


CS377E: DESIGNING SOLUTIONS TO GLOBAL GRAND CHALLENGES: HUMAN-CENTERED AI

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Define

Prof. James A. Landay  
Computer Science Department  
Stanford University  
Spring 2019  
2019/04/17

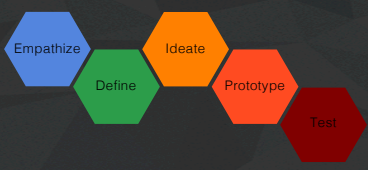
Slides adapted from d. leadership Define + Ideate slides (<https://www.youtube.com/watch?v=3333333333>)  
Additional resources from bootcamp booting (<https://www.bootcampbooting.com/>)

### Outline

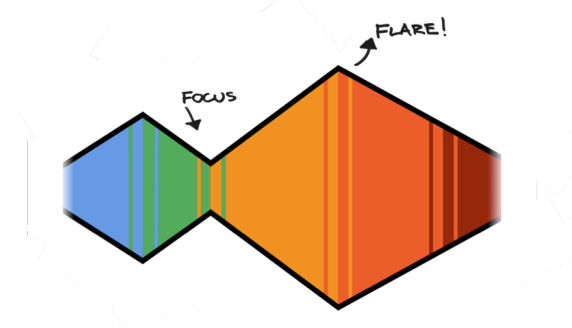
- Inferring insights
- Point of views

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### Design Thinking




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### Design Thinking



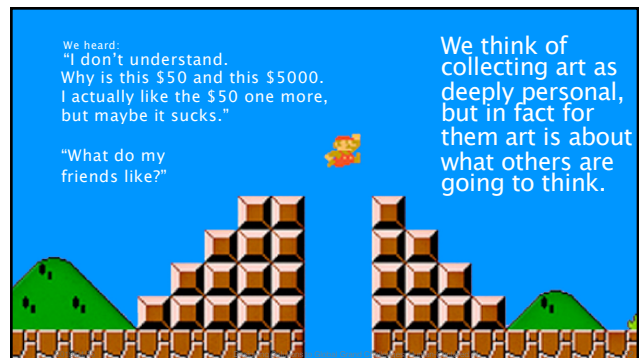
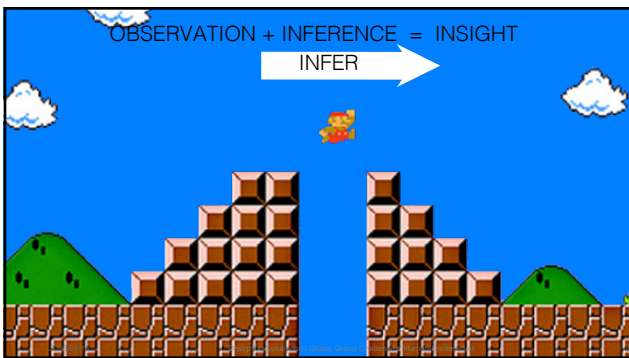
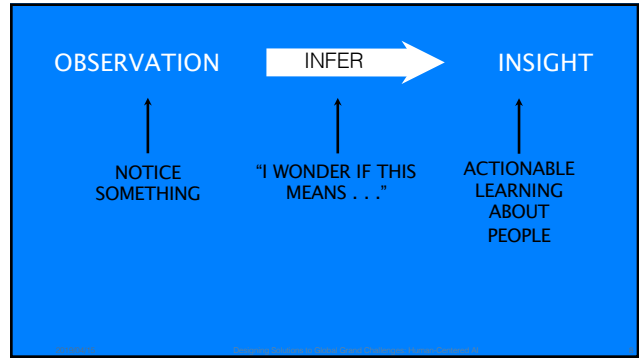
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REALIZE



FOCUS

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The presumed mindset:  
**ART IS DEEPLY PERSONAL.**

The realization:  
**ART IS FASHION ON THE WALL.**

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REALIZE

Define

FOCUS

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**FOCUS  
ON *ONE*  
MEANINGFUL  
CHALLENGE**

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Focus by Writing a “Point of View”

A unique, concise reframing of the problem that is grounded in user needs & insights.

