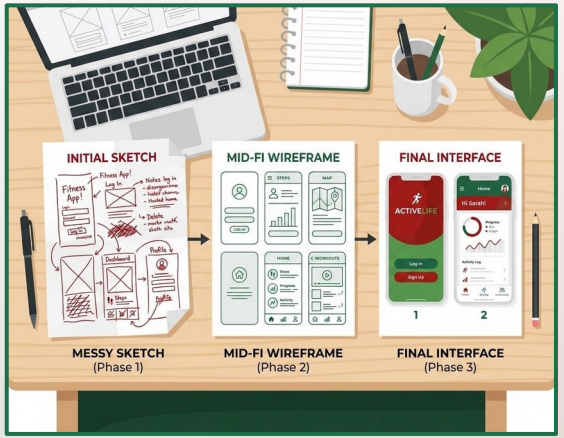
Defining Iteration: Improving Step by Step

What is Iteration?

Iteration means actively improving an idea by creating a specific version of it, testing that version with users, learning from their direct feedback, and then making necessary changes based on what was learned.



Failing Forward Mindset

Innovators do not expect their first idea to be perfect.

They improve step by step.

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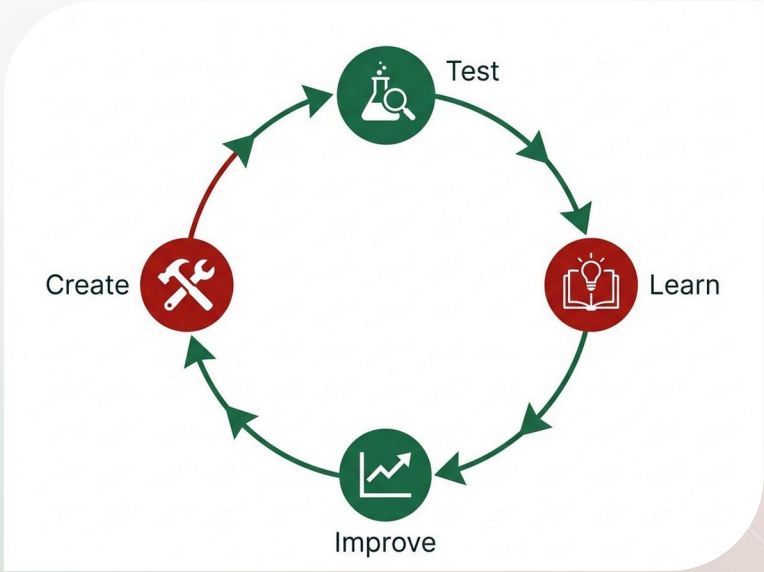
The Iteration Loop: Create, Test, Learn, Improve

1. First, you **Create** a prototype or initial version of your idea.
2. Next, you **Test** that creation with real users to see how they interact with it.
3. Then, you **Learn** from their reactions, gathering specific feedback on what works and what fails.
4. After that, you **Improve** the design by making changes based directly on those learnings.
5. Finally, you **Test Again**, restarting the cycle to ensure the new changes actually solved the problem.



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Case Study: Analyzing Maya's First Homework Organizer

CASE STUDY: MAYA'S DESIGN JOURNEY — VERSION 1 PROTOTYPE

- **First Prototype (Version 1):** Homework Planner



CRITICAL USER FEEDBACK:

"There are too many sections. It feels confusing".

Learning: The organizer needs to be simpler.

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Case Study: Analyzing Maya's First Homework Organizer

CASE STUDY: MAYA'S DESIGN JOURNEY — VERSION 2 PROTOTYPE

- **Second Prototype (Version 2):** Simplified Homework Planner



CRITICAL USER FEEDBACK:
"I still need help remembering deadlines"

Learning: Users need reminders.

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Case Study: Analyzing Maya's First Homework Organizer

CASE STUDY: MAYA'S DESIGN JOURNEY — VERSION 3 PROTOTYPE

- **Second Prototype (Version 3):** Homework Planner with Reminders

Improvement: The solution now better matches Maya’s needs.



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The Mindset of Great Innovators: Learn and Try Again



Key Takeaway: Great innovators do not expect perfection on the first attempt. They view user criticism not as a failure, but as the essential fuel required to drive step-by-step improvement.

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MISSION 004 - 005

Technical Tracks

Live Session – Day 7



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Agenda

1. Review & Celebrating Day 6 Top Performers
2. Explanation: Prototype Stage and Test Stage
3. LMS Content & Assignment Overview
4. Live Q&A

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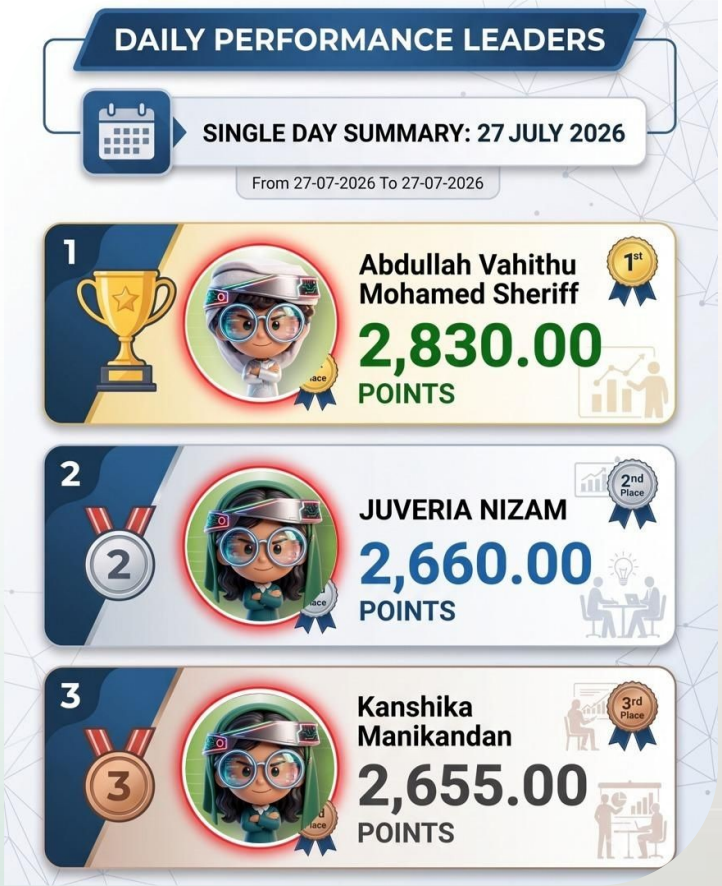

