

# Final project: Problem Definition & Brainstorming

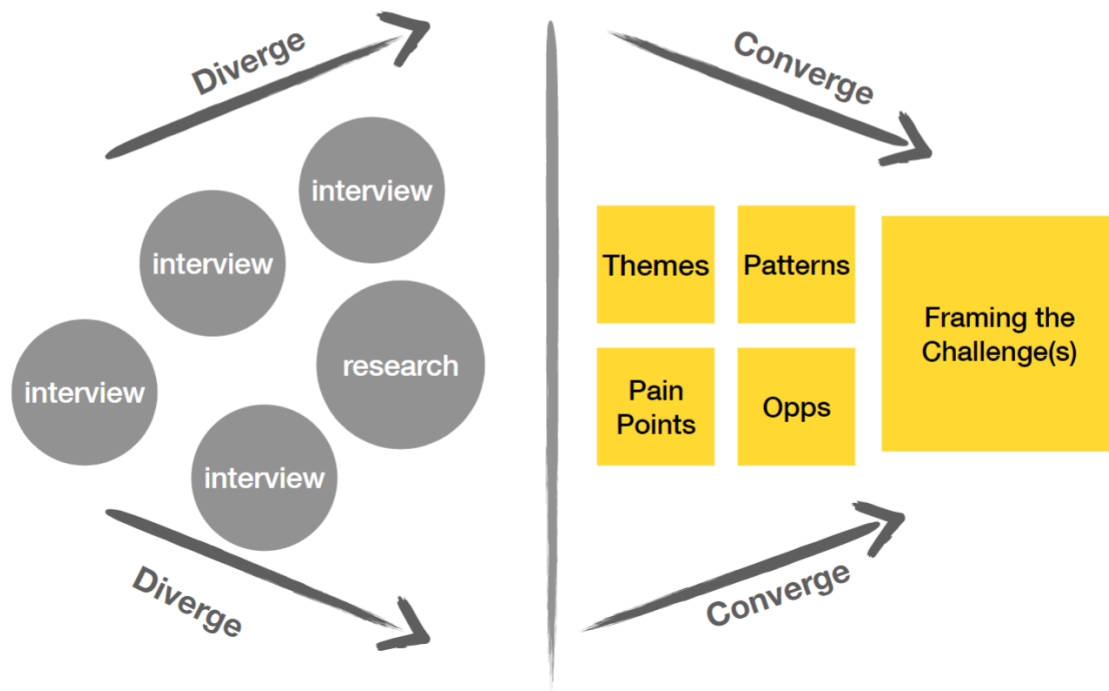
## ENGR 11A – Fall 2024

**Assigned:** Tuesday, November 5

**Due:** Friday, November 8, 9:35am

### Overview

**Goal:** This week, you are going to clarify your problem statement using “how might we statements” based on your interviews and other design research. As a group, you will then brainstorm design solutions, select one, and bring it to life in the form of an evocative storyboard.



### 0 Return to interview analysis

Return to the *Ethnographic interviews* assignment and complete the required interview analysis tasks for each interview subject:

1. A brief *anonymous* profile of your interviewee (who are they, where do they come from, salient events, figures, experiences in their life to date)
2. A complete empathy map
3. A complete journey map
4. Any other details from your interview that didn't seem to fit into either analysis tool

# 1 Problem definition

For the past week, your design process has been in a *divergent* mode, collecting information through research and interviews. Today we switch to *convergent thinking*. In the first part of today's class, you will take the results from your design research—your annotated bibliography, empathy maps, journey maps, and any additional notes—and distill them down to a set of “How Might We...” statements which will help you to define your specific design problem. Use the times listed below as guidance. You may take longer than this for each step, but if you are taking much less than indicated, you might not be getting into the creative process as much as you should be.

## 1.1 Interview debrief (15 min)

1. Start by bringing out all of your design artifacts and discussing them in your groups.
2. How did your interviews go? Did you get the type of information you were looking for? Do you wish you could have found other types of perspectives?

## 1.2 Thematic analysis (20–30 min)

3. Using whiteboards, sticky notes, pieces of paper, digital tools, or whatever else you like, write down words, phrases, quotes, etc. that stand out to you. Group them into categories, which will start turning into themes.
4. Feel free to follow the general process described here:  
<https://www.designkit.org/methods/find-themes.html>
5. “Take a good long look across your interviews and other research. Have any patterns emerged? Is there a compelling insight you heard again and again? A consistent problem the people you’re designing for face? What feels significant? What surprised you?”
6. I can’t tell you how many themes you’ll end up with. Some groups may have as few as three, others may have 15. Instructors will be circulating to help.
7. If you’re interested, here are some other resources for thematic analysis and qualitative data analysis:
  - <https://www.nngroup.com/articles/thematic-analysis/>
  - <https://www.nngroup.com/articles/qualitative-rigor/>

## 1.3 Create insight statements (20–30 min)

8. For each theme you identified, draft an insight statement, which “succinctly articulate[s] the most valuable learning or ‘aha’ moments that emerge from your research.”
9. Sometimes these statements take the form of “<person> <feels/thinks/does a thing> when they <have an experience>.”
10. Insight statements are not easy things to write. Follow the instructions presented here:  
<https://www.designkit.org/methods/create-insight-statements.html>. In particular, use the checklist provided.
11. You should arrive at a list of 3–5 compelling statements that capture the most interesting, most impactful insights from your interviews and research.

