Design Thinking
Pre-reading Material

What’s inside?

This learning material provides a high-level overview of Design Thinking: a summary of the fundamental concepts of Design Thinking.

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Human-centered Design

Design thinking informs human-centered innovation. Design thinking is a deeply human process that taps into abilities we all have but get overlooked by more conventional problem-solving practices.

It relies on our ability to be intuitive, to recognize patterns, to construct ideas that are emotionally meaningful as well as functional, and to express ourselves through means beyond words or symbols. Nobody wants to run an organization on feeling, intuition, and inspiration, but an over-reliance on the rational and the analytical can be just as risky. Design thinking provides an integrated third way. —IDEO

Human-centered design is innovation inspired by people

Human-centered design taps into the creative abilities we all have, that typically get overlooked by more conventional problem-solving practices.

Human-centered design is a process used across industries and sectors. It’s inspired by behaviors rather than demographics, takes place in natural contexts versus controlled settings, and relies on dynamic conversations rather than scripted interviews. Ultimately, it is a process that helps teams transform difficult challenges into a desirable solutions—all through design.

It’s Empathetic.
Human-centered design begins from a deep understanding of the needs and motivations of people—the parents, neighbors, children, colleagues, and strangers who make up a community.

**It’s Collaborative.**

Several great minds are always stronger than just one. Human-centered design benefits greatly from the views of multiple perspectives, and others’ creativity bolstering your own.

**It’s Optimistic.**

Human-centered design is the fundamental belief that we can all create change—no matter how big a problem, how little time, or how small a budget. No matter what constraints exist around you, designing can be a powerful process.

**It’s Experimental.**

Expecting perfection makes it hard to take risks, and limits the possibilities to create more radical change. Human-centered design is all about experimenting and learning by doing. It gives you the confidence to believe that new, better things are possible and that you can help make them a reality.
**Design Thinking Mindset**

**Show Don’t Tell**
Communicate your vision in an impactful and meaningful way by creating experiences, using illustrative visuals, and telling good stories.

**Focus on Human Values**
Empathy for the people you are designing for and feedback from these users is fundamental to good design.

**Craft Clarity**
Produce a coherent vision out of messy problems. Frame it in a way to inspire others and to fuel ideation.

**Embrace Experimentation**
Prototyping is not simply a way to validate your idea; it is an integral part of your innovation process. We build to think and learn.

**Be Mindful Of Process**
Know where you are in the design process, what methods to use in that stage, and what your goals are.

**Bias Toward Action**
Design thinking is a misnomer; it is more about doing than thinking. Bias toward doing and making over thinking and meeting.

**Radical Collaboration**
Bring together innovators with varied backgrounds and viewpoints. Enable breakthrough insights and solutions to emerge from the diversity.
Empathize

“To create meaningful innovations, you need to know your users and care about their lives.”

**WHAT is the Empathize mode**

Empathy is the centerpiece of a human-centered design process. The Empathize mode is the work you do to understand people, within the context of your design challenge. It is your effort to understand the way they do things and why, their physical and emotional needs, how they think about world, and what is meaningful to them.

**WHY empathize**

As a design thinker, the problems you are trying to solve are rarely your own—they are those of a particular group of people; in order to design for them, you must gain empathy for who they are and what is important to them.
HOW to empathize

- Observe. View users and their behavior in the context of their lives. As much as possible do observations in relevant contexts in addition to interviews. Some of the most powerful realizations come from noticing a disconnect between what someone says and what he does. Others come from a work-around someone has created which may be very surprising to you as the designer, but she may not even think to mention in conversation.

- Engage. Sometimes we call this technique ‘interviewing’ but it should really feel more like a conversation. Prepare some questions you’d like to ask, but expect to let the conversation deviate from them. Keep the conversation only loosely bounded. Elicit stories from the people you talk to, and always ask “Why?” to uncover deeper meaning. Engagement can come through both short ‘intercept’ encounters and longer scheduled conversations.

- Watch and Listen. Certainly you can, and should, combine observation and engagement. Ask someone to show you how they complete a task. Have them physically go through the steps, and talk you through why they are doing what they do. Ask them to vocalize what’s going through their mind as they perform a task or interact with an object. Have a conversation in the context of someone’s home or workplace – so many stories are embodied in artifacts. Use the environment to prompt deeper questions.

