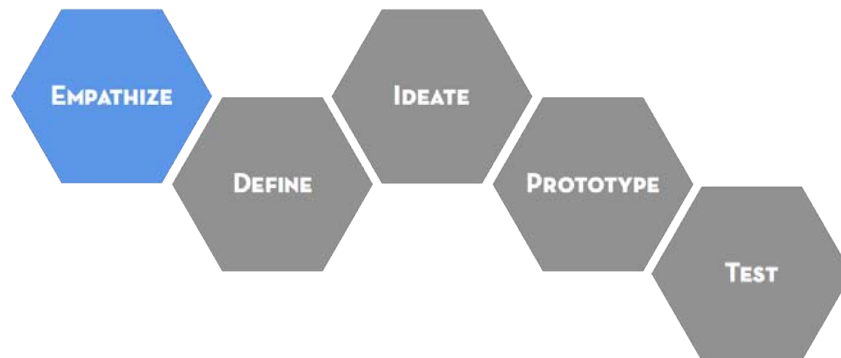


Introduction to Design Thinking

UNIVERSITY OF NAIROBI, JULY 18-22, 2011

MODE

EMPATHIZE



WHAT is the empathize mode

Empathy is the foundation of a human-centered design process. To empathize, we:

- **Observe.** View users and their behavior in the context of their lives.
- **Engage.** Interact with and interview users through both scheduled and short 'intercept' encounters.
- **Immerse.** Experience what your user experiences.

WHY empathize

As a human-centered designer you need to understand the people for whom you are designing. The problems you are trying to solve are rarely your own—they are those of particular users; in order to design for your users, you must build empathy for who they are and what is important to them.

Watching what people do and how they interact with their environment gives you clues about what they think and feel. It also helps you to learn about what they need. By watching people you can capture physical manifestations of their experiences, what they do and say. This will allow you to interpret intangible meaning of those experiences in order to uncover insights. These insights will lead you to the innovative solutions. The best solutions come out of the best insights into human behavior. But learning to recognize those insights is harder than you might think. Why? Because our minds automatically filter out a lot of information in ways we aren't even aware of. We need to learn to see things "with a fresh set of eyes" – tools for empathy, along with a human-centered mindset, is what gives us those new eyes.

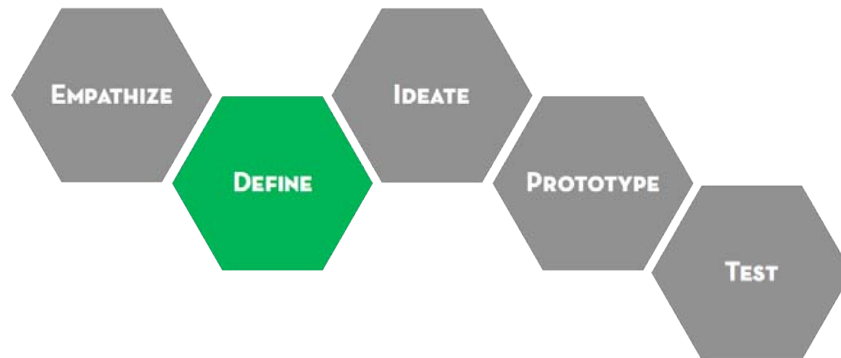
Engaging with people directly reveals a tremendous amount about the way they think and the values they hold. Sometimes these thoughts and values are not obvious to the people who hold them. A deep engagement can surprise both the designer and the designee by the unanticipated insights that are revealed. The stories that people tell and the things that people say they do—even if they are different from what they actually do—are strong indicators of their deeply held beliefs about the way the world is. Good designs are built on a solid understanding of these kinds of beliefs and values. Engage to:

- Uncover needs that people have which they may or may not be aware of
- Guide innovation efforts
- Identify the right users to design for
- Discover the emotions that guide behaviors

In addition to speaking with and observing your users, you need to have personal experience in the design space yourself. Find (or create if necessary) experiences to immerse yourself to better understand the situation that your users are in, and for which you are designing.

MODE

DEFINE



WHAT is the define mode

The define mode is when you unpack and synthesize your empathy findings into compelling needs and insights, and scope a specific and meaningful challenge. It is a mode of “focus” rather than “flaring.” Two goals of the define mode are to develop a deep understanding of your users and the design space and, based on that understanding, to come up with an actionable problem statement: **your point of view**. Your point of view should be a guiding statement that focuses on specific users, and insights and needs that you uncovered during the empathize mode.

More than simply defining the problem to work on, your point of view is your unique design vision that you crafted based on your discoveries during your empathy work. Understanding the meaningful challenge to address and the insights that you can leverage in your design work is fundamental to creating a successful solution.

WHY define

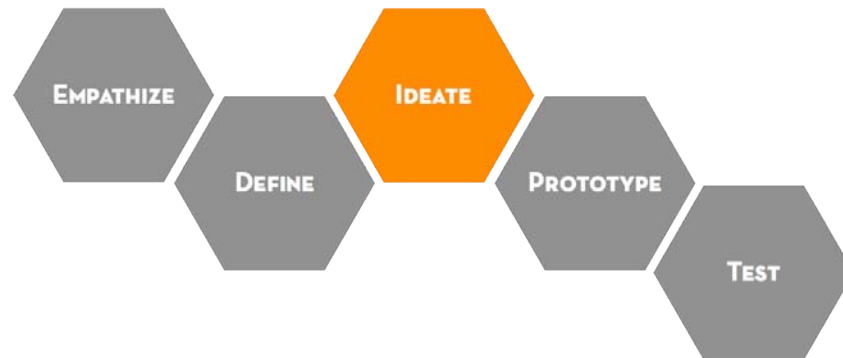
The define mode is critical to the design process because it explicitly expresses the problem you are striving to address through your efforts. In order to be truly generative, you must first craft a specific and compelling problem statement to use as a solution-generation springboard.

As a test, a good point of view (POV) is one that:

- Provides focus and frames the problem
- Inspires your team
- Provides a reference for evaluating competing ideas
- Empowers your team to make decisions independently in parallel
- Fuels brainstorming by suggesting “how might we” statements
- 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
- Is something you revisit and reformulate as you learn by doing
- Guides your innovation efforts

MODE

IDEATE



WHAT is the ideate mode

Ideate is the mode during your design process in which you focus on idea generation. Mentally it represents a process of “going wide” in terms of concepts and outcomes—it is a mode of “flaring” rather than “focus.” The goal of ideation is to explore a wide solution space – both a large quantity of ideas and a diversity among those ideas. From this vast depository of ideas you can build prototypes to test with users.