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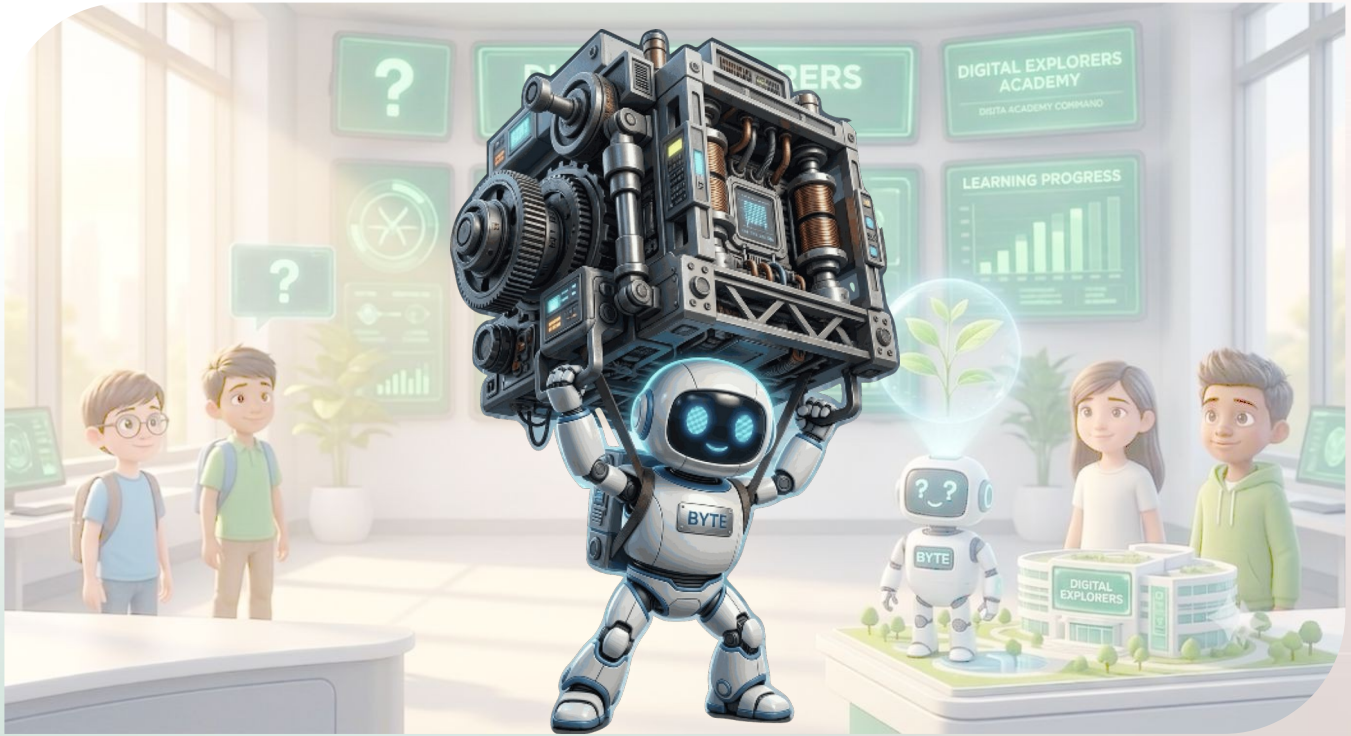
Byte appeared carrying a huge machine