Define

“Framing the right problem is the only way to create the right solution.”
**WHAT is the Define mode**

The Define mode of the design process is all about bringing clarity and focus to the design space. It is your chance, and responsibility, as a design thinker to define the challenge you are taking on, based on what you have learned about your user and about the context. After becoming an instant-expert on the subject and gaining invaluable empathy for the person you are designing for, this stage is about making sense of the widespread information you have gathered.

The goal of the Define mode is to craft a meaningful and actionable problem statement – this is what we call a point-of-view. This should be a guiding statement that focuses on insights and needs of a particular user, or composite character. Insights don’t often just jump in your lap; rather they emerge from a process of synthesizing information to discover connections and patterns. In a word, the Define mode is sense-making.

**WHY Define**

The Define mode is critical to the design process because it results in your point-of-view (POV): the explicit expression of the problem you are striving to address. More importantly, your POV defines the RIGHT challenge to address, based on your new understanding of people and the problem space. It may seem counterintuitive but crafting a more narrowly focused problem statement tends to yield both greater quantity and higher quality solutions when you are generating ideas.

The Define mode is also an endeavor to synthesize your scattered findings into powerful insights. It is this synthesis of your empathy work that gives you the advantage that no one else has: discoveries that you can leverage to tackle the design challenge; that is, INSIGHT.
**HOW to Define**

Consider what stood out to you when talking and observing people. What patterns emerge when you look at the set? If you noticed something interesting ask yourself (and your team) why that might be. In asking why someone had a certain behavior or feeling you are making connections from that person to the larger context.

Develop an understanding of the type of person you are designing for – your USER. Synthesize and select a limited set of NEEDS that you think are important to fulfill; you may in fact express a just one single salient need to address. Work to express INSIGHTS you developed through the synthesis of information you have gathered through empathy and research work. Then articulate a point-of-view by combining these three elements – user, need, and insight – as an actionable problem statement that will drive the rest of your design work.

A good point-of-view is one that:
- Provides focus and frames the problem
- Inspires your team
- Informs criteria for evaluating competing ideas
- Empowers your team to make decisions independently in parallel
- Captures the hearts and minds of people you meet
- Saves you from the impossible task of developing concepts that are all things to all people (i.e. your problem statement should be discrete, not broad.)

**Ideate**
“It’s not about coming up with the ‘right’ idea, it’s about generating the broadest range of possibilities.”

**WHAT is the Ideate mode**

Ideate is the mode of the design process in which you concentrate on idea generation. Mentally it represents a process of “going wide” in terms of concepts and outcomes. Ideation provides both the fuel and also the source material for building prototypes and getting innovative solutions into the hands of your users.

**WHY Ideate**

You ideate in order to transition from identifying problems to creating solutions for your users. Ideation is your chance to combine the understanding you have of the problem space and people you are designing for with your imagination to generate solution concepts. Particularly early in a design project, ideation is about pushing for a widest possible range of ideas from which you can select, not simply finding a single, best solution. The determination of the best solution will be discovered later, through user testing and feedback.

Various forms of ideation are leveraged to:
- Step beyond obvious solutions and thus increase the innovation potential of your solution set
- Harness the collective perspectives and strengths of your teams
- Uncover unexpected areas of exploration
- Create fluency (volume) and flexibility (variety) in your innovation options
- Get obvious solutions out of your heads, and drive your team beyond them

**HOW to ideate**
You ideate by combining your conscious and unconscious mind, and rational thoughts with imagination. For example, in a brainstorm you leverage the synergy of the group to reach new ideas by building on others’ ideas. Adding constraints, surrounding yourself with inspiring related materials, and embracing misunderstanding all allow you to reach further than you could by simply thinking about a problem.

Another ideation technique is building – that is, prototyping itself can be an ideation technique. In physically making something you come to points where decisions need to be made; this encourages new ideas to come forward.

There are other ideation techniques such as body-storming, mind-mapping, and sketching. But one theme throughout all of them is deferring judgment – that is, separating the generation of ideas from the evaluation of ideas. In doing so, you give your imagination and creativity a voice, while placating your rational side in knowing that your will get to the examination of merits later.

Prototype

“Build to think and test to learn.”

