Design Thinking

Objectives

- To define design thinking
- To understand the core principles of design thinking
- To list the stages of design thinking
- To get familiarized with the tools used in design thinking
- To understand the best practices in implementation of design thinking

Introduction

Design thinking represents a completely different way of thinking. It is a new approach to problem solving and ideation. It is more than just a process, it is an entirely new ideology that aims to deal with solving complex problems in a user centric manner.

Design thinking is a people centric approach that focuses on understanding human needs and coming up with effective solutions that meet those needs. It is based heavily on processes and methods that have been used by designers, hence the name design thinking. It actually incorporates principles from various fields including design, business, engineering, and architecture, and it is equally applicable in a variety of domains.

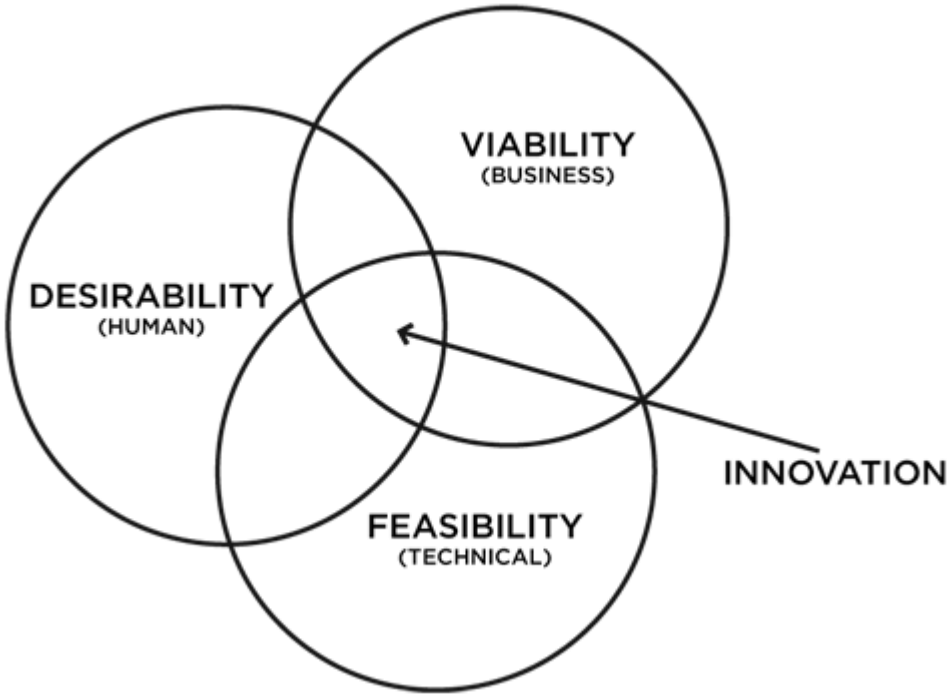
Christoph Meinel and Larry Leifer of the Hasso-Plattner Institute of Design at Stanford University have outlined the four core rules of design thinking.

- The human rule– Irrespective of the context, all design activity is social in nature and we must remember to keep human needs at the centre of the process.
- The ambiguity rule– Ambiguity cannot be avoided or eliminated. The design thinking process should embrace it.
- The redesign rule– Nothing is completely new and all design is basically redesign to fulfil basic needs in a different and better way.
- The tangible rule– Ideas have to be made tangible in the form of prototypes. This enables designers to communicate their solution to users and other stakeholders.

In addition to this there are several other characteristics of design thinking that help us to understand its true nature.

- Design thinking is especially useful in solving ill-defined and tricky problems, which many practitioners call ‘wicked’ problems.
- Rather than accept the problem as a given, design thinkers explore the issue to see if the problem can be reframed or restructured.
- Design thinking is solution focused as opposed to being problem focussed.
- The mode of creative thinking is abductive, which means that the inference drawn from observations is the best possible one and not necessarily a wholly satisfactory one.