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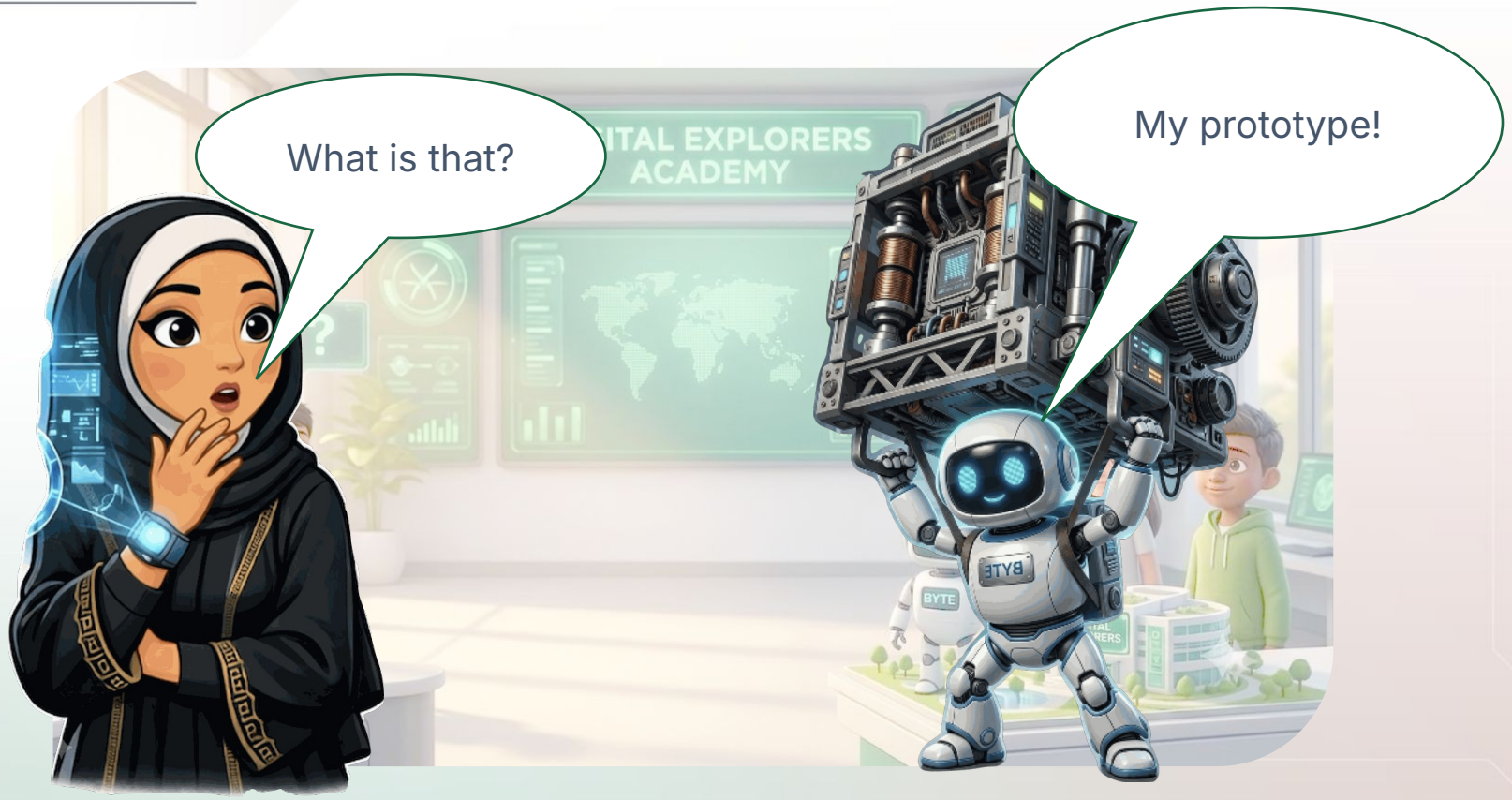

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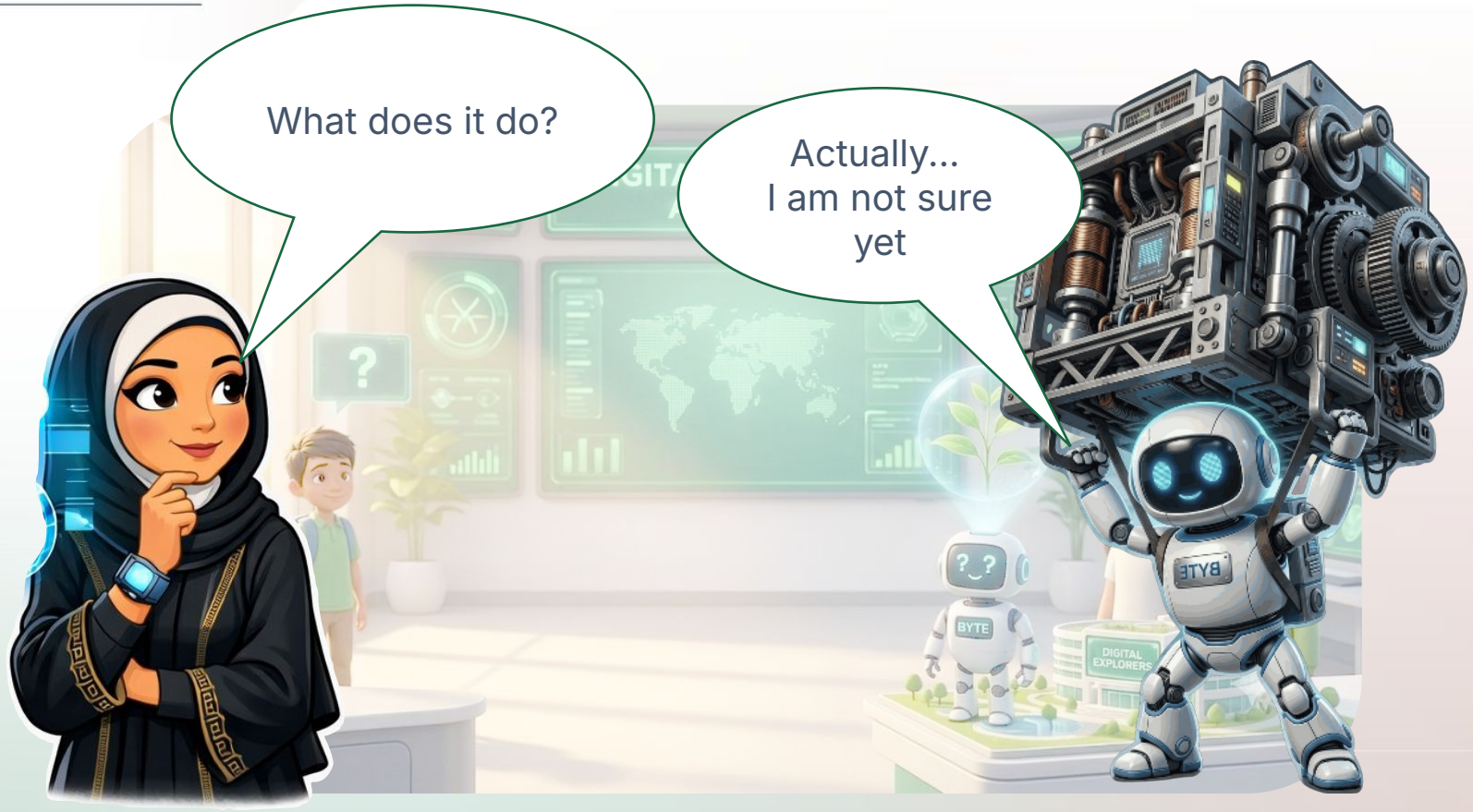