## 1.4 Draft “how might we” statements (20–30 min)

12. Convert your 3–5 insight statements into “how might we” statements. This might be as simple as rearranging the statement to start with the words “How might we...” but more likely you’ll have to zoom back out a bit from your insight statement to capture a bit more of the potential solution space.
13. Follow the instructions here: <https://www.designkit.org/methods/how-might-we.html>
14. Here is some specific guidance on writing good HMW statements, including lots of examples, from <https://www.nngroup.com/articles/how-might-we-questions/>:
  - (a) Start with the problems (or insights) you’ve uncovered
  - (b) Avoid suggesting a solution in your HMW question (don’t start solution-ing)
  - (c) Keep your HMWs broad (but not too broad; you can’t boil the ocean)
  - (d) Focus your HMWs on the desired outcome
  - (e) Phrase your HMW questions positively

## 2 Brainstorming!

For the second part of today’s class, you will be using your How Might We statements to develop ideas through brainstorming. It’s likely you’ve done some brainstorming before, but perhaps not quite this way. Today we will be doing rapid brainstorming which is intended to engage creative parts of your brain while not giving the judgmental parts time to shut down wild and wacky ideas.

GO FOR QUANTITY



DEFER JUDGMENT



ENCOURAGE WILD IDEAS



BUILD ON THE IDEAS OF OTHERS



STAY FOCUSED ON THE TOPIC



BE VISUAL



## 2.1 Prepare

First, take a look at these two resources:

- <https://www.designkit.org/methods/28.html>
- <https://www.interaction-design.org/literature/topics/brainstorming>

Prepare a five minute timer.

## 2.2 Ideate

Select one of your HMW statements. Place it at the center of your table. Now, **ideate!** You have five minutes to come up with as many ideas as possible, write them on sticky notes, and add them to the table. This can be individual work or you can choose to say your idea out loud as you add it to the pile.

Try to come up with idea multiple design domains, such as physical objects, modifications to the built environment, information and policy, digital technology, systems and organization, and anything else you can think of.

Keep the following brainstorming guidelines in mind:

- Go for quantity
- Defer judgment
- Encourage wild ideas
- Build on the ideas of others
- Stay focused on the topic
- Be visual

## 2.3 Repeat

Once you've completed this round of brainstorming, move onto the next HMW statement and repeat the process. Keep going until you've done all of the HMW statements that you want to do.

## 2.4 Organize

You should now have a big pile of sticky notes. Using thematic analysis techniques, start to organize and categorize them. What themes emerge? Are there technologies that keep showing up? Or specific policy solutions?

## 2.5 Narrow down

You need to narrow down to your top 3–5 ideas. Feel free to do this by independent voting or by conversation. You don't need to select your top 3–5 sticky notes, just the top ideas, which may involve synthesizing some of the things written or drawn on your notes. Flesh out each of the 3–5 ideas. Please identify:

- What's the main idea?
- What are some specifics about how that idea will be implemented?
- How novel or innovative do you think this idea will be? How practical is it?

## 2.6 Final selection

Go back to your insight and HMW statements. Which of your finalist ideas best fits the needs of your users? Which most clearly solves the problem as you have identified it? You may need to combine multiple ideas together to arrive at your desired solution.

## 3 Deliverables

Please prepare a report documenting your problem definition and brainstorming processes. Once you have selected your final idea, please also prepare a brief description and a **10–12 frame storyboard** showing someone making use of your solution to solve their problem. The storyboard should have both text and visuals for each frame. Post to your team website.

Your user can start by encountering the problem you identified. You can then show them using your design solution in as much detail as you like to solve the problem. You can also consider what the larger-scale implications of your design idea might be, beyond just the experience of your specific user.

There are a lot of resources on storyboarding available. Here is one example:

<https://www.smashingmagazine.com/2017/10/storyboarding-ux-design/>

## 4 Resources

- IDEO Design Kit Methods:
  - Brainstorm rules: <https://www.designkit.org/methods/28.html>
  - Create insight statements: <https://www.designkit.org/methods/create-insight-statements.html>
  - Find themes: <https://www.designkit.org/methods/find-themes.html>
  - How might we: <https://www.designkit.org/methods/how-might-we.html>
- Babich, N. (25 Oct 2017). “The role of storyboarding in UX design.” *Smashing Magazine*. <https://www.smashingmagazine.com/2017/10/storyboarding-ux-design/>
- “Brainstorming,” (n.d.), Interaction Design Foundation. <https://www.interaction-design.org/literature/topics/brainstorming>
- Laubheimer, P. (1 Aug 2021). “Data is more than numbers: Why qualitative data isn’t just opinions,” Nielsen Norman Group. <https://www.nngroup.com/articles/qualitative-rigor/>
- Rosala, M. (17 Aug 2022). “How to analyze qualitative data from UX research: Thematic analysis,” Nielsen Norman Group. <https://www.nngroup.com/articles/thematic-analysis/>
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