- The design thinker must oscillate between thinking about the problem and about the solution, leading to co-evolution of the problem and the solution.
- Design thinking is an iterative process that continues with experimentation to first find a solution, and then, improve the solution.
- Communication within the design thinking team is not done mainly through words but through graphical representations, drawings, and sketches.



Stages of design thinking

As per the Hasso-Plattner Institute of Design at Stanford (also known as the DSchool), the design thinking process can be divided into five stages (See Figure 6.2).

- Empathize
- Define
- Ideate
- Prototype
- Test

Other schools of thought in design thinking have divided up the process of design thinking differently, but for the purposes of this chapter, we will refer to the aforementioned five stage process.

Empathise

Empathy is defined as the ability to understand and share the feelings of another. This is the critical starting point of the design thinking process. This stage involves getting to know the

users better and delving into their actual wants, needs, and motives. The problems to be solved are usually not the problems of the designer. To get to know users helps design products for them. Empathy can be developed in the following ways:

- Observe—observe users and their behaviour, especially in the context of the problem
- Engage—interact with them through scheduled and unscheduled interviews and meetups
- Immerse—designers experience what the user experiences

At this stage the design thinker should set aside their own viewpoints and assumptions and gain insights on the users and their needs without any preconceived notions.

At this stage the design thinker may engage with experts and others too. The idea is to collect information that sets the stage for the subsequent stages.

Source: Ideo

Define

The define stage uses all the information that is gathered during the empathize stage. Observations and data are analysed and synthesized to define the core problem that the users are facing. So, the end point of this stage is a definitive problem statement that emerges from our observations.

It is important that the problem statement should be expressed in terms of the user needs rather than the needs of those conducting the process. So, instead of "We need to increase our biscuit sales among college goers by 20%", it should be like, "The college going students need nutritious, tasty yet cheap snacks to help them through their busy yet unstructured day".

Illustrative example: From her chats with keto enthusiasts, she found that there are some keto enthusiasts whose jobs get them to move a lot during the day. They are not confined to a single location. They find it very hard to stick to the diet.

Ideate

Armed with a clear understanding of the users and a well-defined problem statement, at this stage, the designers will start the ideation process. The objective is to look at the problem statement from various angles and generate many possible solutions. Free thinking is stimulated and several ideation techniques like mind mapping and brain storming can be used. Towards the end of this phase, a few good ideas are narrowed down and possibly one or two are selected for implementation. Other ideas need not be discarded but kept in cold storage for now. It may also be good to combine elements of two or more ideas into one.

Prototype

At this stage the idea of the solution is given a tangible look. A prototype is a scaled down version of the possible final product or service which incorporates the representation of the important elements of the proposed solution. In this step, the solution is built and initial flaws and constraints are identified.

It is not only products but also services that can have a working prototype. For example, a guided tour to a monument can have a completely worked out prototype which includes details of who will be the guide, where will it start, what will be said, and what exactly will be shared with the tourists.

Test

Only when the users interact with and use the solution, will there be a clear picture of how well are their needs being served by the proposed solution. It is important to note how the users think, behave, and feel while interacting with the product. Refinements and alterations will be made based on their feedback.

Even though this is the last stage, it is important to remember that design thinking is an iterative process and the results of the test phase take the process back to the first stage to start the process of further refinement.

Illustrative example: Lo Foods

Sudarshan Gangrade worked in several startups and then started his boutique health consulting firm – LeanScience. There he saw the growing trend of the high fat, high protein Keto diet and decided to start a line of keto friendly food products

- Empathize
  Instead of just starting off with the Keto food products that others were selling or were successful in the west, Sudarshan decided to talk to Keto enthusiasts, He asked them general questions about their life, their interest in Keto and the main challenges they were facing.