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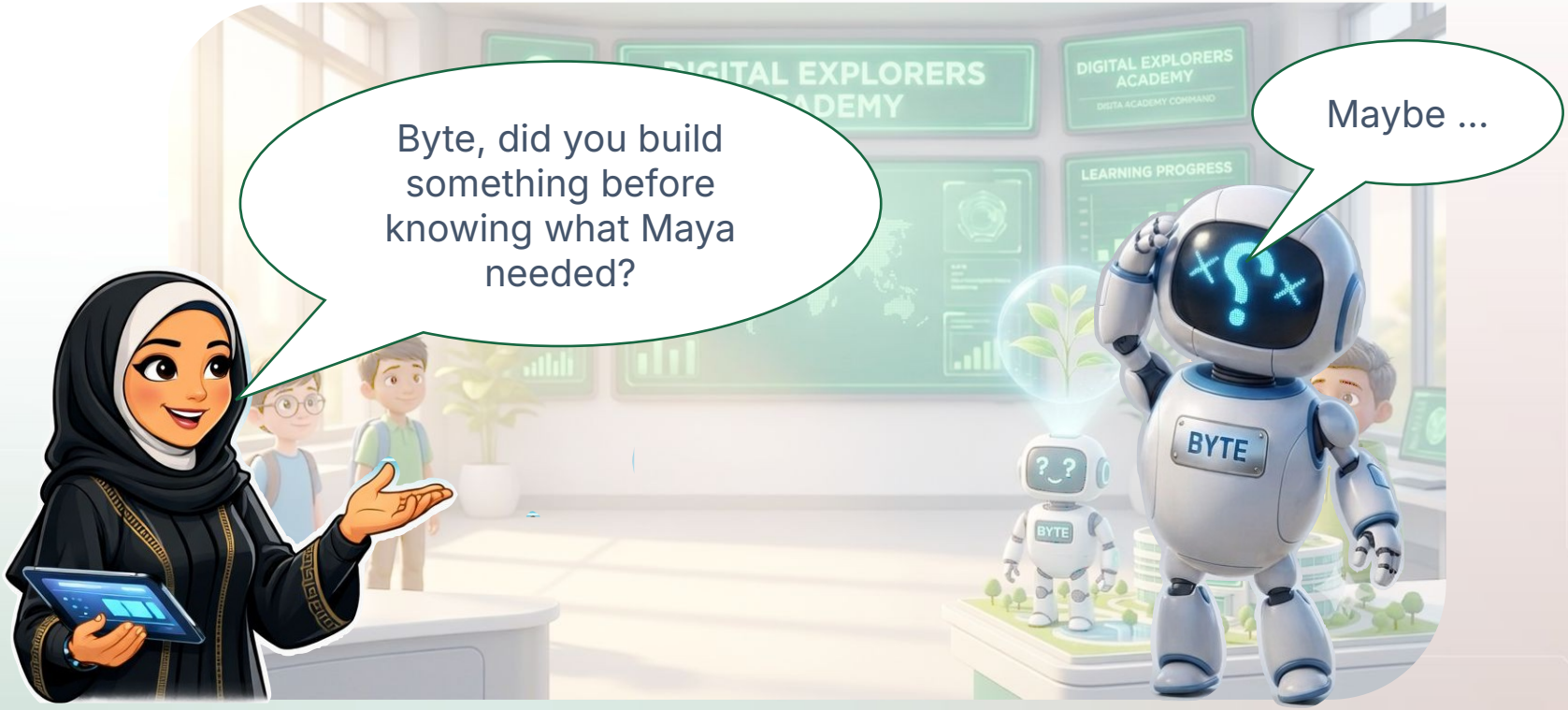

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Captain Noor opens Maya's file.



Our HMW: How might we help Maya organize and remember her homework more easily?

Yesterday, you created ideas.

Today, you will bring one idea to life.
But you don't need to build the final product.

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If you want to build a new game, would you immediately create the whole game?

- A drawing
- A small version
- A model
- A test version



And this is Prototyping

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What is a Prototype?

Prototype = A simple version of an idea that helps us test and improve it.

- **A prototype is not a finished product.** It is not perfect, and it is not meant to be permanent.
- **The main purpose of creating this simple version is to learn:** see what works, what fails, and what needs to be changed before spending significant time or resources building the final, polished version.