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Focus by Writing a “Point of View”

WE MET . . .  
(user you are inspired by)

WE WERE AMAZED TO REALIZE. . .  
(insight—verb reflecting user needs)

IT WOULD BE GAME-CHANGING TO. . .  
(Synthesized statement to leverage in designing solution.  
NOT just a reason for the need! )

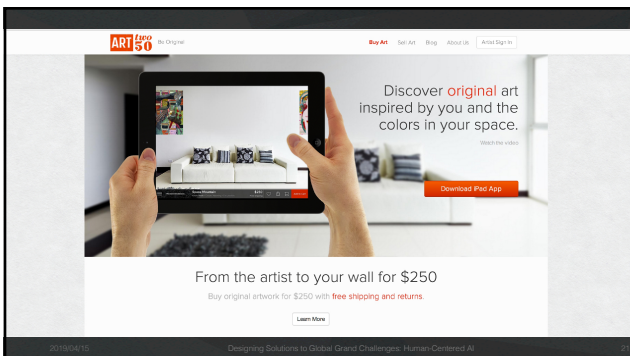
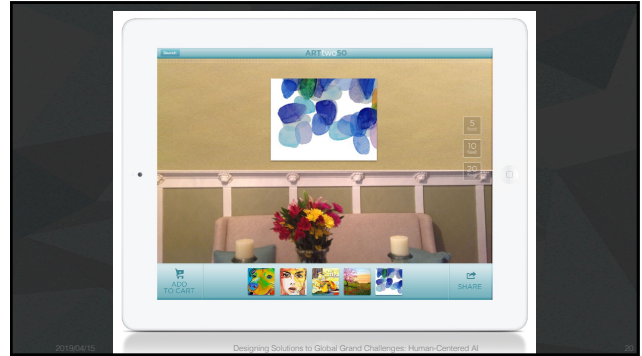
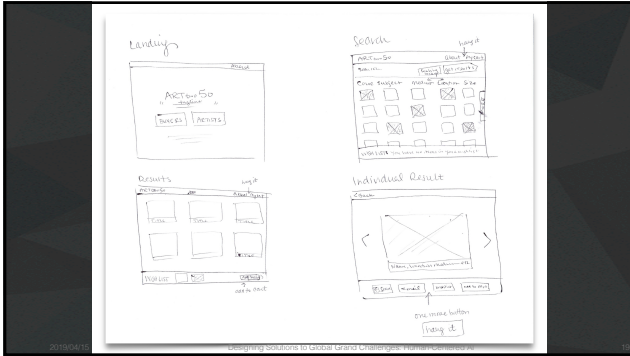
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WE MET . . .  
a guy in his twenties with a good new job and a  
new apartment

WE WERE AMAZED TO REALIZE . . .  
art is fashion on the wall: it’s about what other  
people are going to think of you

IT WOULD BE GAME-CHANGING TO . . .  
help buyers cut through the paralysis of doubt

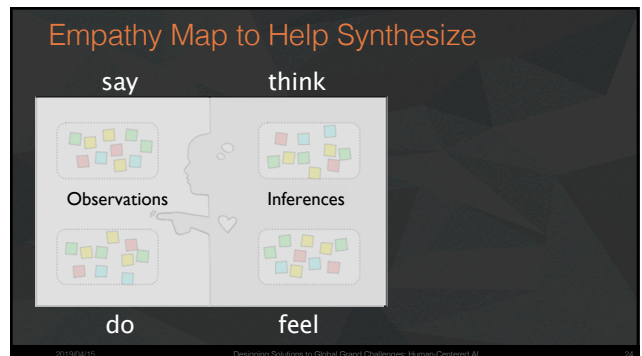
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### Point of View: How?

- **Unpack** your empathy work
- Leap from observations to identifying **user, needs, & insights**
- **Reframe** the problem as a POV

UNPACK  
 INSIGHTS  
 POINT OF VIEW



### Empathy Map to Help Synthesize

say think

do feel

KEEP A LIST OF TENSIONS, CONTRADICTIONS, SURPRISES

USE TO FIND NEEDS & INSIGHTS

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### Identifying Needs

#### WHAT DOES SHE NEED?

- A ladder, more books, ...  
– NO, these are solutions
- Acknowledgement from her peers that she is a hard worker?
- A strong voice driven by knowledge & education?
- More social time with her father through reading together?
- These needs are more **powerful & inspiring** for design

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### UNPACK INSIGHTS POINT OF VIEW

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### I wonder if this means . . .

think

TENSIONS, CONTRADICTIONS, SURPRISES

INSIGHTS

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### identify user, needs, and insights