WHY ideate

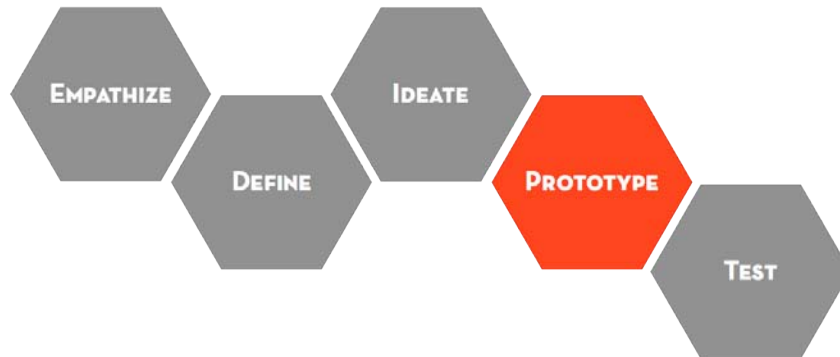
You ideate in order to transition from identifying problems into exploring solutions for your users. Various forms of ideation are leveraged to:

- 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

Regardless of what ideation method you use, the fundamental principle of ideation is to be cognizant of when you and your team are generating ideas and when you are evaluating ideas – and mix the two only intentionally.

MODE

PROTOTYPE



WHAT is the prototype mode

Prototyping is getting ideas and explorations out of your head and into the physical world. A prototype can be *anything* that takes a physical form – be it a wall of post-it notes, a role-playing activity, a space, an object, an interface, or even a storyboard. The resolution of your prototype should be commensurate with your progress in your project. In early explorations keep your prototypes rough and rapid to allow yourself to learn quickly and investigate a lot of different possibilities.

Prototypes are most successful when people (the design team, the user, and others) can experience and interact with them. What you learn from those interactions can help drive deeper empathy, as well as shape successful solutions.

WHY do we prototype

Traditionally prototyping is thought of as a way to test functionality. But prototyping is used for many reasons, including these (non-mutually-exclusive) categories:

- **Empathy gaining:** Prototyping is a tool to deepen your understanding of the design space and your user, even at a pre-solution phase of your project.
- **Exploration:** Build to think. Develop multiple solution options.
- **Testing:** Create prototypes (and develop the context) to test and refine solutions with users.
- **Inspiration:** Inspire others (teammates, clients, customers, investors) by showing your vision.

Many of the goals of prototyping are shared across all four of the above categories.

We prototype to:

Learn. If a picture is worth a thousand words, a prototype is worth a thousand pictures.

Solve disagreements. Prototyping is a powerful tool that can eliminate ambiguity, assist in ideation, and reduce miscommunication.

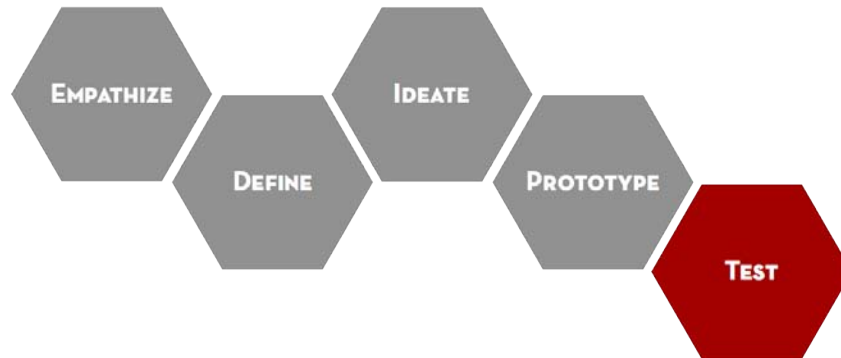
Start a conversation. A prototype can be a great way to have a different kind of conversation with users.

Fail quickly and cheaply. Creating quick and dirty prototypes allows you to test a number of ideas without investing a lot of time and money up front.

Manage the solution-building process. Identifying a variable to explore encourages you to break a large problem down into smaller, testable chunks.

MODE

TEST



WHAT is the test mode

Testing is the chance to refine our solutions and make them better. The test mode is another iterative mode in which we place our low-resolution artifacts in the appropriate context of the user's life. Prototype as if you know you're right, but test as if you know you're wrong.

WHY test

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

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

To test and refine our POV. Sometimes testing reveals that not only did we not get the solution right, but also that we have failed to frame the problem correctly.

METHOD

ASSUME A BEGINNER'S MINDSET



WHY assume a beginner's mindset

We all carry our experiences, understanding, and expertise with us. These aspects of yourself are incredibly valuable assets to bring to the design challenge – but at the right time, and with intentionality. Your assumptions may be misconceptions and stereotypes, and can restrict the amount of real empathy you can build. Assume a beginner's mindset in order to put aside these biases, so that you can approach a design challenge afresh.

HOW to assume a beginner's mindset

Don't judge. Just observe and engage users without the influence of value judgments upon their actions, circumstances, decisions, or “issues.”

Question everything. Question even (and especially) the things you think you already understand. Ask questions to learn about how the user perceives the world. Think about how a 4-year-old asks “Why?” about everything. Follow up an answer to one “why” with a second “why.”

Be truly curious. Strive to assume a posture of wonder and curiosity, especially in circumstances that seem either familiar or uncomfortable.

Find patterns. Look for interesting threads and themes that emerge across interactions with users.

Listen. Really. Lose your agenda and let the scene soak into your psyche. Absorb what users say to you, and how they say it, without thinking about the next thing you're going to say.

METHOD

WHAT? | How? | Why?

concrete		emotional	
WHAT (what are they doing in the photo?)	HOW (how are they doing it?)	WHY (why are they doing it this way? Take a guess!)	
-little girl picking root vegetables	-she's smiling, even though it looks bigger than her, it looks fun	-somehow it's been made into a game...gardening is fun...getting messy is fun to her?	
			

WHY use What? | How? | Why?

During observation mode, What? | How? | Why? is a tool that can help you drive to deeper levels of observation. This simple scaffolding allows you to move from concrete observations of the happenings of a particular situation to the more abstract potential emotions and motives that are at play in the situation you're observing. This is a particularly powerful technique to leverage when analyzing photos that your team has taken into the field, both for synthesis purposes, and to direct your team to future areas of needfinding.