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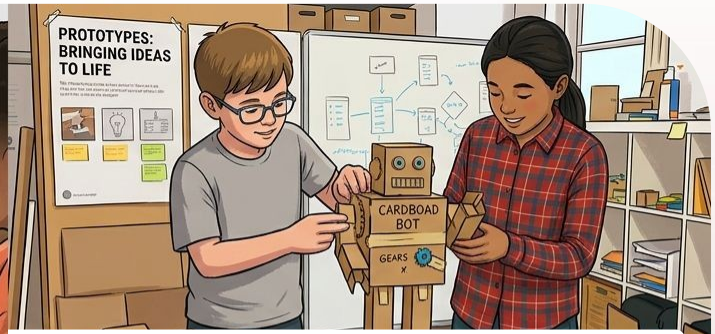
A new app: → Draw the screens on paper



A new robot: → Build a cardboard model



A new game: → Create a sample round



A new service: → Act it out

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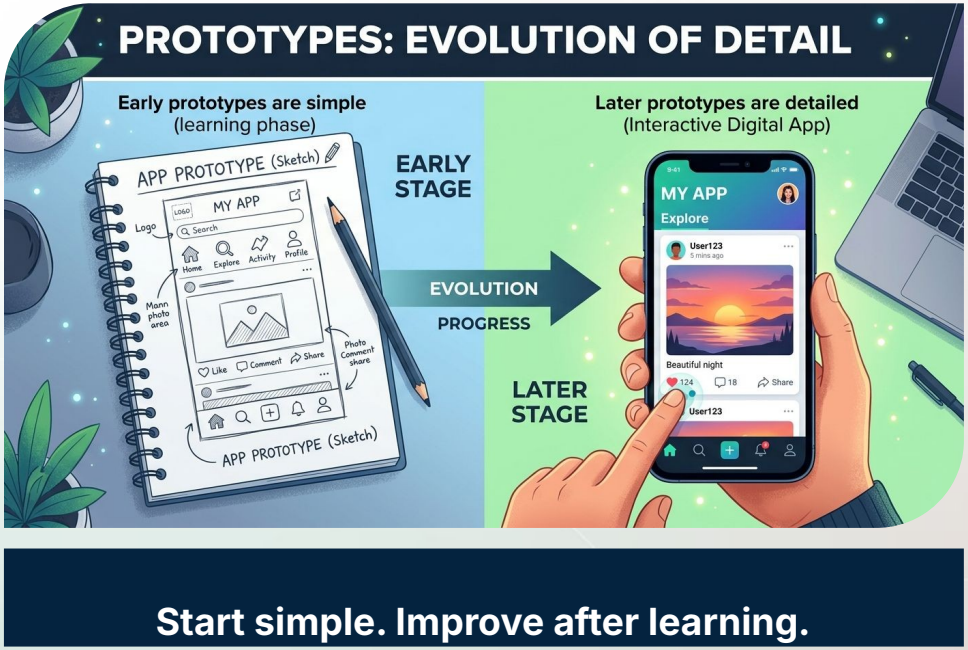
→ Prototypes can have different levels of detail.



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Prototype Fast. Learn Faster.

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Q1 - Maya's team has chosen an idea to help her remember her homework. What should they do next?

A. Build the final product immediately
B. Create a simple version to test the idea
C. Start selling the product
D. Choose a different problem

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Q2 - A team wants to design a new educational app. They draw the app screens on paper before programming it. What have they created?

A. The final product
B. A prototype
C. User feedback
D. A finished solution

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Q3 - Why do innovators usually create simple prototypes first?

A. They want to save paper

B. They already know the final solution

C. They do not want anyone to see their idea

D. They are still learning and improving their idea

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Q4 - A group is creating a new board game. Which of the following is the best first prototype?

A. Creating one sample game using paper and markers

B. Printing thousands of game boxes

C. Opening a game store

D. Advertising the game online

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Q5 - After building a quick prototype, what is the main thing innovators should do?

A. Keep it exactly the same forever
B. Throw it away immediately
C. Learn from it and improve the idea
D. Build a larger version without testing

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Q6 - A prototype is a simple version of an idea that helps innovators test and improve it.

A. False
B. True

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Q7 - The goal of the Prototype stage is to create the perfect final product on the first try.

A. False

B. True

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Later that day, Byte entered carrying the team's prototype.



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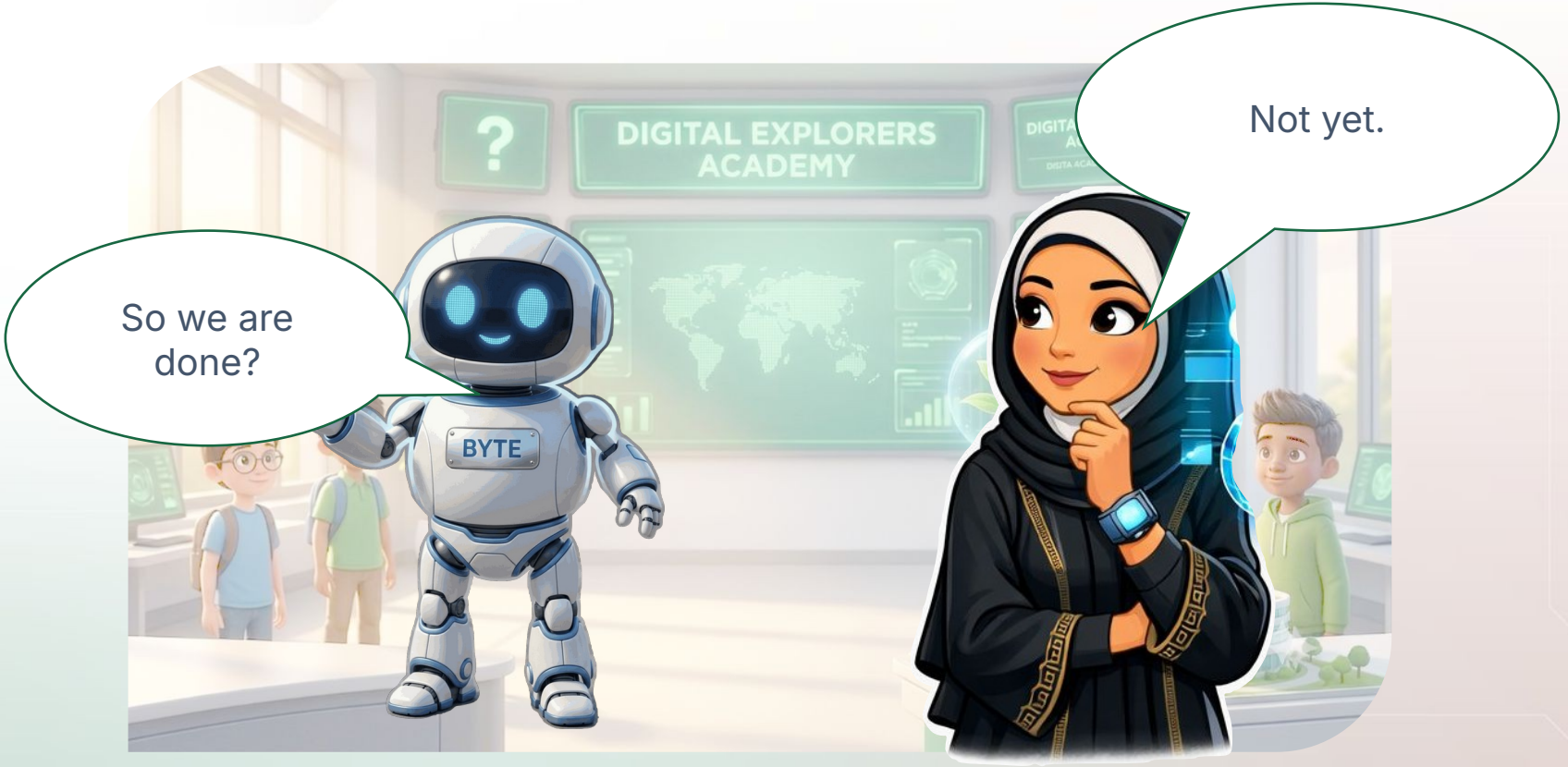