- Define
  From his conversations, he came to know that people on a Keto diet find it hard to stick to it because keto friendly foods available today are either not tasty, or are very different from what we are used to eating. For example, an Indian doesn't really feel like munching on a granola bar while having an evening cup of chai. Being on the diet on a long term becomes difficult.
- Ideate
  The team decided to look at popular Indian snacks and figure out which could be made by replacing traditional ingredients with keto-friendly ingredients and not compromise much on the taste.
- Prototype
  Constantly experimenting with ingredients and recipes lead the team to a small set of products they found satisfactory. The Lo Foods team of food technologists and nutritionists came up with namkeens like murukku, coated peanuts and salted namakpara; and desserts like coconut ladoo, almond cookies and elaichi biscuits.
- Test
  Lo Foods launched they initial range of products in select market and closely tracked the customer response. After they were able to get a repeat ratio of over 35%, they were confident of the viability of their products and decided to launch it in bigger markets and market it extensively.

Lo Foods products are now available on Swiggy, Freshmenu and Amazon, in addition to several retail outlets. They even have a tie-up with Hyatt. Now, they are looking at expanding their reach as well as their product range.

Design thinking tools

The following tools and orientation are helpful in getting the best out of design thinking.

Beginner's mindset

Everyone carries their own understanding, experiences, and mindset. This predisposes us to think in certain ways. Assume a beginner's mindset to put your biases aside and see the situation with fresh eyes.

- Observe and engage with users without being judgemental.
- Question things which are seemingly obvious. Ask 'why' and follow that up with more 'whys'.
- Be curious about both the familiar and the unfamiliar.
- Look for patterns that emerge from your observations.
- Listen patiently.

Extreme users

Look for engaging some users who have a higher level of need or who feel the problem more acutely. For example, while engaging with commuters, find those that commute for more than

3 hours daily. Often the extreme users give very valuable insights because of the work-arounds or *jugaad* they may have implemented.

What | How | Why

It is a tool to help to get deeper levels of observation. Divide a sheet into three sections and fill up as follows:

- What—the concrete objective observation of what the person is doing
- How—how are they doing it… does it take time and skill? Describe with the help of adjectives
- Why—explore the motivations and emotions behind the action

The empathy interview

The empathy interview uses a human centred approach to understand the thoughts and emotions of others. The interview is informal and feels like an open conversation with a friend. There are certain tips that are helpful in conducting an empathy interview with the purpose of understanding the user well. These are:

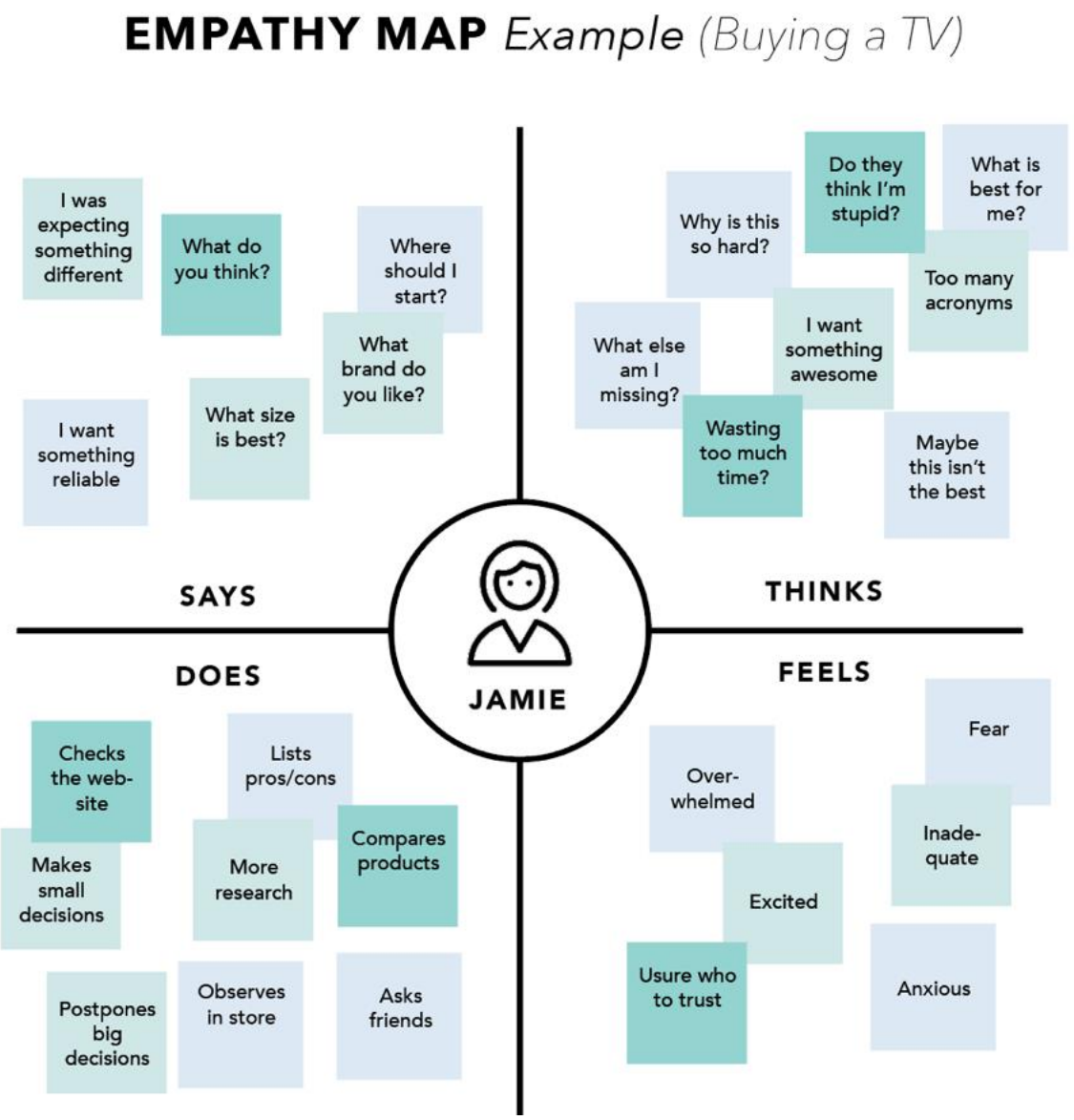
- Ask 'why' even when the answer may seem obvious.
- Ask questions that encourage people to tell stories.
- Pay attention to non-verbal cues like periods of silence, body language, etc.
- Look for inconsistencies, as inconsistencies reveal interesting insights.
- Don't suggest answers to questions.
- Ask open ended questions rather than questions that can be answered by 'yes', 'no', or a 'single word'.

Empathy Map

An empathy map is a tool that helps synthesize your observations and draw out interesting insights. It has four quadrants

- Say—what all has the user said
- Do—actions and behaviour exhibited by the user
- Think—what might they be thinking
- Feel—what emotions might they be feeling

'Say' and 'do' can be observed while 'think' and 'feel' must be inferred.



Uses of design thinking

Design thinking can be put to a variety of uses. Some of the main uses are as follows:

New product development– Traditionally, businesses have used design to improve functionality and aesthetics but now design thinking is being used to come up with the basic product concept as well.

Process improvement– For ongoing businesses, a fresh look at processes by observing and engaging with stakeholders can bring a lot of benefits in terms of cost saving and efficiency.

User interface improvement– UI/UX design relies on design thinking to improve customer experience. It is most evident in the development of websites and apps.

Education– Many universities and colleges have courses on design thinking. Educators have also recognized the importance of introducing the design thinking methodology at the school level itself.

Public institutions– Several public institutions are using design thinking to improve governance and to reach beneficiaries better. For example, several smart city administrations use design thinking before introducing new civic amenities.

Several companies have used design thinking to come up with products that have revolutionized the industry. Uber is probably one of the finest examples of how design thinking could be used to come up with a service that resonates so well with consumer needs. Uber launched in 2012 and reached a valuation of $50 billion in three years' time. By the use of human centric design principles, Uber was able to completely redesign the 'taxi' experience in the following ways.