HOW to use What? | How? | Why?

Set-up: Divide a sheet into three sections: What?, How?, and Why?

Start with concrete observations:

What is the person you're observing doing in a particular situation or photograph? Use descriptive phrases packed with adjectives and relative descriptions.

Move to understanding:

How is the person you're observing doing what they are doing? Does it require effort? Do they appear rushed? Pained? Does the activity or situation appear to be impacting the user's state of being either positively or negatively? Again, use as many descriptive phrases as possible here.

Step out on a limb of interpretation:

Why is the person you're observing doing what they're doing, and in the particular way that they are doing it? This step usually requires that you make informed guesses regarding motivation and emotions. Step out on a limb in order to project meaning into the situation that you have been observing. This step will reveal assumptions that you should test with users, and often uncovers unexpected realizations about a particular situation.

METHOD

INTERVIEW PREPARATION



WHY prepare for an interview

Time with users is precious, we need to make the most of it! While we always must allow room for the spontaneous, blissful serendipity of a user-guided conversation, we should never abdicate our responsibility to prepare for interviews. Especially in following up with users (after testing, etc.), it is imperative to plan your interviews. You may not get to every question you prepare, but you should come in with a plan for engagement.

HOW to prepare for an interview

Brainstorm questions

Write down all of the potential questions your team can generate. Try to build on one another's ideas in order to flesh out meaningful subject areas.

Identify and order themes

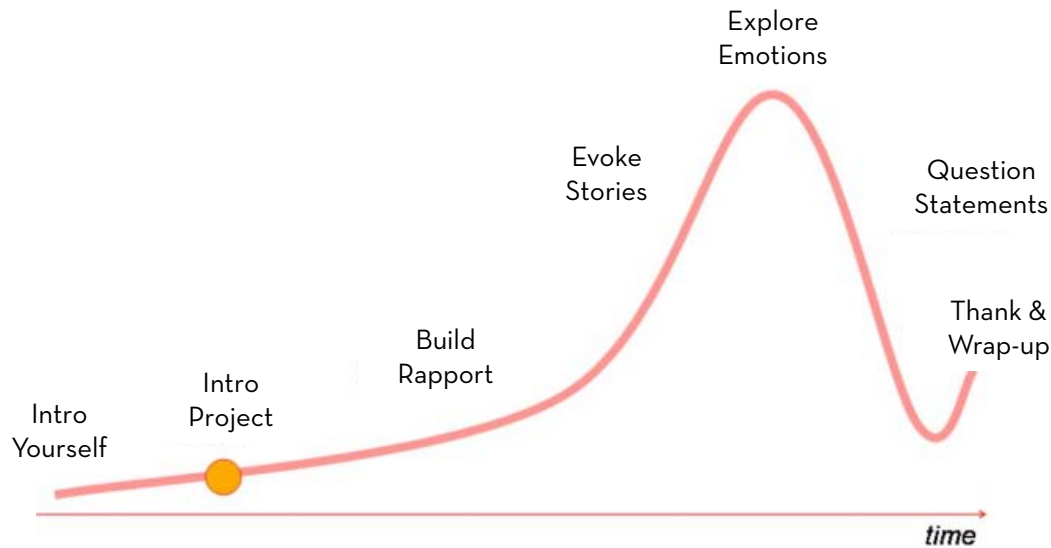
Similar to "grouping" in synthesis, have your team identify themes or subject areas into which most questions fall; once you've identified the themes of your question-pool, determine the order that would allow the conversation to flow most naturally. This will enable you to structure the flow of your interview, decreasing the potential for hosting a seemingly-scattershot interaction with your user.

Refine questions

Once you have all the questions grouped by theme and order, you may find that there are some redundant areas of conversation, or questions that seem strangely out of place. Take a few moments to make sure that you leave room in your planning to ask plenty of "why?" questions, plenty of "tell me about the last time you ___?" questions, and plenty of questions that are directed at how the user FEELS.

METHOD

INTERVIEW FOR EMPATHY



WHY interview

We want to understand a person's thoughts, emotions, and motivations, so that we can determine how to innovate for him or her. By understanding the choices that person makes and the behaviors that person engages in, we can identify their needs and design for those needs.

HOW to interview

Ask why. Even when you think you know the answer, ask people why they do or say things. The answers will sometimes surprise you. A conversation started from one question should go on as long as it needs to.

Never say “usually” when asking a question. Instead, ask about a specific instance or occurrence, such as “tell me about the last time you ____”

Encourage stories. Whether or not the stories people tell are true, they reveal how they think about the world. Ask questions that get people telling stories.

Look for inconsistencies. Sometimes what people say and what they do are different. These inconsistencies often hide interesting insights.

Pay attention to nonverbal cues. Be aware of body language and emotions.

Don't be afraid of silence. Interviewers often feel the need to ask another question when there is a pause. If you allow for silence, a person can reflect on what they've just said and may reveal something deeper.

Don't suggest answers to your questions. Even if they pause before answering, don't help them by suggesting an answer. This can unintentionally get people to say things that agree with your expectations.

Ask questions neutrally. “What do you think about buying gifts for your spouse?” is a better question than “Don't you think shopping is great?” because the first question doesn't imply that there is a right answer.

Don't ask binary questions. Binary questions can be answered in a word; you want to host a conversation built upon stories.

Only ten words to a question. Your user will get lost inside long questions.

Only ask one question at a time, one person at a time. Resist the urge to ambush your user.

Make sure you're prepared to capture. Always interview in pairs. If this is not possible, you should use a voice recorder—it is impossible to engage a user and take detailed notes at the same time.

METHOD

EXTREME USERS



WHY engage with extreme users

Designers engage with users (people!) to understand their needs and gain insights about their lives. We also draw inspiration from their work-arounds and frameworks. When you speak with and observe extreme users, the needs are amplified and their work-arounds are often more notable. This helps you pull out meaningful needs that may not pop when engaging with the middle of the bell curve. However, the needs that are uncovered through extreme users are often also needs of a wider population.

HOW to engage extreme users

Determine who's extreme

Determining who is an extreme user starts with considering what aspect of your design challenge you want to explore to an extreme. List a number of facets to explore within your design space. Then think of people who may be extreme in those facets. For example, if you are redesigning the grocery store shopping experience you might consider the following aspects: how groceries are gathered, how payment is made, how purchase choices are made, how people get their groceries home, etc. Then to consider the aspect of gathering groceries, for example, you might talk to professional shoppers, someone who uses a shopping cart to gather recyclables (and thus overloads the cart), product pullers for online buyers, people who bring their kids shopping with them, or someone who doesn't go to grocery stores.