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Byte looked confused...



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Captain Noor opens Maya's file



Remember our mission?

Who can tell us if our idea actually helps?

Maya - The user is the most important person in testing

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Putting Prototypes to the Test

"Building is not the finish line"

- Completing a prototype is not the final destination of the design process. **The act of building only proves that we can construct our idea; it does not prove that our idea is the right solution.**

- The real question we must constantly ask ourselves is: **"Does it actually help the user?"**

Testing is the critical bridge between our assumptions and reality, ensuring our hard work translates into meaningful impact rather than just a finished object.

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Imagine you have just created a brand new game...

Which Approach Would You Take?

Option A

Give the game to yourself, play it, and decide it is absolutely perfect without outside input.

❌ *When we design for ourselves, we are blinded by our own biases and assumptions.*

Option B

Let other people try playing the game and actively ask them what they think about the experience.

✅ *As designers, we are not designing for ourselves; we are designing for users. By opening our creations to others, we discover how different people interact with our work, ensuring the final product is universally intuitive, engaging, and successful for its intended audience.*

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The Feedback Challenge



We have three different reactions from users:

- **Student A:** "I don't like it"
- **Student B:** "I like it because the colors are nice"
- **Student C:** "I think it would be better if the levels were easier to find"

Which feedback actually helps the designer?

The answer is **Student C**. While Student A provides an opinion and Student B offers superficial praise, Student C identifies a specific functional need regarding the levels, giving a clear path forward.

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What Makes Feedback Truly Valuable?

Good, constructive feedback is characterized by three essential traits defined in our Feedback Challenge.

01

Specific

Vague comments provide no direction, whereas pointing out exact features or missing elements gives clear guidance.

02

Helpful

The information provided should directly relate to the user's experience and functionality of the design.

03

Focused on Improving

Constructive feedback is not about tearing down the designer's hard work or offering empty compliments; it is a focused, collaborative effort to identify weaknesses and brainstorm actionable enhancements that elevate the prototype to the next level.

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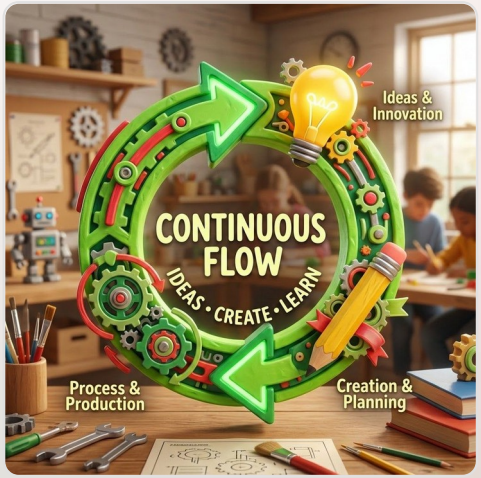
The Continuous Learning Cycle

- **Innovation is never a straight line; it is a continuous, dynamic cycle of learning and improvement.**

- We adjust, refine, and rebuild based on real-world evidence. This iterative loop of building, testing, learning, and rebuilding is the engine of true innovation. Every cycle brings our solution closer to perfectly matching the user's needs.
- Embracing this continuous learning cycle ensures that our final designs are not just creative, but genuinely effective and deeply impactful.



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Your User is ready to see your prototypes.

But remember... Testing is not about proving your idea is perfect.

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Q1 - A team has finished building a prototype to help Maya organize her homework. What should they do next?

A. Test it with Maya and ask for feedback.

B. Assume it works because they built it.

C. Build a bigger version immediately.

D. Start a new project.

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Q2 - Why is the user the most important person during the Test stage?

A. They designed the prototype.

B. They can tell the team whether the solution meets their needs.

C. They decide the team's grades.

D. They build the final product.

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Q3 - A team asks three students to try their homework organizer. Which feedback is the most helpful?