**WHAT is the Prototype mode**

The Prototype mode is the iterative generation of artifacts intended to answer questions that get you closer to your final solution. In the early stages
of a project that question may be broad – such as “do my users enjoy cooking in a competitive manner?” In these early stages, you should create low-resolution prototypes that are quick and cheap to make (think minutes and cents) but can elicit useful feedback from users and colleagues. In later stages both your prototype and question may get a little more refined. For example, you may create a later stage prototype for the cooking project that aims to find out: “do my users enjoy cooking with voice commands or visual commands”.

A prototype can be anything that a user can interact with – be it a wall of post-it notes, a gadget you put together, a role-playing activity, or even a storyboard. Ideally you bias toward something a user can experience. Walking someone through a scenario with a storyboard is good, but having them role-play through a physical environment that you have created will likely bring out more emotions and responses from that person.

**WHY Prototype**

**To ideate and problem-solve.** Build to think.
**To communicate.** If a picture is worth a thousand words, a prototype is worth a thousand pictures.

**To start a conversation.** Your interactions with users are often richer when centered around a conversation piece. A prototype is an opportunity to have another, directed conversation with a user.

**To fail quickly and cheaply.** Committing as few resources as possible to each idea means less time and money invested up front.

**To test possibilities.** Staying low-res allows you to pursue many different ideas without committing to a direction too early on.

**To manage the solution-building process.** Identifying a variable also encourages you to break a large problem down into smaller, testable chunks.

**HOW to prototype**
Start building. Even if you aren’t sure what you’re doing, the act of picking up some materials (post-its, tape, and found objects are a good way to start!) will be enough to get you going.

Don’t spend too long on one prototype. Let go before you find yourself getting too emotionally attached to any one prototype.

ID a variable. Identify what’s being tested with each prototype. A prototype should answer a particular question when tested. That said, don’t be blind to the other tangential understanding you can gain as someone responds to a prototype.

Build with the user in mind. What do you hope to test with the user? What sorts of behavior do you expect? Answering these questions will help focus your prototyping and help you receive meaningful feedback in the testing phase.

Test

“Testing is an opportunity to learn about your solution and your user.”

WHAT is the Test mode
The Test mode is when you solicit feedback, about the prototypes you have created, from your users and have another opportunity to gain empathy for the people you are designing for. Testing is another opportunity to understand your user, but unlike your initial empathy mode, you have now likely done more framing of the problem and created prototypes to test. Both these things tend to focus the interaction with users, but don’t reduce your “testing” work to asking whether or not people like your solution. Instead, continue to ask “Why?”, and focus on what you can learn about the person and the problem as well as your potential solutions.

Ideally you can test within a real context of the user’s life. For a physical object, ask people to take it with them and use it within their normal routines. For an experience, try to create a scenario in a location that would capture the real situation. If testing a prototype in situation is not possible, frame a more realistic situation by having users take on a role or task when approaching your prototype. A rule of thumb: always prototype as if you know you’re right, but test as if you know you’re wrong—testing is the chance to refine your solutions and make them better.

**WHY Test**

**To refine prototypes and solutions.** Testing informs the next iterations of prototypes. Sometimes this means going back to the drawing board.

**To learn more about your user.** Testing is another opportunity to build empathy through observation and engagement—it often yields unexpected insights.

**To refine your POV.** Sometimes testing reveals that not only did you not get the solution right, but also that you failed to frame the problem correctly.

**HOW to test**

**Show don’t tell.** Put your prototype in the user’s hands – or your user within an experience. And don’t explain everything (yet). Let your tester interpret
the prototype. Watch how they use (and misuse!) what you have given them, and how they handle and interact with it; then listen to what they say about it, and the questions they have.

Create Experiences. Create your prototypes and test them in a way that feels like an experience that your user is reacting to, rather than an explanation that your user is evaluating.

Ask users to compare. Bringing multiple prototypes to the eld to test gives users a basis for comparison, and comparisons often reveal latent needs.
**Stakeholder Map**

Stakeholder Map helps you identify project stakeholders, their expectations and relationships.

**Instructions:**

1. Diverge on identifying stakeholders, one per sticky note. “Stakeholders” can include teams, team roles, project leads, executives, partners, customers, and end users.

2. For each stakeholder, add a second sticky note with a quote expressing their thoughts, opinions, or expectation.

3. In parallel, cluster stakeholders and label the group.
4. Draw and label lines among groups representing relationships such as influence, process, or dependencies.

**Tips:**

- **Don’t delay.** Take an inventory of a project’s stakeholders as soon as possible in the development cycle. It’s difficult to circle back with those who have been forgotten, so it’s better to get a jump start than to play catch-up.