Engage

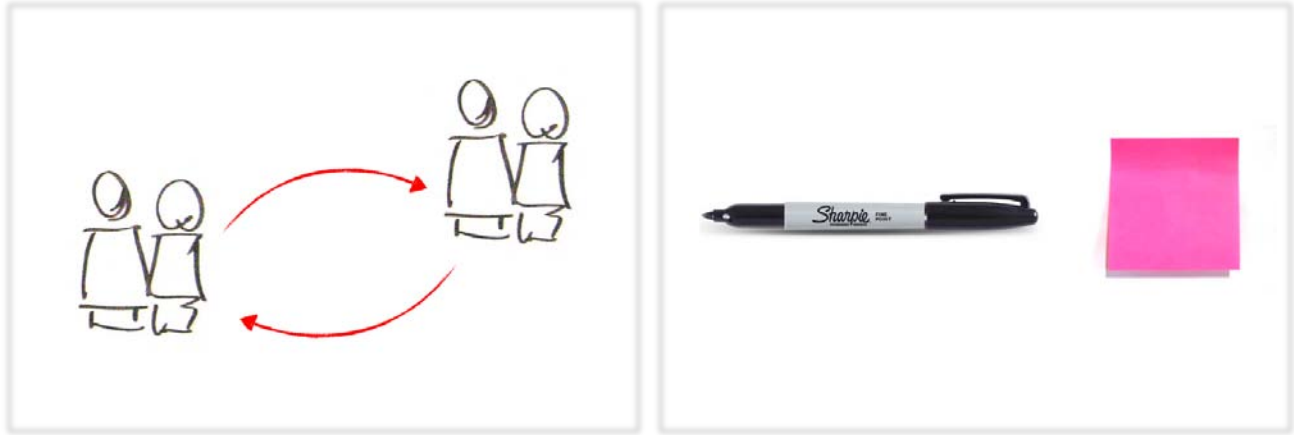
Observe and interview your extreme user as you would other folks. Look for work-arounds (or other extreme behaviors) that can serve as inspiration and uncover insights.

Look at the extreme in all of us

Look to extreme users for inspiration and to spur wild ideas. Then work to understand what resonates with the primary users you are designing for.

METHOD

STORY SHARE-AND-CAPTURE



WHY story share-and-capture

A team share serves at least three purposes. First, it allows team members to come up to speed about what different people saw and heard in the field. Even if all the team members were present for the same fieldwork, comparing how each experienced it is valuable. Second, in listening and probing for more information, team members can draw out more nuance and meaning from the experience than you may have initially realized. This starts the synthesis process. Third, in capturing each interesting detail of the fieldwork, you begin the space saturation process.

HOW to story share-and-capture

Unpack observations and air all the stories that stick out to you about what you saw and heard during your empathy fieldwork. Each member in the group should tell user stories and share notes while other members headline quotes, surprises, and other interesting bits – one headline per post-it. These post-its become part of the team's space saturation, and can also be physically grouped to illuminate theme and patterns that emerge (See "Saturate and Group" method card). The end goal is to understand what is really going on with each user. Discover who that person is and what that person needs in regard to your problem space.

METHOD

SATURATE AND GROUP



WHY saturate and group

You space saturate to help you unpack thoughts and experiences into tangible and visual pieces of information that you surround yourself with to inform and inspire the design team. You group these findings to explore what themes and patterns emerge, and strive to move toward identifying meaningful needs of people and insights that will inform your design solutions.

HOW to saturate and group

Saturate your wall space (or work boards) with post-its headlining interesting findings (see “Story Share-and-Capture”) plus pictures from the field of users you met and relevant products and situations.

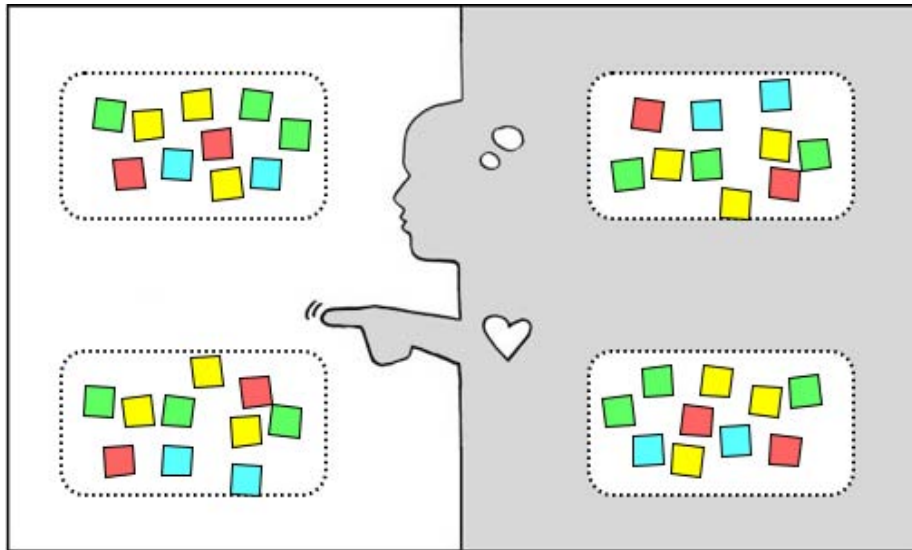
In order to begin to synthesize the information, organize the post-its and pictures into groups of related parts. You likely have some ideas of the patterns within the data from the unpacking you did when producing the notes. For example, you may have seen and heard many things related to feeling safe, and many things regarding desire for efficiency. Within the group of ‘safety’, go beyond the theme and try to see if there is a deeper connection that may lead to an insight such as “Feeling safe is more about who I am with than where I am”. Maybe there is a relation between groups that you realize as you place items in groups – that safety is often at odds with users’ desire for efficiency. Try one set of grouping, discuss (and write down) the findings, and then create a new set of groups.

The end goal is to synthesize data into interesting findings and create insights which will be useful to you in creating design solutions.

It is common to do the grouping with post-its headlining interesting stories from fieldwork. But grouping is also useful to think about similarities among a group of products, objects, or users.

METHOD

EMPATHY MAP



WHY use an empathy map

Good design is grounded in a deep understanding of the person for whom you are designing. Designers have many techniques for developing this sort of empathy. An Empathy Map is one tool to help you synthesize your observations and draw out unexpected insights.