A. “It’s okay.”

B. “I like the colors.”

C. “It would be easier to use if today’s homework appeared first.”

D. “Nice.”

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Q4 - A student creates a new board game and only plays it by themselves before saying it is perfect. What important step did they miss?

A. ~~Brainstorming more ideas.~~
B. Testing the game with users and collecting feedback.
C. Drawing the game board.
D. Naming the game.

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Q5 - What is the main purpose of the Test stage?

A. To prove the idea is perfect.

B. To discover how the idea can be improved.

C. To make the prototype look more colorful.

D. To build the final product.

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Q6 - Good feedback should be specific and help improve the prototype.

A. False
B. True

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Q7 - If you think your prototype is perfect, you do not need to test it with users.

A. False

B. True

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DESIGN THINKING



1. EMPATHIZE

Understand users' experiences and needs through observation and engagement

Understand People

2. DEFINE

Analyze findings to define core user problems and a clear problem statement

Find the Real Problem

3. IDEATE

Generate a wide range of creative and innovative solutions and ideas

Generate Many Ideas

4. PROTOTYPE

Build simple, tangible representations of ideas to test assumptions

Build and Try

5. TEST

Gather feedback from users on prototypes to refine and improve

Improve Through Feedback

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MISSION 006 - PITCHING

Pitch Your Big Idea!

Live Session – Day 8



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Agenda

1. Review & Celebrating Day 7 Top Performers
2. Explanation: Pitching
3. Live Practice & Knowledge Check
4. LMS Content & Assignment Overview
5. Live Q&A

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At the academy, Byte learned to slow down, pace himself, and stop skipping crucial steps.



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A great solution can only create change if people understand it.



Design Thiniking Stages (Empathize, Define, Ideate, Prototype, Test)

↓

Improve

↓

Pitch

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What is Pitching?

Imagine This...



You invented something amazing.



But nobody understands/knows it.

Would people use it?

Probably not.

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What is Pitching?

A pitch is a short presentation that helps people understand:



What problem you found



Why it matters



Why people should care



How your solution helps

A pitch is not about selling. It is about sharing your idea clearly.

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Remember Maya? She forgot homework. She became stressed. Teachers couldn’t always help.

Byte says: “Our app reminds Maya about homework, organizes tasks, and makes studying easier.”



Captain Noor smiles. “That is a solution. Now convince me.”

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Why Do Innovators Pitch?

Every great inventor shares ideas. People need to understand before they can support them.

Pitching helps:

- Get support
- Improve ideas
- Create real impact
- Receive feedback
- Inspire others

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The 5 Parts of a Great Pitch



The Problem



Why it Matters



Our Solution



Why It Works?



The Ending

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The 5 Parts of a Great Pitch

Part 1 — The Problem

Start by introducing your user.

- Who are they?
- What challenge do they have?

Example:
“This is Maya.
She often forgets her homework and feels stressed”.

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The 5 Parts of a Great Pitch

Part 2 — Why It Matters?

Explain why the problem is important.
How does it affect people?

Example:
“When students forget homework, they lose confidence and become frustrated”

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The 5 Parts of a Great Pitch

Part 3 — Our Solution

Now explain your idea.

- What did you create?

Keep it simple.

Example:
“We designed a homework helper app that reminds students and organizes their tasks”.

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The 5 Parts of a Great Pitch

Part 4 — Why It Works

Explain the benefits.
How does your solution help?

Example:
“It saves time, reduces stress, and helps students stay organized”.

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The 5 Parts of a Great Pitch

Part 5 — The Ending

Finish with confidence.

Example:
“We believe every student deserves an easier way to stay organized.
Thank you!”

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A Few Tips!

🌟 Before You Present

- Practice your pitch together.
- Make sure everyone knows their part.
- Keep your pitch short and focused (about 2–3 minutes).

🎙️ While You Speak

- Speak slowly and clearly.
- Use a loud, confident voice.
- Look at your audience, not just your notes.
- Smile and show enthusiasm.
- Stand up straight with confident body language.

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A Few Tips!

🤝 **As a Team**

- Let every team member speak.
- Support each other if someone forgets a line.
- Transition smoothly from one speaker to the next.

❓ **During Questions**

- Listen carefully before answering.
- Take a moment to think.
- Answer honestly.
- If you don't know the answer, say:
- *"That's a great question! We'll think about how we can improve our idea."*

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Q1 - Byte was so excited that he forgot some important parts of his pitch.

Read Byte's pitch:

"Hello everyone! We built an app with colorful buttons and fun sounds. It has a timer and cool animations. Thank you for listening!"

What is missing? (Choose all that apply.)

A. ✅The problem
B. ✅The user's need
C. ☐ The solution
D. ✅The impact
E. ☐ A strong closing

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Q2 - 📋 Put the Pitch in the Correct Order

Write the numbers 1–5 in order of sequence in pitching.

A. Our solution helps...	4
B. Thank you!	5
C. Our user struggles because...	1
D. This problem is important because...	2
E. We created...	3

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Q3 - Captain Noor tells the team: *"A great solution only creates change if people understand it."*

What skill is she talking about?

A. Brainstorming
B. Testing
C. Pitching
D. Research

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Q4 - Which part of a pitch should come first?

A. Introduce the user’s problem
B. Explain your solution
C. Say thank you
D. Answer questions

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Q5 - Which sentence best explains why the problem matters?

A. “Our app has blue buttons”
B. “We worked hard”
C. “Thank you for listening”
D. “Many students become stressed because they forget important homework”

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Q6 - A team says: “We built a smart water bottle that reminds people to drink water.”
Which part of the pitch is this?

A. Problem
B. Need
C. Solution
D. Closing

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Q7 - Which ending is the strongest?