- **Assumptions aren’t always bad.** Assume that everyone is involved or impacted until proven otherwise. This might seem hard to do, but it’s actually easier than trying to guess who’s impacted and risking an accidental oversight.

**Empathy Map**

Empathy Map help to rapidly put your team in the user’s shoes and align on pains and gains.
Instructions:

1. Draw the map and its four quadrants: Says & Does, Thinks & Feel, Hear, and See.

2. Sketch your user in the center and give them a name and a bit of description about who they are or what they do.

3. Diverge, with each team member writing one observation per sticky note and applying it to the appropriate quadrant of the map.

4. Annotate unknowns (assumptions and questions) for later inquiry or validation.

5. Discuss observations and fill in gaps collaboratively.

Tips:

• **Don’t go it alone.** Empathy for users arises from sharing in the collaborative making of the Empathy Map. Everyone knows something about your user, so use the activity as a means to gather, socialize, and synthesize that information together.

• **Involve your users.** Share your Empathy Maps with your Sponsor Users to validate or invalidate your observations and assumptions. Better yet, invite them to co-create the artifact with your team.

• **Go beyond the job title.** Rather than focusing on your user’s “job title,” consider their actual tasks, motivations, goals, and obstacles.

Problem Statement

Problem statement helps to reorient or reframe the work around your users, theirs actual needs, desires and goals.
Problem statement

_________________________ needs a way to

_________________________  

TYPE OF USER

_________________________

USER'S NEED

Surprisingly/because/but...

_________________________

INSIGHT


Instructions:

1. Write the statement: *The user* needs a way to *do something that addresses their need* so that *they benefit directly*.

2. Focus on your user’s pain points—this helps get at what the underlying problems are. More than one Needs Statement can come from a single pain point.

3. Stay away from listing individual features. Instead, ask yourself, “What does my user really seek? What does she really want?”

4. Cluster similar ideas and discuss

Tips:

- **One big Needs Statement.** After clustering several ideas together, try writing one big (“über”) Needs Statement that represents the entire group. Use the same “need/benefit” format.
• **People aren’t machines.** If an idea is expressed in terms of the machine ("dashboard," "click," "log in," "export," and so on), that’s a clue it’s actually a feature. Re-cast the idea in human terms of what the technology allows your user to accomplish.

**Storyboard**

A storyboard is a visual representation of how a user will interact with an application, product interface or service. Storyboarding is a way to iterate and communicate ideas and scenarios visually by telling user-centric stories. It is also one of the three main techniques for rapid prototyping.

**Instructions:**
1. Imagine your scenario as a story with characters, a plot, conflict, and resolution.

2. Place six sticky notes (“frames”) on a piece of paper. For each frame, draw a quick sketch and annotate with a brief caption.

3. Make the story seamless with a beginning, middle, and end.

4. Share your stories and get feedback.

5. To converge, choose the best parts of each teammate’s story and weave them into one refined “master” story that’s representative of the entire team’s thinking.

Tips:

- **Comics aren’t just for kids.** Try thinking of your storyboard like a comic strip. Combine quick sketches with speech and thought bubbles, action bursts, captions, and narration.

- **This isn’t wire-framing.** Avoid drawing too many screens. Instead, create a narrative that focuses on people and their actions, thoughts, goals, emotions, and relationships.

Feedback Grid

This tool helps to gather and organize any sort of feedback and to then unpack questions and ideas—either in real time or after-the-fact—as an efficient means of determining next steps.
Instructions:

1. Draw the grid and its four quadrants: Things that worked, Things to change, New ideas to try, and Questions we still have.

2. Fill in each quadrant with sticky notes. Be specific and give constructive criticism.

3. Cluster similar ideas and discuss. Search for patterns and themes.

Tips:
• **The sooner, the better.** Use the Feedback Grid to capture ideas in real-time during a meeting or workshop. Or do the activity immediately following a Playback or a cognitive walk-through with a user.

• **Take the next step.** Once you’ve developed and discussed a Feedback Grid, it’s time to take action: Use the “Questions we still have” from the Feedback Grid to inform an Assumptions and Questions activity. Use the “New ideas to try” to begin Storyboarding. Or use the “Things to change” as the basis for a to-do list of action items for different team members.

The best way to learn design thinking is by doing projects and solving real problems! Have fun!