HOW to use an empathy map

UNPACK: Create a four quadrant layout on paper or a whiteboard. Populate the map by taking note of the following four traits of your user as you review your notes, audio, and video from your fieldwork:

- SAY: What are some quotes and defining words your user said?
- DO: What actions and behaviors did you notice?
- THINK: What might your user be thinking? What does this tell you about his or her beliefs?
- FEEL: What emotions might your subject be feeling?

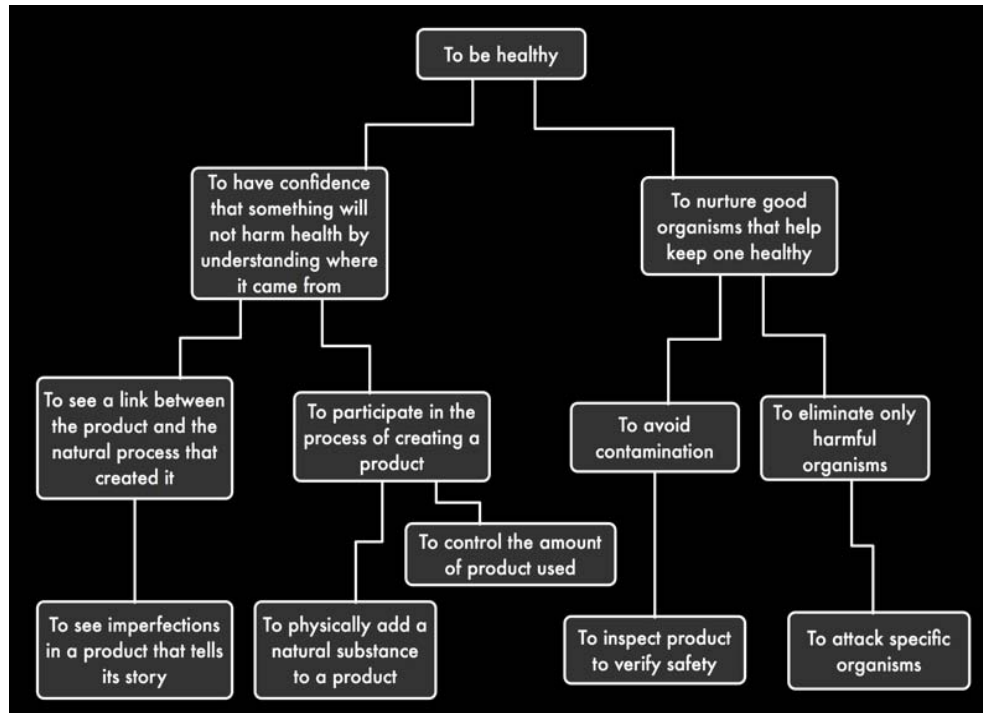
Note that thoughts/beliefs and feelings/emotions cannot be observed directly. They must be inferred by paying careful attention to various clues. Pay attention to body language, tone, and choice of words.

IDENTIFY NEEDS: “Needs” are human emotional or physical necessities. Needs help define your design challenge. Remember: Needs are *verbs* (activities and desires with which your user could use help), not *nouns* (solutions). Identify needs directly out of the user traits you noted, or from contradictions between two traits – such as a disconnect between what she says and what she does. Write down needs on the side of your Empathy Map.

IDENTIFY INSIGHTS: An “Insight” is a remarkable realization that you could leverage to better respond to a design challenge. Insights often grow from contradictions between two user attributes (either within a quadrant or from two different quadrants) or from asking yourself “Why?” when you notice strange behavior. Write down potential insights on the side of your Empathy Map. One way to identify the seeds of insights is to capture “tensions” and “contradictions” as you work.

METHOD

WHY-HOW LADDERING



WHY why-how ladder

As a general rule, asking 'why' yields more abstract statements and asking 'how' yields specific statements. Often times abstract statements are more meaningful but not as directly actionable, and the opposite is true of more specific statements. That is why you ask 'why?' often during interviews – in order to get toward more meaningful feelings from users rather than specific likes and dislikes, and surface layer answers. Outside an interview, when you think about the needs of someone, you can use why-how laddering to flesh out a number of needs, and find a middle stratum of needs that are both meaningful and actionable.

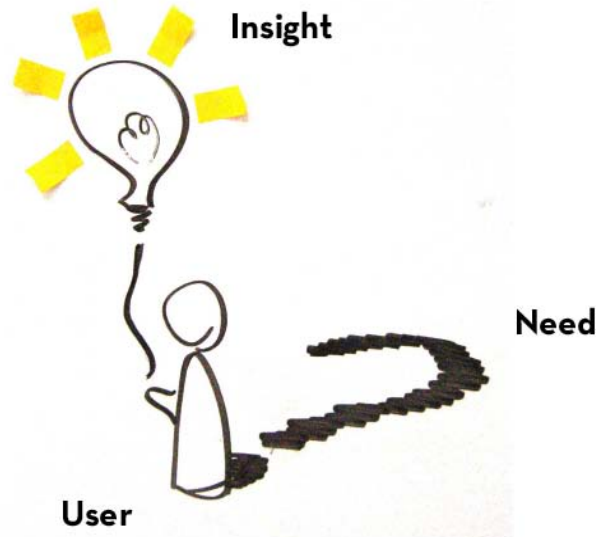
HOW to why-how ladder

When considering the needs of your user, start with a meaningful one. Write that need on the board and then ladder up from there by asking 'why'. Ask why your user would have that need, and phrase the answer as a need. For example, "Why would she 'need to see a link between a product and the natural process that created it'? Because she 'needs to have confidence that something will not harm her health by understanding where it came from'." Combine your observations and interviews with your intuition to identify that need. Then take that more abstract need and ask why again, to create another need. Write each on the board above the former. At a certain point you will reach a very abstract need, common to just about everyone, such as the 'need to be healthy'. This is the top of that need hierarchy branch. You can also ask 'how' to develop more specific needs. Climb up ('why?') and down (how?) in branches to flesh out a set of needs for your user. You might come up to one need and then come back down. In the previous example, you climbed up to the 'need to understand where a product came from'. Then ask 'how' to identify the 'need to participate in the process of creating a product'. There will also be multiple answers to your 'whys' and 'hows' – branch out and write those down.

The result (after some editing and refining) is a needs hierarchy that paints a full picture of your user or composite user. Alternatively, you can use this tool to hone in on one or two particularly salient needs.

