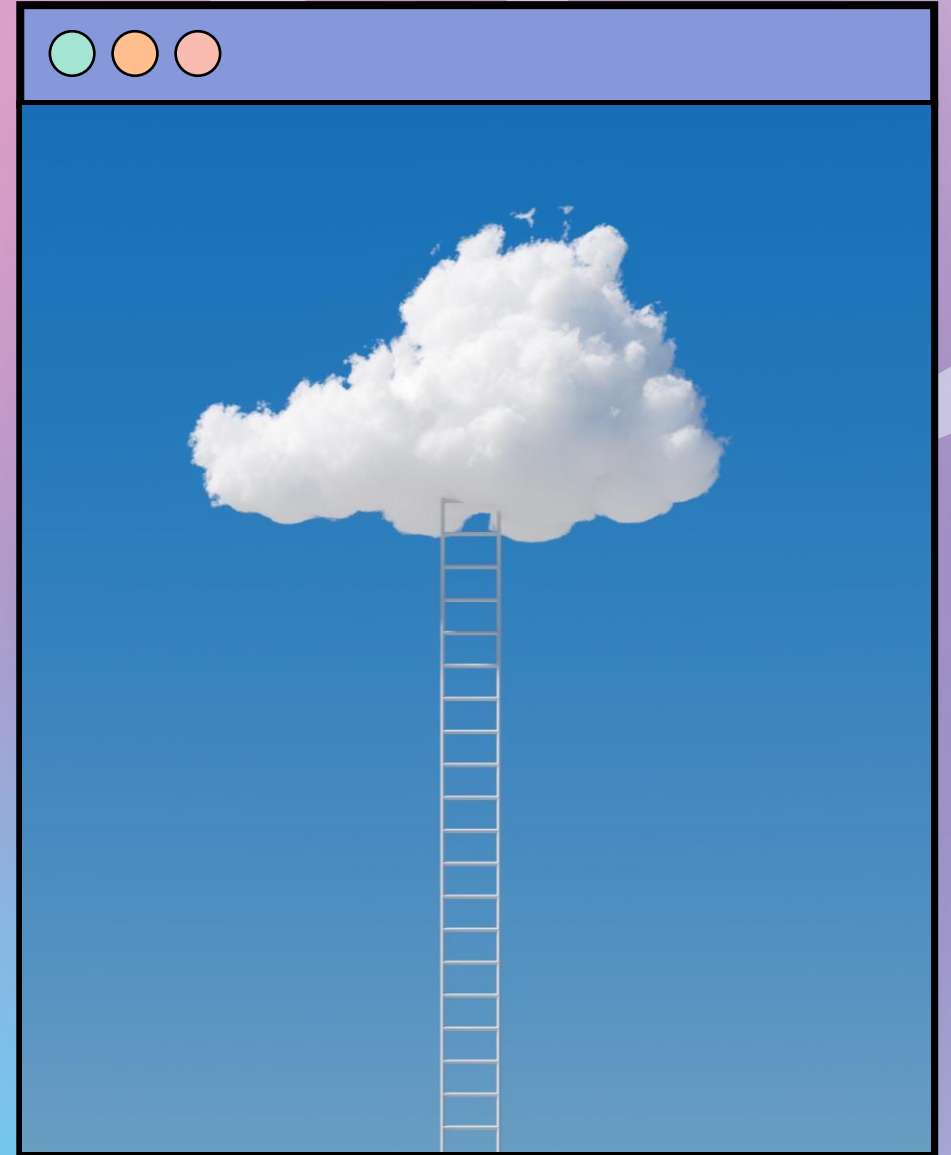


Design Thinking: A Holistic Approach to Innovation

Exploring the Power of Design Thinking in Engineering Education

Dr. Rituparna Matkar



Agenda

Introduction

Why Design Thinking?

- The Design Thinking Process
- Core Principles
- Non-Linear Nature
- Design Thinking and Innovation

Case Studies and Aspects

Design Thinking in Curriculum and National Education Policy

- NEP Core Points
- Design Thinking in Education

Design for Sustainability

Conclusion

Any Questions?