- Lower prices possible by higher utilization of the taxi through a search and book system
- Customer uncertainty regarding arrival of booked cab is reduced by an online tracking and visualization tool
- Customer concerns regarding safety reduced through a customer rating system
- Transaction discomfort reduced through a cashless payment mechanism

GE Adventure MRI for Kids

Source: GE

Similarly, several other organizations have used design thinking effectively to get ahead.

- GE Healthcare used design thinking to turn the terrifying experience of MRI for kids into an adventure by making it a theme park type ride (Figure 6.4).
- AirBnB realized that people are open to sharing homes with strangers and it is now an exemplar in the 'sharing' economy.
- Developer of Embrace infant warmer, used design thinking to bring out an extremely affordable alternative for an incubator for premature babies (less than ₹1000) in Nepal.
- Established companies like PepsiCo and IBM have used design thinking to come up with process improvements and new business lines.

Best practices of Design thinking

While there is no set way in which design thinking needs to be done, experience of teams so far has indicated that the following best practices lead to good results.

- Design thinking should not be the role of a specific person but of the entire startup team. The entire venture should adopt it as a way of thinking and doing.
- The process should be carried out by diverse and multidisciplinary participants.
- There should be a high level of interaction and communication within the startup.
- Not just marketing and sales, all others in the team should also interact with customers.
- It should not be a time bound exercise, in effect, design thinking should be happening all the time.
- All sorts of qualitative and quantitative research like user surveys, group discussions, field observations, etc., should be used to power design thinking.
- Prototyping and testing should be done often. It should be understood that not all prototypes are going to be successful.
- Metrics should be tracked rigorously to see what is working and what is not.

Design thinking is not just for business or startups but is also for other aspects of personal and professional life.

Design thinking does not work well when specific results are sought or a specific path has been decided on. For example, when the objective is to expand to Nasik and achieve sales of 50 per cent in Pune by the current product mix. When the desired outcomes are fixed and not open ended, design thinking will fall short of the expectations.

Key terms and concepts

Design thinking - Design thinking is a people centric approach that focuses on understanding human needs and coming up with effective solutions that meet those needs

Abductive thinking – In abductive thinking, the inference drawn from observations is the best possible one and not necessarily a wholly satisfactory one

Empathy - Empathy is defined as the ability to understand and share the feelings of another

Prototype - A prototype is a scaled down version of the possible final product or service which incorporates the representation of the important elements of the proposed solution

Extreme users - Users who have a higher level of need or who feel the problem more acutely

Empathy Map - An empathy map is a tool that helps synthesize your observations and draw out interesting insights about users. It has four quadrants—say, do, think, and feel.

Optivolt Labs

Optivolt Labs is a startup founded by Rohit Kalyanpur and Paul Coston. They used design thinking to solve a problem faced by many. It relates to wireless charging of mobile phones. Heavy usage of mobile phones leads to draining of the battery and people are fed up of moving around with power cords and power banks to charge their phones. With over 7 billion phones in the world this is a large opportunity.

There have been several attempts to solve this problem: charging plates, battery packs, solar and motion chargers, etc., but none of them have really struck a chord with the users. Based on their empathy interviews, Rohit and Paul identified the following customer needs.

- Wireless
- Self-charging
- Lightweight
- Portable
- Efficient
- Flexibility to work everywhere

On the basis of these customer needs, they came up with 'Particle' a wireless, solar battery phone case, which meets all of these requirements.

- The charger has been built into the phone case, hence not needing any wires and is wireless.
- It uses solar power, so does not need to be plugged in, and hence is self-charging.
- The phone case is both slim and lightweight.
- It is portable as the outer battery can be detached from the phone and charged if needed.
- It charges faster than most other solar charges and is much more efficient.
- It has the flexibility to work anywhere as it can use both indoor lighting and natural sunlight for charging.

According to Rohit, they would never have thought of the dual case design unless they conducted empathy interviews and tested prototypes. The dual case allows charging to be done away from the phone and to stop charging when the phone is fully charged.

Helpful links

https://thisisdesignthinking.net/

https://dschool.stanford.edu/

https://www.ideou.com/