METHOD

POINT-OF-VIEW MADLIB



WHY use a POV madlib

A point-of-view (POV) is your reframing of a design challenge into an actionable problem statement that will launch you into generative ideation. A POV Madlib provides a scaffolding to develop your POV. A good POV will allow you to ideate in a directed manner, by creating How-Might-We (HMW) questions based on your POV (see “Facilitating Brainstorms”). Most of all, your POV captures your design vision – your responsibility and opportunity as a designer is to discover and articulate the meaningful challenge.

HOW to use a POV madlib

Use the following madlib to capture and harmonize three elements of a POV: user, need, and insight.

[USER] needs to [USER’S NEED] because [SURPRISING INSIGHT]

Use a whiteboard or scratch paper to try out a number of options, playing with each variable and the combinations of them. The need and insight should flow from your unpacking and synthesis work. Remember, ‘needs’ should be verbs, and the insight typically should not simply be a reason for the need, but rather a synthesized statement that you can leverage in designing a solution. Keep it sexy (it should intrigue people) and hold the tension in your POV.

For example, instead of “A teenage girl needs more nutritious food because vitamins are vital to good health” try “A teenage girl with a bleak outlook needs to feel more socially accepted when eating healthy food, because in her hood a social risk is more dangerous than a health risk.” Note how the latter is an actionable, and potentially generative, problem statement, while the former is little more than a statement of fact, which spurs little excitement or direction to develop solutions.

METHOD

“How Might We” QUESTIONS

How Might We...?

WHY create how might we questions

“How might we” (HMW) questions are short questions that launch brainstorm. HMWs fall out of your point-of-view statement or design principles as seeds for your ideation. Create a seed that is broad enough that there are a wide range of solutions but narrow enough that the team has some helpful boundaries. For example, between the too narrow “HMW create a cone to eat ice cream without dripping” and the too broad “HMW redesign dessert” might be the properly scoped “HMW redesign ice cream to be more portable.” It should be noted, the proper scope of the seed will vary with the project and how much progress you have made in your project work.

HOW to generate how might we questions

Begin with your Point of View (POV) or problem statement. Break that larger challenge up into smaller actionable pieces. Look for aspects of the statement to complete the sentence, “How might we...” It is often helpful to brainstorm the HMW questions before the solutions brainstorm. For example, consider the following POV and resulting HMW statements.

USER	+	NEED	+	INSIGHT
An overworked husband	(needs)	to feel good about recycling		When things pile up he feels behind. And ultimately the big pile on the curb feels more like generating waste than doing good

- How to reduce the size of the recycling pile?
- How to make the husband feel good about a big pile?
- How to reduce the amount of work involved in gathering all the house piles?
- How to eliminate overflowing recycling bins?
- How to make the husband feel ahead of the game?
- How to make the husband feel less overworked?
- How to make recycling feel less like waste?

METHOD

STOKE



WHY stoke

Stoke activities help teams loosen up and become mentally and physically active. Use stoke activities when energy is wavering, to wake up in the morning, to launch a meeting, or before a brainstorm.

HOW to stoke

Do an activity that gets your creativity going and increases your team members' engagement with each other. A good stoke activity not only increases energy but also requires each person to actively engage, listen, think, and do. For example, when playing Pictionary you must watch a teammate drawing, listen to other teammates guessing the answer (allowing you to build on those ideas), think of what the answer might be, and call out guesses yourself. Keep the activity brief (5-10 minutes) and active so you can jump into your design work after. Many improv games are good stoke activities. Try one of these:

Category, category, die! Line folks up. Name a category (breakfast cereals, vegetables, animals, car manufacturers). Point at each person in rapid succession, skipping around the group. The player has to name something in the category. If she does not, everyone yells "die!!" and that player is out for the round.

Sound ball Stand in a circle and throw an imaginary ball to each other. Make eye contact with the person you are throwing to, and make a noise as you throw it. The catcher should repeat the noise while catching, and then make a new noise as he throws to next person. Try to increase the speed the ball travels around the circle. Add a second ball to the circle to increase each person's awareness.

"Yes, Let's" Everyone walk around the room randomly, and then one person can make an offer: "Let's act like we're all at a cocktail party," "Let's be baby birds," or "Let's act like we don't understand gravity." Then everyone should shout in unison the response, "Yes, let's" and proceed to take the directive by acting it out. At anytime someone else can yell out the next offer. The answer is always, "Yes, let's!"

METHOD

BRAINSTORMING



One Conversation at a Time

Encourage wild ideas

Go for Quantity

Be Visual

Headline!

Stay on Topic

Build on the Ideas of Others

**Defer Judgement -
NO Blocking**

WHY brainstorm

Brainstorming is a great way to come up with a lot of ideas that you would not be able to generate by just sitting down with a pen and paper. The intention of brainstorming is to leverage the collective thinking of the group, by engaging with each other, listening, and building on other ideas. Conducting a brainstorm also creates a distinct segment of time when you intentionally turn up the generative part of your brain and turn down the evaluative part. Brainstorming can be used throughout a design process; of course to come up with design solutions, but also any time you are trying to come up with ideas, such as planning where to do empathy work, or thinking about product and services related to your project – as two examples.

HOW to brainstorm

Be intentional about setting aside a period of time when your team will be in “brainstorm mode” – when the sole goal is to come up with as many ideas as possible, and when judgment of those ideas will not come into the discussion. Invest energy into a short period of time, such as 15 or 30 minutes of high engagement. Get in front of a whiteboard or around a table, but take an active posture of standing or sitting upright. Get close together.

Write down clearly what you are brainstorming. Using a How-Might-We (HMW) question is a great way to frame a brainstorm (e.g. HMW give each shopper a personal checkout experience?). (See more on the “How Might We” Questions” method card.)

There are at least two ways to capture the ideas of a brainstorming:

1. Scribe: the scribe legibly and visually captures on the board ideas that team members call out. It is very important to capture every idea, regardless of your own feelings about each idea.
2. All-in: Each person will write down each of his or her ideas as they come, and **verbally share it** with the group. It is great to do this with post-it notes, so you can write your idea and then stick it on the board.

Follow and (nicely) enforce the brainstorming rules – they are intended to increase your creative output.

METHOD

FACILITATE A BRAINSTORM



WHY facilitate a brainstorm

Good facilitation is key to a generative brainstorm. You brainstorm to come up with many, wide-ranging ideas; a good facilitator sets the stage for the team to be successful doing this.