References

START

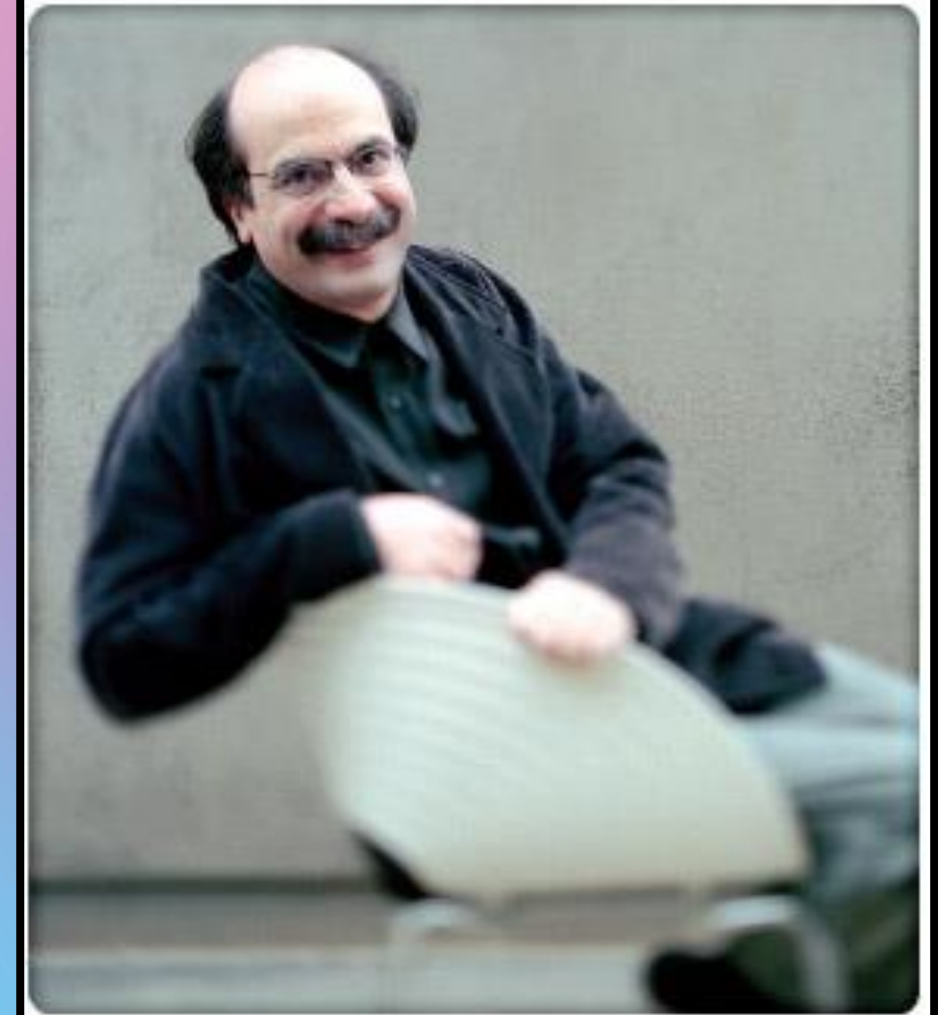


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2

“The main tenet of design thinking is empathy for the people you’re trying to design for.”

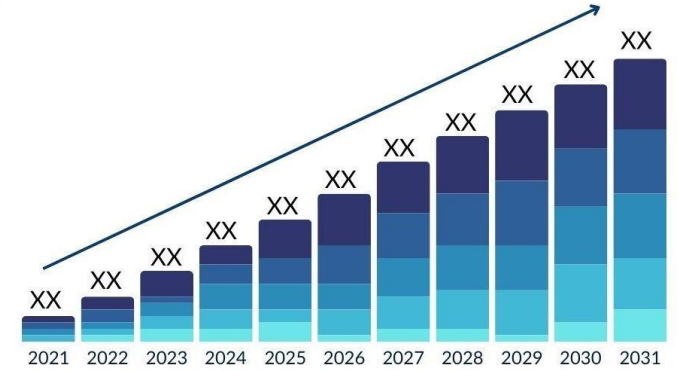
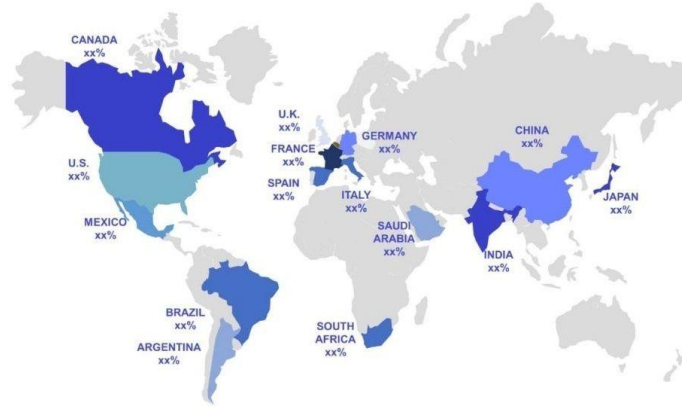
**-David Kelly
Founder of IDEO**



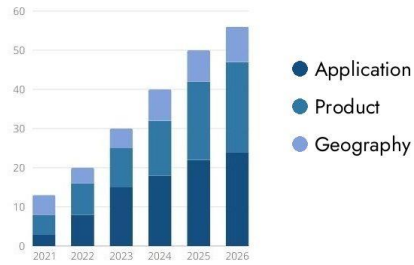


Global Market size and Scope

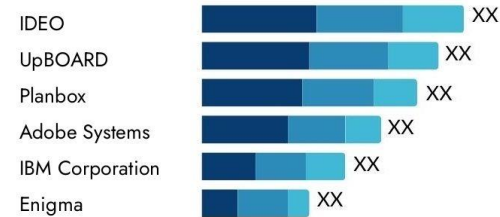
Global Design Thinking Market Size and Scope