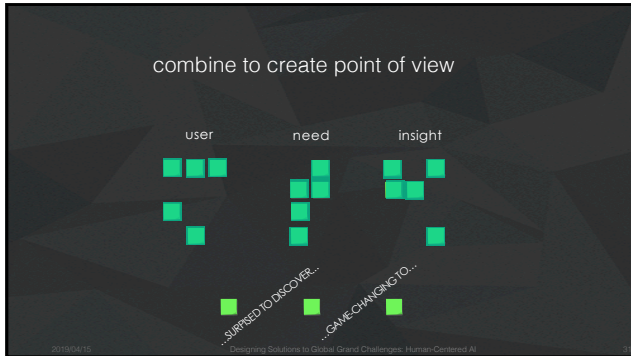
user need insight

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### combine to create point of view

user need insight

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**Point of View**

**WE MET . . .**  
(extreme user you are inspired by)

**WE WERE AMAZED TO REALIZE . . .**  
(what did you learn that's new? What is their need?)

**IT WOULD BE GAME-CHANGING TO . . .**  
(frame up an inspired challenge for yourself – the insight.)  
(don't dictate the solution.)

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**DO IT NOW:**

UNPACK: done – use this to get to needs  
INSIGHTS: infer challenge from your needs  
POINT OF VIEW: 1 written sentence

We met X  
We were amazed to realize...  
It would be game-changing to...

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**Point of View**

**WE MET . . .**  
(extreme user you are inspired by)

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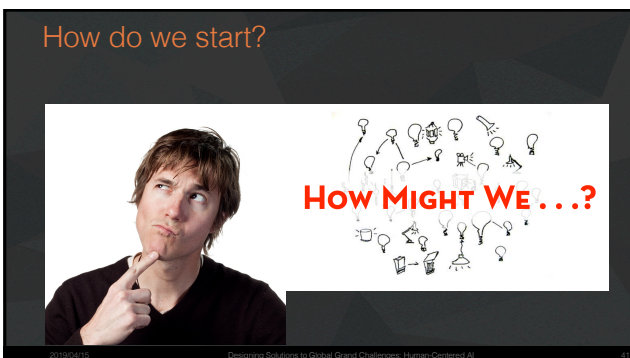
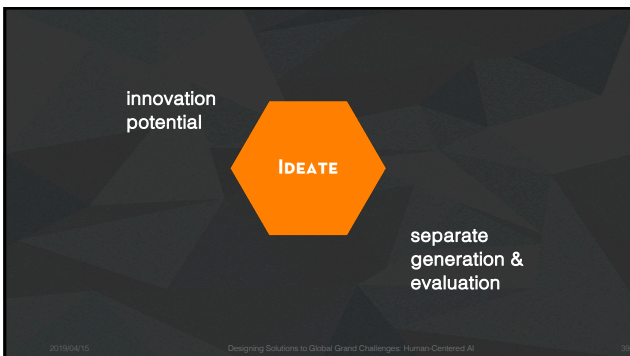
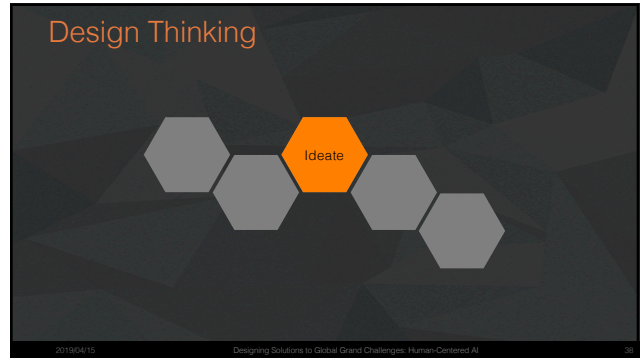
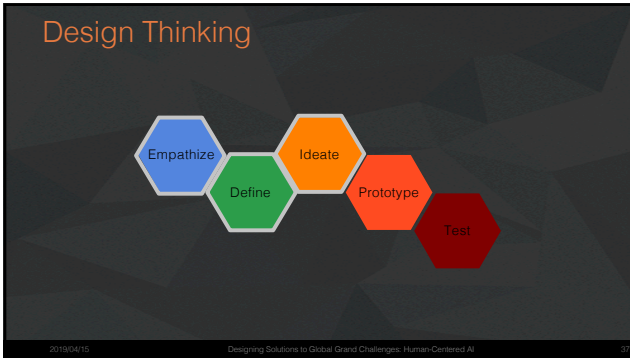
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Ideate

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Slides adapted from d.leadership Define + Ideate slides (<https://www.dleadership.com/define-ideate-slides/>)  
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“Might” lets you defer judgment  
helps people to create options freely  
opens up more possibilities

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POV: We met Janice, a harried mother of 3, rushing through the airport only to wait hours at the gate. We were surprised at the many games she makes up to entertain her children so they don't irritate frustrated fellow passengers. It would be game changing to bring the other passengers and the airport facilities into helping families have a better travel experience.