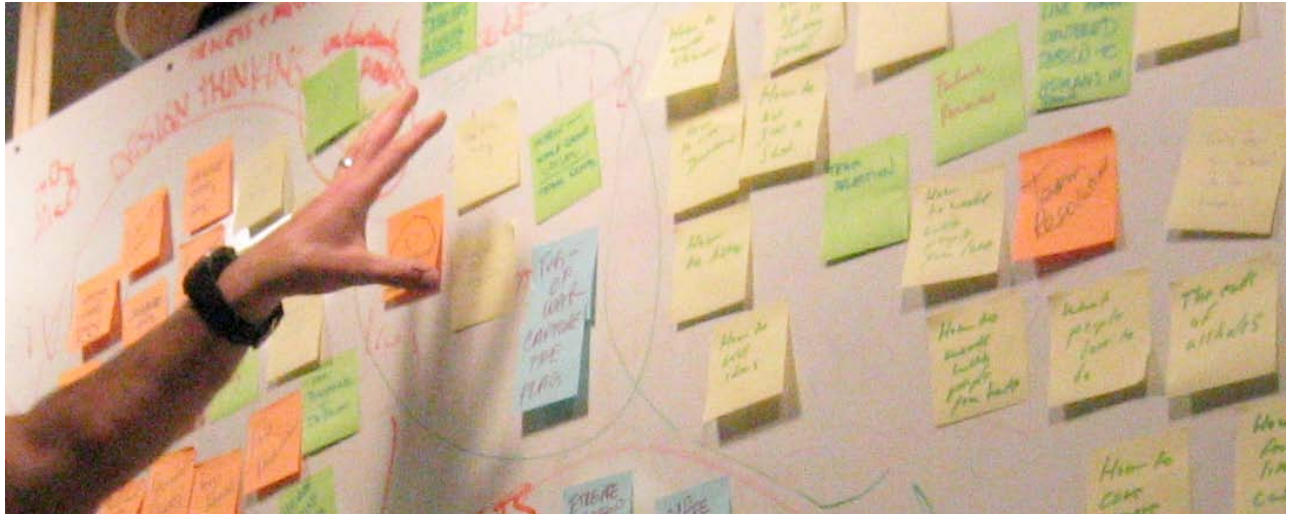
HOW to facilitate brainstorm

ENERGY – As the facilitator it is your task to keep the ideas flowing. Perhaps the most important aspect of a successful brainstorm is the seed question that you are brainstorming about (see the “How Might We” method card for more information). During the brainstorm keep a pulse on the energy of the group. If the group is slowing down or getting stuck, make an adjustment. Create a variation to the “How-might-we?” (HMW) statement to get the group thinking in another direction (prepare some HMW options ahead of time). Or have a few provocative ideas in your back pocket that you can lob in to re-energize the team.

CONSTRAINTS – Add constraints that may spark new ideas. “What if it had to be round?,” “How would superman do it?,” “How would your spouse design it?,” “How would you design it with the technology of 100 years ago?” Additionally you can create process constraints. Try putting a time limit on each how-might-we statement; shoot for 50 ideas in 20 minutes.

SPACE – Be mindful about the space in which you conduct a brainstorm. Make sure that there is plenty of vertical writing area. This allows the group to generate a large number of potential solutions. Strike a balance between having a footprint that is big enough for everyone, but also is not so large that some people start to feel removed. A good rule of thumb is that all members of the group should be able to reach the board in two steps. Also, make sure each person has access to sticky notes and a marker so they can capture their own thoughts and add them to the board if the scribe cannot keep up with the pace. (See more about scribing on the “Brainstorming” method card.)

METHOD SELECTION



WHY brainstorm selection is important

Your brainstorm should generate many, wide-ranging ideas. Now harvest that brainstorm, so those ideas don't just sit there on the board. Harvesting is straight forward for some brainstorms (pick a couple of ideas), but when ideating design solutions give some thought to how you select ideas. Carry forward a range of those ideas, so you preserve the breadth of solutions and don't settle only for the safe choice.

HOW to select

In the selection process, don't narrow too fast. Don't immediately worry about feasibility. Hang on to the ideas about which the group is excited, amused, or intrigued. An idea that is not plausible may still have an aspect within it that is very useful and meaningful.

Different selection techniques can be used, including these three:

1. Post-it voting – each team member gets three votes and marks three ideas that he or she is attracted to. Independent voting allows all team members to have a voice.
2. The four categories method – the method encourages you to hang onto those crazy but meaningful ideas. Elect one or two ideas for each of these four categories: the rational choice, the most likely to delight, the darling, and the long shot.
3. Bingo selection method – like the four categories method, this is designed to help preserve innovation potential. Choose ideas that inspire you to build in different form factors: a physical prototype, a digital prototype, and an experience prototype.

Carry forward multiple ideas into prototyping. If an idea is so far out there that it seems pointless to test, ask yourselves what about that solution was attractive, and then test that aspect or integrate it into a new solution.

METHOD

PROTOTYPE FOR EMPATHY



WHY prototype for empathy

It is common practice to test prototypes with users to evaluate solutions, but you can also gain empathy through prototyping, exposing different information than simple interviewing and observation might. Of course, *whenever you test with a user you should consider both what you can learn about your solution and what you can learn about the person* – you can always use more empathetic understanding.

But you can also develop prototypes or create situations specifically designed to gain empathy, without testing a solution at all (or even having a solution in mind). This is sometimes called “active empathy” because you are not an outside observer, you are creating conditions to bring out new information. In the same way a solution prototype helps you gain understanding about your concept, an empathy prototype helps you gain understanding about the design space and people’s mindsets about certain issues.

HOW to prototype for empathy

These empathy prototypes are often best used when you have done some work to understand the design space, and want to dig deeper into a certain area or probe an insight you are developing. Think about what aspect of the challenge you want to learn more about. Then discuss or brainstorm ways you might investigate that subject. You can create prototypes for empathy to test with users or with your design team.

Some ideas:

- Have your user draw something (for example, draw how you think about spending money, or draw how you get to work) and then talk about it afterward.
- Create a game that probes issues you want to explore (for example, you could make a simple card game which forces users to make choices related to your design challenge).
- Simulate an aspect of what users are going through to better understand it yourself (for example, if your users plant seeds while carrying a baby, get a sling and carry ten pounds while planting seeds).