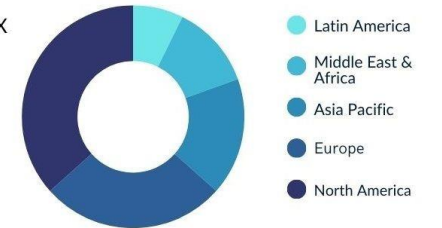
Market Segmentation



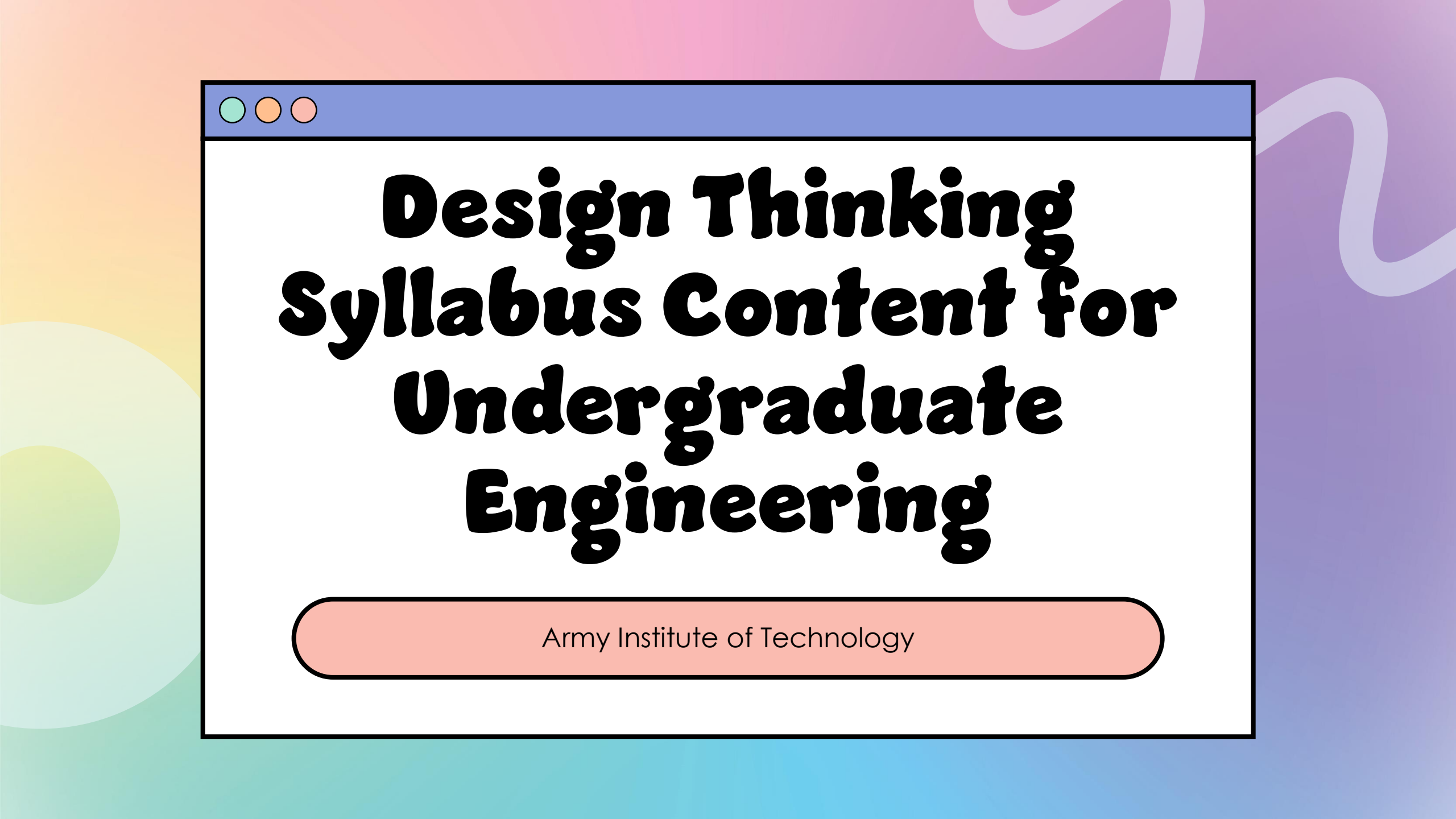
Top Key Players



Regional Analysis



Source: www.marketresearchintellect.com



Design Thinking Syllabus Content for Undergraduate Engineering

Army Institute of Technology



Design Thinking



Empathize



Define



Ideate



Prototype



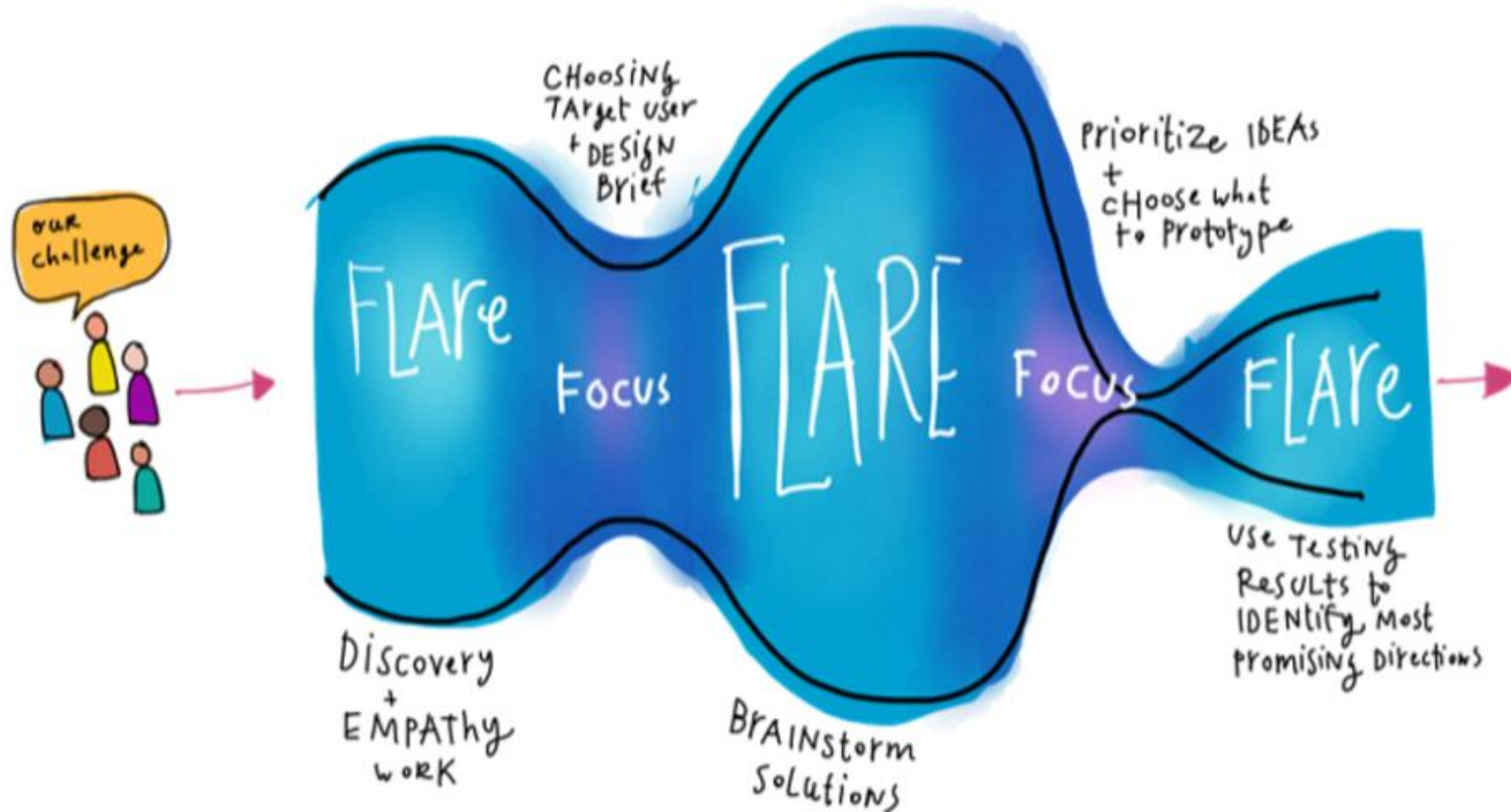
Test



Empathy – User research



Experiential learning





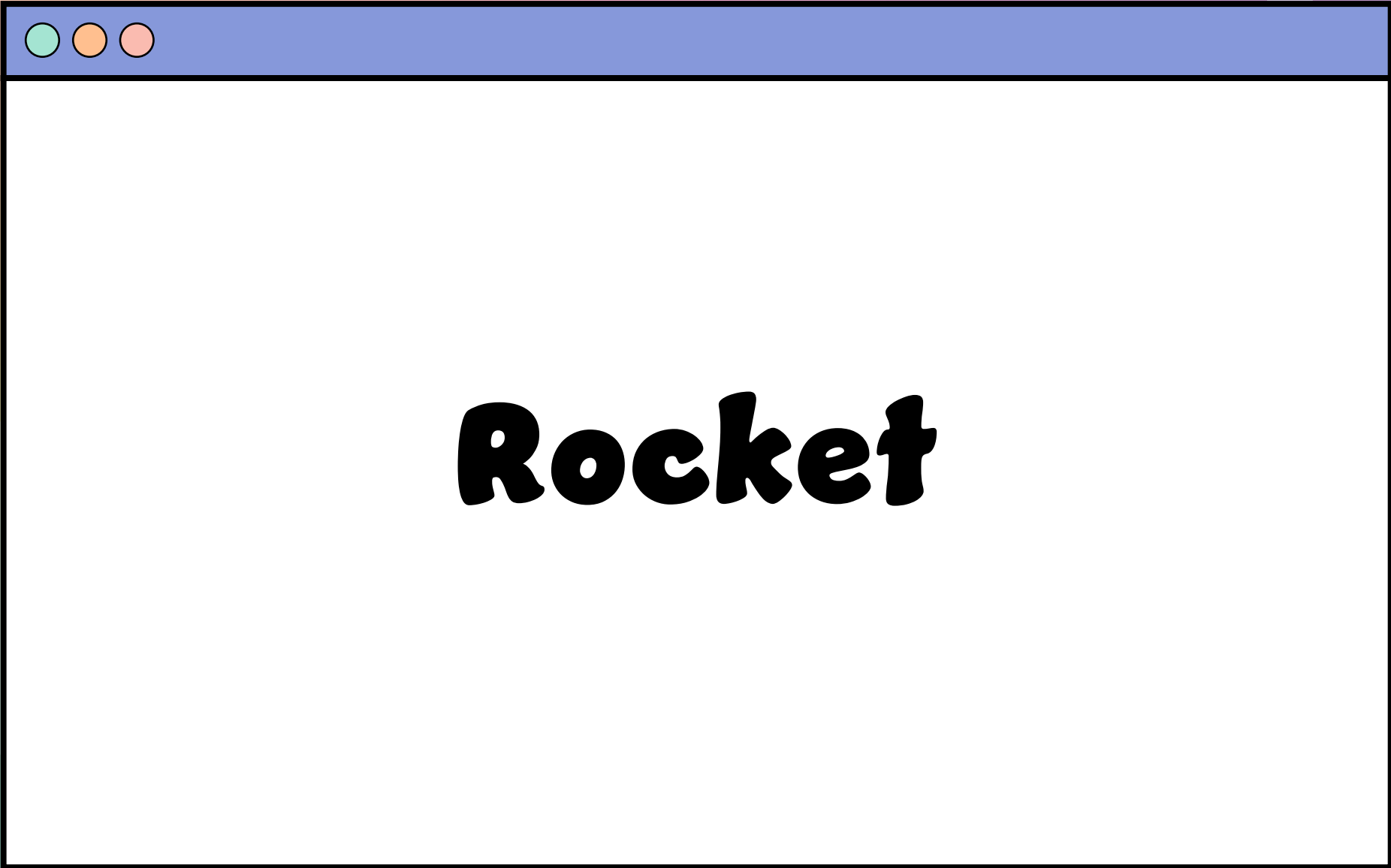
Baby



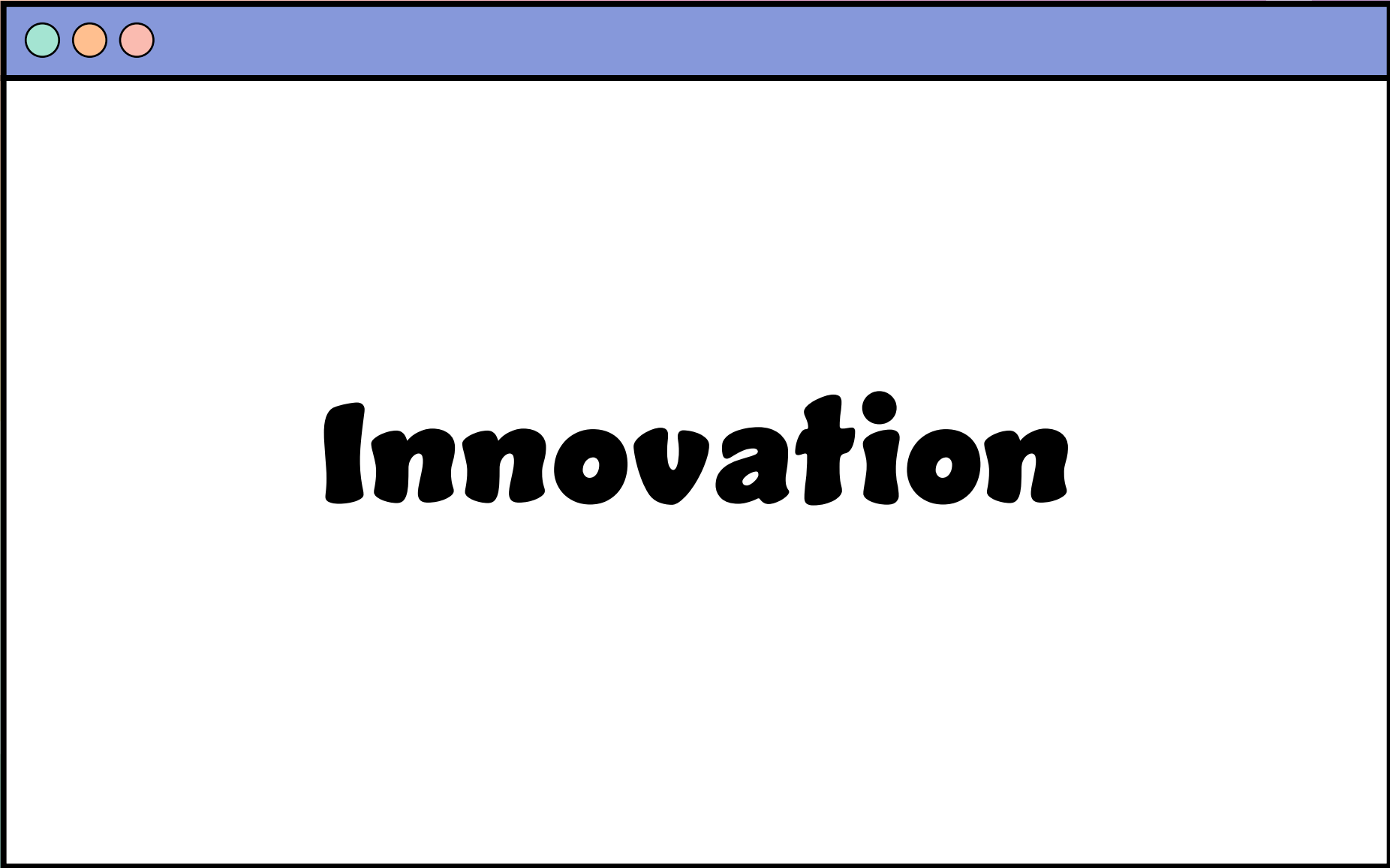
House
Tree
Sun



Automobile



Rocket