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**Break POV into pieces**  
 HMW entertain kids? HMW slow a mom down?

**Amp up the good/Remove the bad**  
 HMW separate kids from fellow passengers?

**Explore the opposite**  
 HMW make the wait the most exciting part of the trip?

**Question an assumption**  
 HMW entirely remove the wait time at the airport?

<http://dschool.stanford.edu/wp-content/uploads/2012/05/HMW-METHODCARD.pdf>  
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POV: We met Janice, a harried mother of 3, rushing through the airport only to wait hours at the gate. We were surprised at the many games she makes up to entertain her children so they don't irritate frustrated fellow passengers. It would be game changing to bring the other passengers and the airport facilities into helping families have a better travel experience.

**Go after adjectives**  
 HMW we make the rush refreshing instead of harrying?

**Identify unexpected resources**  
 HMW leverage free time of fellow passengers to share the load?

**Create an analogy from need or context**  
 HMW make the airport like a spa?

**Change a status quo**  
 HMW make playful, loud kids less annoying?

<http://dschool.stanford.edu/wp-content/uploads/2012/05/HMW-METHODCARD.pdf>  
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### Anatomy of a Strong HMW Question

- Who
- What
- When
- Where
- Why

• Best to have at least 3 W's in a good HMW question

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**BRAINSTORM RULES**

one conversation at a time	encourage wild ideas
go for quantity	be visual
headline!	stay on topic
build on the ideas of others	defer judgment

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## DO IT NOW:

Generate some HMW statements for your project!

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POV: We met X. We were surprised to find Y. It would be game changing if Z.

- Break POV into pieces
- Amp up the good/Remove the bad
- Explore the opposite
- Question an assumption
- Go after adjectives
- ID unexpected resources
- Create an analogy from need or context
- Change a status quo

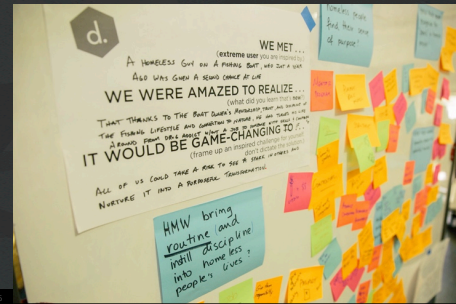
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## Brainstorm "How Might We's" → Solutions



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## Constraints Can Energize

"How would you design it with the technology of 100 years ago?"

"What if we had to spend at least a million dollars?"

"Only ideas that would get you fired"

"All ideas must use magic."

<http://dschool.stanford.edu/wp-content/themes/dschool/method-cards/facilitate-a-brainstorm.pdf>

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## Selecting a Good Problem or Solution Idea

- Frequency
  - want something that occurs often
- Density
  - lots of people experience it
- Pain
  - more than a small annoyance
- Interested
  - your team is motivated to work on this problem



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## Downselecting Ideas

- Celebrate the success of the brainstorm, take a break, vote!
- Option 1: Heat map voting
  - Everyone starts with an unlimited number of votes (small dots)
  - Then everyone gets 3 final votes on their absolute favorites (large dots) **and** 1 bonus dark horse vote
- Option 2: Category voting
  - Each person gets a specific number of votes (i.e., 5)
  - Specific categories (Most feasible idea, Craziest idea, Best long shot, my favorite but improbable, short term solution, etc.)