METHOD

PROTOTYPE TO TEST



WHY prototype to test

Prototyping to test is the iterative generation of low-resolution artifacts that probe different aspects of your design solution or design space. The fundamental way we test our prototypes is by letting users experience them and react to them. In creating prototypes to test with users you have the opportunity to examine your solution decisions as well as your perception of your users and their needs.

HOW to prototype to test

Think about what you are trying to learn with your prototypes, and create low-resolution objects and scenarios which probe those questions. Staying low-res allows you to pursue many different ideas you generated without committing to a direction too early on. The objective is not simply to create a mock-up or scale model of your solution concept; it is to create experiences to which users can react. Bring resolution to the aspects that are important for what you are trying to test, and save your efforts on other aspects. You also need to think about the context and testing scenario you will create to get meaningful feedback. It is not always the case that you can just hand an object to someone on the street and get real feedback. Test in the context that your solution would actually be used (or approximate the important parts of that context). For example, if you are creating a consumer food storage system, let users test it in their kitchens at home – some of the nuanced but important issues will only emerge there.

Some tips for prototyping to test:

Start building. Even if you aren't sure what you're doing, the act of picking up some materials (paper, 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. Move on before you find yourself getting too emotionally attached to any one 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.

ID a variable. Identify what's being tested with each prototype. A prototype should answer a particular question when tested.

METHOD

TESTING WITH USERS



WHY test with users

Testing with users is a fundamental part of a human-centered design approach. You test with users to refine your solution and also to refine your understanding of the people for whom you are designing. When you test prototypes you should consider both their feedback on your solution and use the opportunity to gain more empathy. You are back in a learning and empathy mode when you engage users with a prototype.

HOW to test with users

There are multiple aspects to be aware of when you test with users. One is your **prototype**, two is the **context and scenario** in which you are testing, three is **how you interact** with the user during testing and four is how you **observe and capture** and consider the feedback.

In regard to the first two aspects, you need to test a prototype in a context that give you the best chance for meaningful feedback; think about how the prototype and the testing scenario interact. If the prototype is a scenario, think about how to find the proper people (i.e. users relevant to your point-of-view) and get them in the right mindset so that you get genuine feedback.

Roles

During the testing itself, use intentional team roles, as you would with empathy work:

Host: You help transition the user from reality to your prototype situation and give them the basic context they need to understand the scenario (don't over-explain it, let the user discover through the experience). As the host, you will also likely be the lead questioner when the time comes.

Players: You often need to play certain roles in the scenario to create the prototype experience.

Observers: It is very important to have team members who are solely observers, watching the user experience the prototype. If you don't have enough people to run the prototype and observe, videotape the testing.

Procedure

Use a deliberate procedure when you test.

1. Let your user experience the prototype. Show don't tell. Put your prototype in the user's hands (or your user in the prototype) and give just the minimum context so they understand what to do. Don't explain your thinking or reasoning for your prototype.

2. Have them talk through their experience. For example, when appropriate, as the host, ask "Tell me what you are thinking as you are doing this."

3. Actively observe. Watch how they use (and misuse!) what you have given them. Don't immediately "correct" what your user tester is doing.

4. Follow up with questions. This is important; often this is the most valuable part of testing. "Show me why this would [not] work for you." "Can you tell me more about how this made you feel?" "Why?" Answer questions with questions (i.e. "well, what do you think that button does").

METHOD

IDENTIFY A VARIABLE



WHY identify a variable

Identifying a variable you want to test helps you understand what kind of prototype you are going to create. Most prototypes should not simply be mock-ups of a solution you have in mind. Instead, create prototypes – which may not look like or wholly represent your solutions at all – that help you learn about specific aspects of your solution or mindsets of your users. When you identify a variable you can save energy in not creating all the facets of a complicated solution, and, more importantly, the results of testing with users will often be more conclusive and nuanced.

Incorporating too many variables into one prototype can water down the feedback you'll get from your users – what was it were they responding to? You might never find out. Identifying a variable also gives you the opportunity to create multiple prototypes, each varying in the one property. Giving a user tester a choice and the ability to make comparisons often results in more useful feedback because that person is encouraged to promote one option over another (rather than a less useful “I like it” response you might get with one prototype).

HOW to identify a variable

Prototype with a purpose; think about what you are trying to learn by making a prototype. Identify one variable to flesh out and test with each prototype you build. Bring resolution to that aspect of the prototype. Remember a prototype doesn't have to be, or even look like the solution idea. You might want to know how heavy a device should be. You can create prototypes of varied weight, without making each one operable. In another example, you may want to find out if users prefer getting delivery or picking up themselves – you may not even need to put anything in the box to test this.

METHOD

STORYTELLING



WHY storytelling over other forms of communication

It seems stories are hard-wired into our psyche. People have been passing information along via storytelling for as long as humans have had a rich language to draw from. Stories are a great way to connect people with ideas, at a human level. A well-told story – focused on sharing pertinent details that express surprising meaning and underlying emotions – effects the emotions and the intellect simultaneously.

HOW to design a story

What's the point? Know what you intend to convey both narratively and emotionally. You should be able to describe the essence of the transformation of your character in one sentence & the tone of the story in a couple of words. Be able to articulate the emotional tone in a couple of words.

Be Authentic: Stories are more powerful when they include a little bit of you. Honest expression is stronger and more resonant than cliché.

Character-Driven: Characters are a great vehicle through which to express deep human needs and generate empathy and interest from your audience. Focus on character.

Dramatic Action: Your story should have 3 components: Action, Conflict, and Transformation.

Action: What is the character trying to do? What actions are they taking to achieve it?

Conflict: What is in her way? What questions linger beneath the surface?

Transformation: What is the big insight? How do the action & conflict resolve?

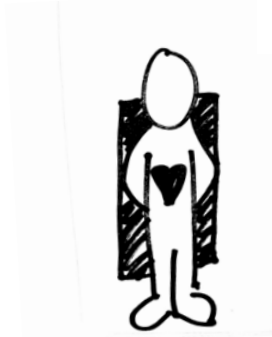
Details: “Behind all behavior lies emotion.” What details can you share about your character and their situation that will suggest the emotions that lie beneath?

Design Process is a Built in Story: Use what you've learned during the design process.

Empathy maps well to Character. Needs map to Conflict, Insights + Solutions map to Transformation.

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.

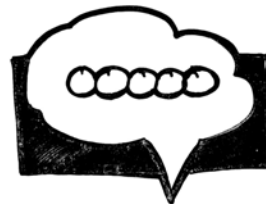
CRAFT CLARITY

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 that 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.

D.MINDSETS