Innovation

Design the **IDEAL** Bag

- Design a **BETTER** bag (4 mins)

Sketch your best idea here
individually

START



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17

Empathy

Empathy is the first step in design thinking because it is a skill that allows us to understand and share the same feelings that others feel. Through empathy, we are able to put ourselves in other people's shoes and connect with how they might be feeling about their **problem, circumstance, or situation.**





**Designers approach
empathy ...**

Without judgment

With a beginner's eye

With Curiosity

Optimistically

Respectfully

Design with Empathy – Your mission – Design something **Useful** and **Meaningful**. Start with **Empathy**

Interview 1

Partner A designs a better bag
for Partner B (Notes/Sketches)

4 mins

Interview 2

Partner B designs a better bag
for Partner A (Notes/Sketches)

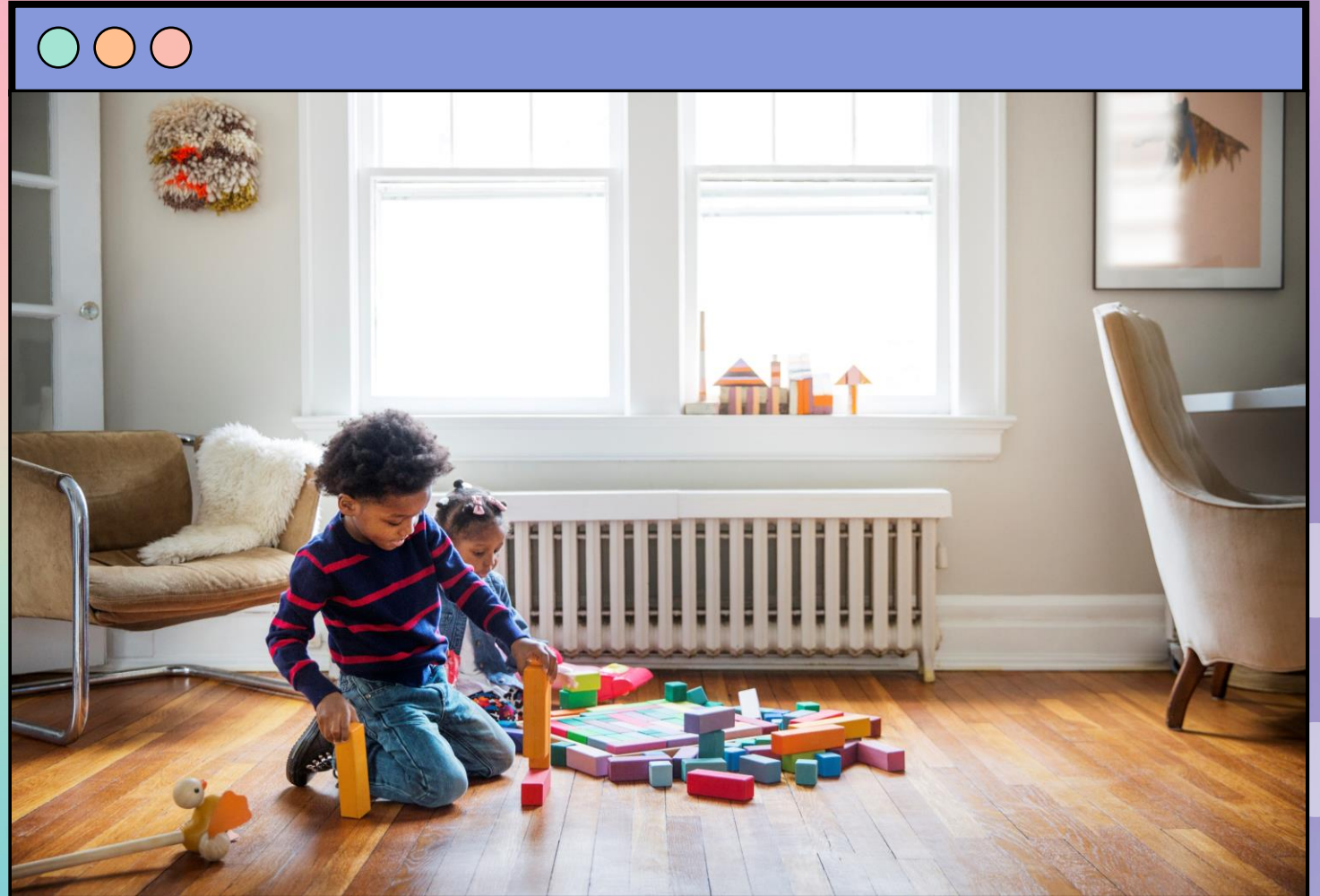
4 mins

Define

the second phase of design thinking, where you define the problem statement in a human-centered manner. In the Define stage, you will organize the information you have gathered during the Empathize stage.