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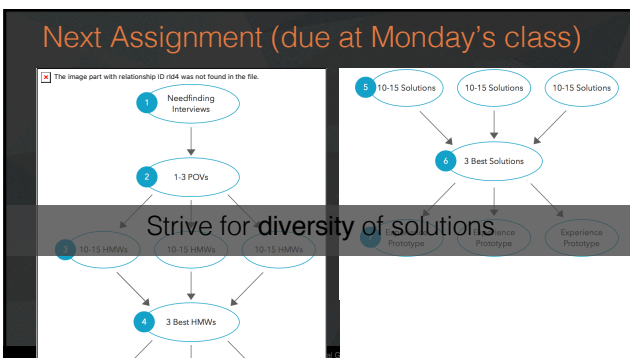
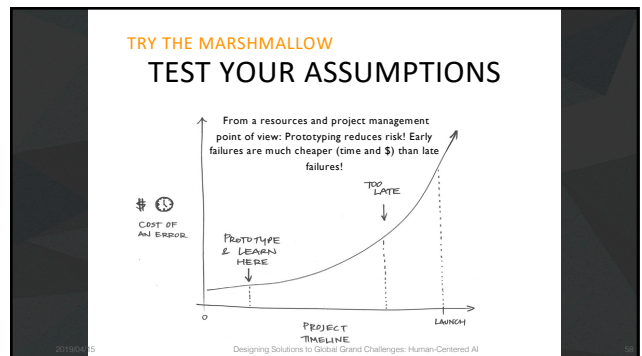
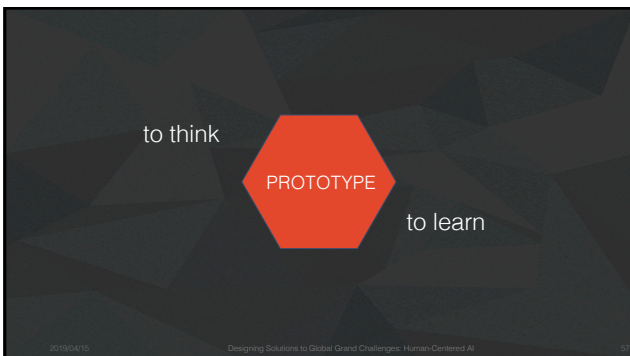
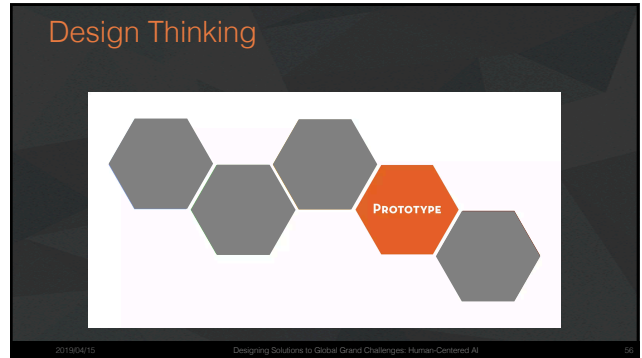
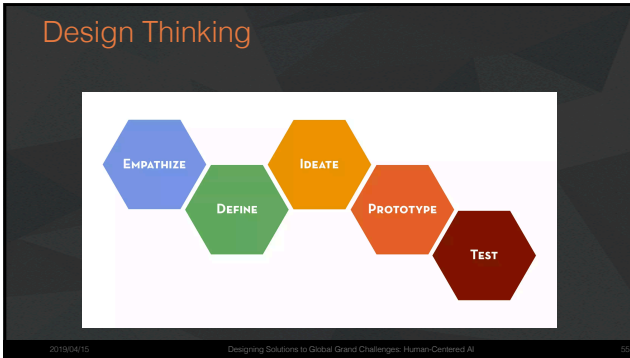


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## Experience Prototyping

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\*slides marked Buxton are courtesy of Bill Buxton, from his talk "Why I Love the iPod, iPhone, Wii and Google", remix.uk, 19-19 Sept. 2008, Brighton





what new information do you have about the user's **need**?

**TEST**

what new information do you have about how your **solution** addresses the need?

**IMPROVING TOOL**

How to improvise to bring an experience to life

**SET THE SCENE**  
 Imagine yourselves in a specific location.  
 ("Okay, we are at the \_\_\_\_\_ . . .")

**DEFINE ROLES AND START PLAYING THEM**  
 Just jump into what makes sense.  
 ("I'm the \_\_\_\_\_ person and you are \_\_\_\_\_ . . .")

**IMPROVISE TO DISCOVER**  
 Build on each other's ideas and keep the scene alive.  
 Try out ideas by playing through them.

**SCENE-PROPS-ROLES TOOL**

**SCENE**  
 of the experience  
how do you make when you are in the "real" context?

---

**PROPS**  
 in the experience  
what are the rough version of the objects "props"?

---

**ROLES**  
 involved in experience  
what are the roles of those "acting" the experience? who are "recording" the experience? (ask them roles to play)

**Parallel Experience Prototyping Goal**

- Prototype to **test an assumption**
- Prototype can be a **piece of idea** rather than a complete solution
- Think of it as a **needfinding** technique

## Summary

Experience prototyping allows us to try many ideas quickly & learn more about the problem & solution space (*prototype to learn*)

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## Next Time

- Project (due Monday at start of class)
  - Flesh out POVs
  - Create HMWs
  - Brainstorm solutions & select the best
  - Create/test experience prototypes for top 3 solutions
  - Test each prototype with at least 1 target users
  - In presentation, get across what you learned!
  - Class will be used to select the idea to move forward

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