A. “We believe our idea can make daily life easier. Thank you!”

B. “Okay…that’s it”

C. “Bye”

D. D. “Next slide”

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Q8 - Your team has 5 minutes to prepare a 60-second pitch.

Create the pitch by using this structure:

- 👤 User
- ➡️ Problem
- 💡 Solution
- ⭐ Impact
- 👏 Thank You

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Design Thinking Explorer Graduation

Welcome back, Innovators!



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Captain Noor's Return

Captain Noor returns to the Innovation Command Center to review your incredible journey. The massive control room is quiet, but the main console is lighting up with success. The five mission screens appear, glowing brightly to signify that all systems are complete and the design thinking sequence has been fully mastered.

Each screen represents a critical step you took to become a true problem solver. From understanding the people around you to testing your final creations, you have navigated the complex universe of innovation. The Command Center recognizes your hard work, dedication, and the creative energy you brought to every single challenge.

Today, we look back at these glowing screens not just as tasks that were finished, but as the foundation of your new superpower: the ability to change the world through design.



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Mission 001: Understand the User [Empathize]

Understand the User

This was your very first step into the world of design thinking, and arguably the most important. Empathy means putting yourself in someone else's shoes to truly feel what they are feeling. Instead of just guessing, you learned how to observe, ask questions, and listen closely.

You discovered that great innovators don't start with tools or technology; they start with people. By understanding their feelings, struggles, and daily needs, you gathered the secret clues required to build something that actually matters. This mission taught you that a warm heart and open mind are the most powerful gadgets!



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Mission 002: Discover the Real Problem [Define]

Discover the Real Problem

After gathering all those clues from your users, you had to make sense of them. This mission was all about focus. You learned that if you try to solve every problem at once, you might not solve any of them well. Instead, you acted like detectives, sorting through the information to discover the real, hidden problem. Defining the problem means writing a clear, specific challenge statement that guides your entire team. It acts like a compass in the wilderness of innovation. By clearly stating who needs help and exactly what they need, you set the stage for brilliant ideas. A well-defined problem is a problem that is already half-solved!



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Mission 003: Create Possibilities [Ideate]

Create Possibilities

This is where your imagination was allowed to run completely wild! During the Ideation mission, you learned the golden rule of brainstorming: there are no bad ideas. You sketched, you dreamed, and you combined silly concepts with serious ones to create endless possibilities. By turning off the critical part of your brain and turning up your creativity, you generated a massive list of potential solutions. You discovered that sometimes the craziest, most impossible-sounding idea can actually spark the perfect, practical solution. This mission proved that when a team works together to dream big, the sky is not the limit—it is just the beginning.



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Mission 004: Build and Learn [Prototype]

Build and Learn

Ideas are wonderful, but they cannot help anyone if they stay trapped inside your head. In this mission, you learned how to bring your ideas into the real world by building prototypes. A prototype is a quick, rough model of your solution. You used cardboard, tape, paper, and digital tools to build physical or digital representations of your concepts. The goal wasn't to make something perfect; the goal was to build just enough to learn quickly. By holding a prototype in your hands, you could instantly see what worked and what didn't. This hands-on mission taught you that making mistakes early and fixing them fast is the secret to building amazing things.



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Mission 005: Listen and Improve [Test]

Mission 005

The final phase of the design thinking cycle brought you right back to where you started: the user. In the Testing mission, you shared your prototypes with real people. You had to be brave, present your work, and, most importantly, listen to their feedback. Sometimes they loved it, and sometimes they pointed out things that were broken. You learned that feedback is a gift, not a failure. By listening and improving, you iterated on your designs, making them better, stronger, and more helpful with every single round. This mission showed you that innovation is a continuous loop of learning and growing.



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An Innovator Who Listens

Captain Noor smiles as she looks at the completed mission screens and turns to the crew. "You started with an idea," she says, reflecting on the very beginning of the journey when everything was just a thought in your minds. "But you became something much more important." The true transformation wasn't just about the gadgets built or the problems solved; it was about the change inside of you.

> *"You became an innovator who listens. An innovator who listens to users, listens to feedback, and listens to their team is unstoppable. Your ability to hear what others need is your greatest strength."*

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The Ultimate Question

Byte asks:

"So what is the greatest invention?"

Byte, the ever-curious robotic sidekick, hovers near the main console, its digital eyes blinking with a profound question. After witnessing all the brainstorming, the cardboard prototypes, the testing, and the teamwork, Byte processes all this data.

Is it a faster rocket ship? Is it a smarter computer? Is it a robot like Byte?

This is the ultimate question for any explorer in the Innovation Command Center.

Out of all the endless possibilities and brilliant ideas in the universe, what is the single most important thing a person could ever design?

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The Greatest Invention

Captain Noor looks at Byte, and then looks out at all the newly trained explorers. She doesn't point to a complex machine or a line of code.

Captain Noor answers: *"The one that truly helps people."*

This simple truth is the core of design thinking. The value of an invention isn't measured by how complicated it is, how shiny it looks, or how much money it makes.

Its true value is measured by the positive impact it has on a human life. Whether it is a new way to clean water, a better backpack, or a simple tool that makes someone smile, the greatest inventions are born from empathy and exist to serve others.

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Mission Complete!

Design Thinking Explorer Certified

The Command Center erupts in celebration! Confetti falls, the screens flash with bright colors, and the mission logs are officially sealed. You have successfully navigated Empathize, Define, Ideate, Prototype, and Test.

You have proven that you can tackle big challenges, work as a team, and listen to the needs of others. As you receive your official certification, remember that this is not the end of your journey, but the launchpad for your next adventure. The world is full of challenges waiting for an innovator who listens.

Congratulations, Explorers!



OFFICIAL CERTIFICATE

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