What do these kids need?



START

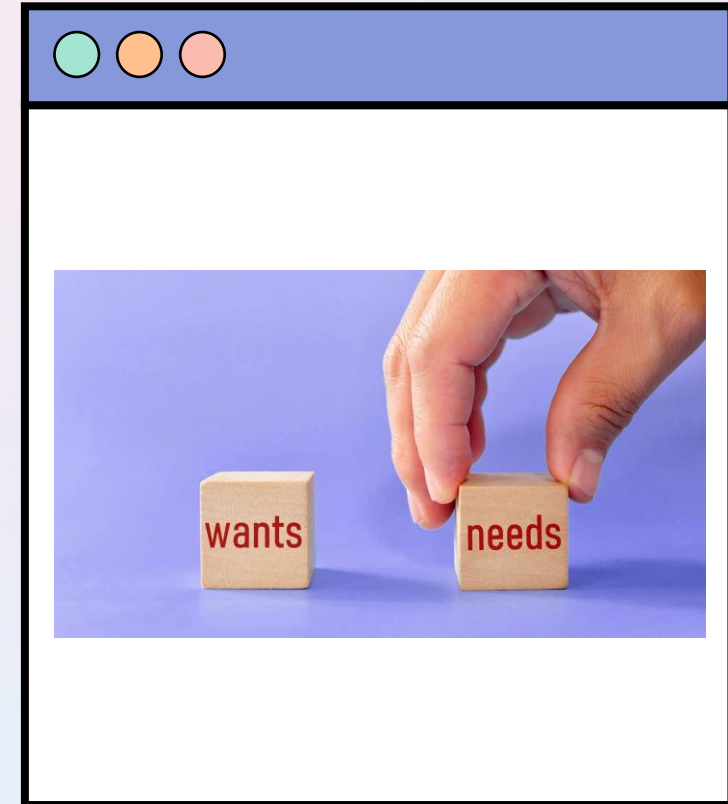


3/7/2024

22

Needs

The design thinking process starts by looking at the needs, dreams and behaviors of people—the end users. The team listens with empathy to understand what people want, not what the organization thinks they want or need. The team then thinks about solutions to satisfy these needs from the end user's point of view



Articulate your **POINT OF VIEW**

Needs (3 mins)

Partner Description _____

What are the things they are trying to do? (needs - verbs)

Ways they want to feel?

Insights (3 mins)

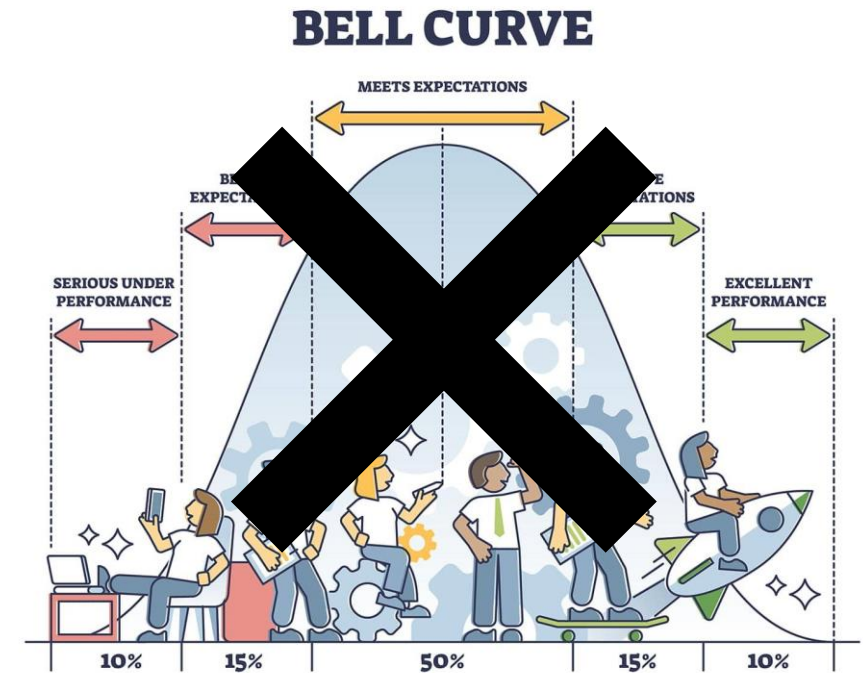
Person _____

Needs a way to

In a way that makes
them feel

Design for individuals

Not for the middle



Teenagers in prison and UBtalker



Form a Statement (2 mins)

POINT OF VIEW STATEMENT

_____ needs a way to _____
(User name) (Verb)

because _____
(Surprising Insight)

START



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27

Ideate

“The best way to have a good idea is to have lots of ideas.”

-Linus Pauling



Image Courtesy Wikipedia: http://en.wikipedia.org/wiki/File:L_Pauling.jpg

12

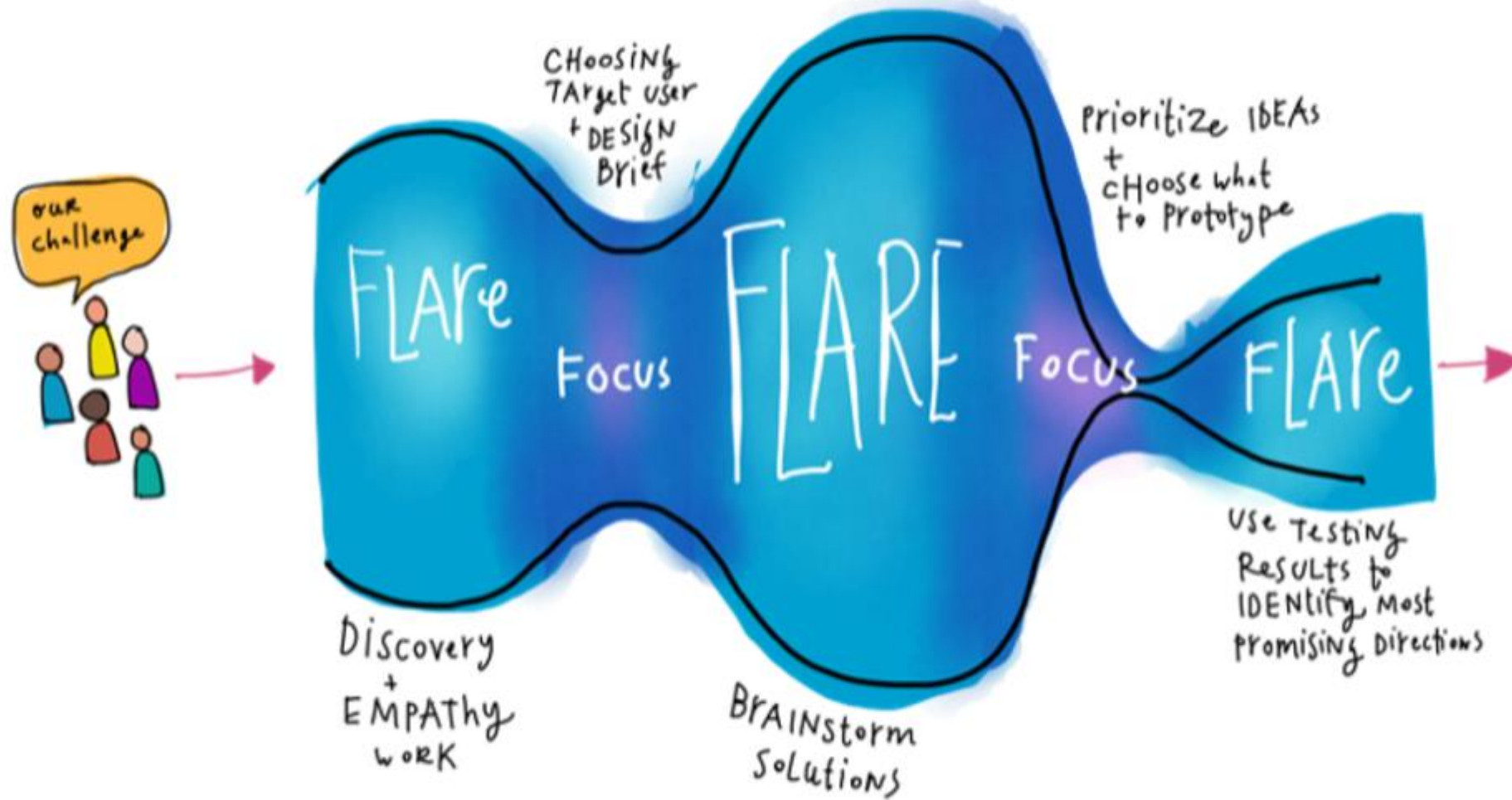
START



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28

Ideate



Sketch 5-7 ideas

- Draw out your **wildest ideas** to meet your **users needs**. (5 mins)
- Share and Gather **feedback**. (3 mins)

Prototype

Create a better bag for your partner using things you can find.

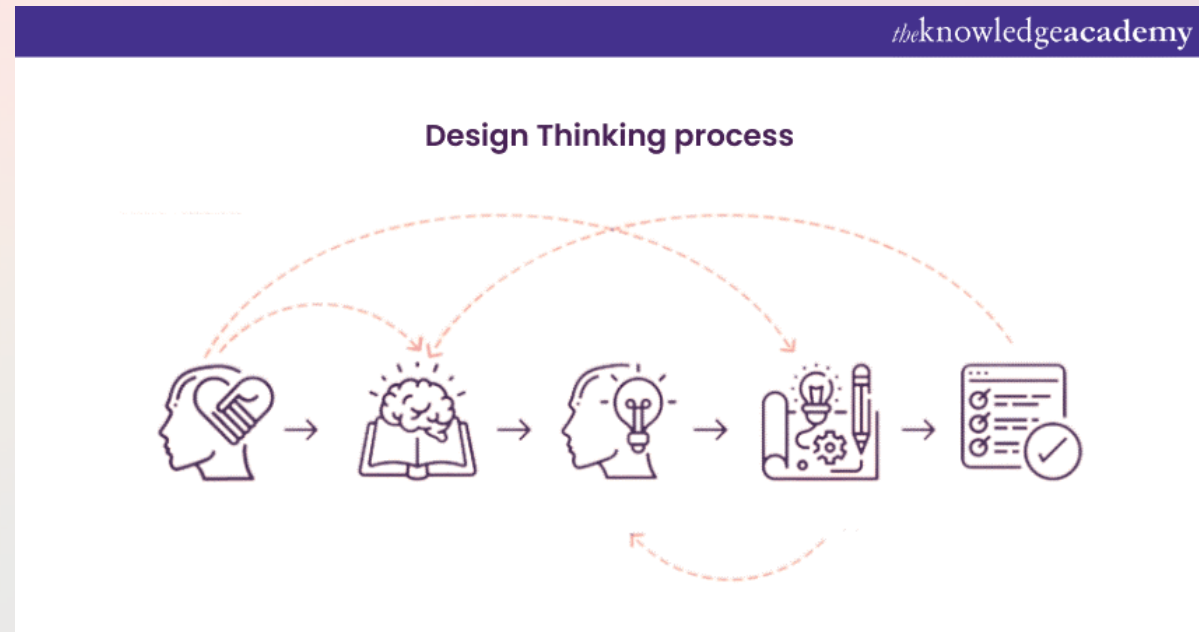
- https://sodnmims.github.io/Tech_and_interactivity/

Test – fail early



Why is design thinking a non-linear process

We've outlined a direct and linear design thinking process here, in which one stage seemingly leads to the next with a logical conclusion at user testing. However, in practice, the process is carried out in a more flexible and non-linear fashion



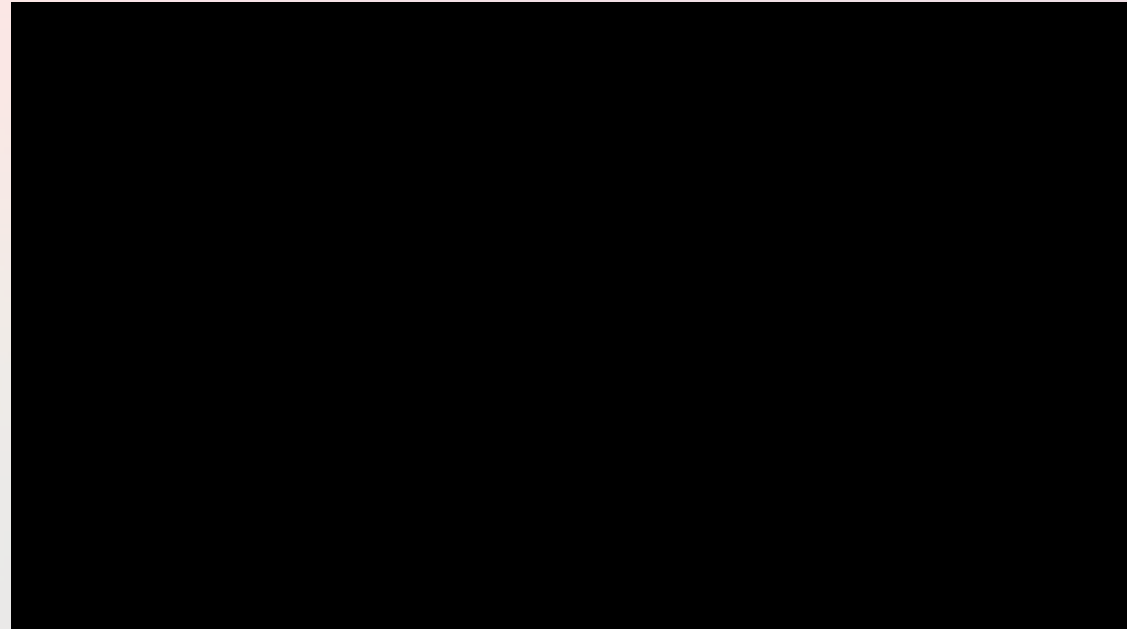
Case Study 1 – Piano Stairs

[Video link here](#)

Piano stairs

Hypothesis - Sales of the mall and time spent by the consumers in the mall are positively related to each other.

Solution: Create fun interactive installations to change behaviors

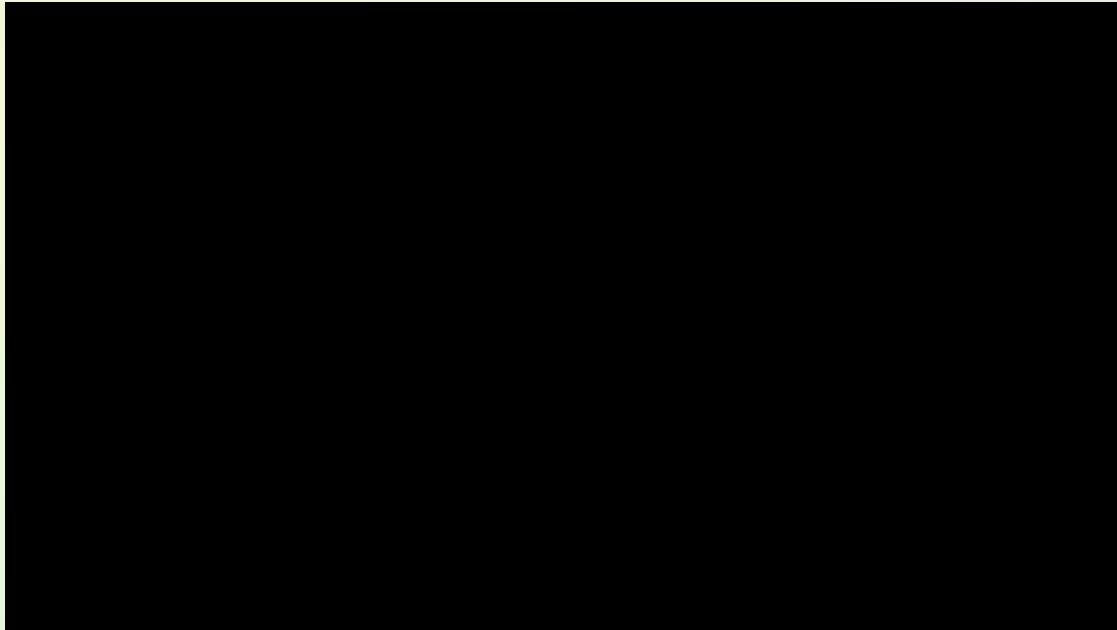


Case Study 2 - GE - MRI scanner



Case Study 3 – life Saving dot

[Video link here](#)



- Bindi

Some of the question to think about...

What are the main points of NEP with respect to design thinking?

How is design thinking used in education?

Faculty learning, teaching to assessment ?

How to implement design thinking for educational reforms?

What are the problems with design thinking with education ?

What is the conclusion of design thinking in education?



Curriculum objectives and outcomes

- Outcome
- I. develop empathy amongst students
- li. create a design thinking culture to drive innovation
- lii. develop the ability to create and test prototypes that are customer centric and innovative

Objective

I. To develop human centric mindset

li. to understand the role of innovation

lii. to create prototypes iteratively

What is design for sustainability?

Design for sustainability (DFS)

E.g. Internal-combustion engines to [electric-propulsion vehicles](#)

1. Rethinking the way their products use resources, adapting them to changing regulations, adopting principles of circularity, and making use of customer insights
2. Understanding and tracking emissions and cost impact of design decisions in support of sustainability goals
3. Fostering the right mindsets and capabilities to integrate sustainability into every product and design decision



Design Thinking in NEP 2020

4.24. Concerted curricular and pedagogical initiatives, including the introduction of contemporary subjects such as Artificial Intelligence, Design Thinking, Holistic Health, Organic Living, Environmental Education, Global Citizenship Education (GCED), etc. at relevant stages will be undertaken to develop these various important skills in students at all levels.



Q&A sessions and conclusion



References



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interaction-design.org/

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Gartner study

thehindu.com

Diksha Portal

Design thinking in Education

<https://tll.gse.harvard.edu/design-thinking>

Thank you

- Rituparna Matkar
- rituparna.matkar AT gmail DOT com
- matkar.org
- Instagram – dr_matkar