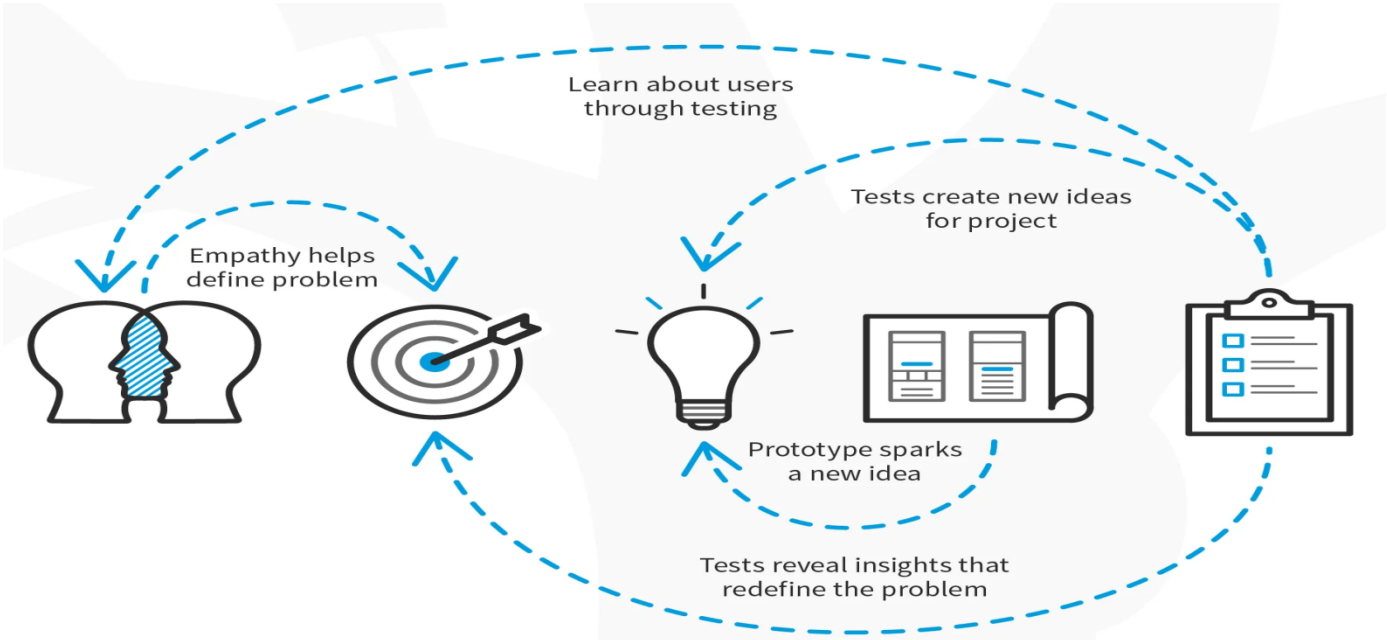
DESIGN THINKING
Unit-1

Design thinking is an iterative process in which you seek to understand your users, challenge assumptions, redefine problems and create innovative solutions which you can prototype and test. The overall goal is to identify alternative strategies and solutions that are not instantly apparent with your initial level of understanding.
In essence, design thinking:
· Revolves around a deep interest to understand the people for whom we design products and services.
· Helps us observe and develop empathy with the target users.
· Enhances our ability to question: in design thinking you question the problem, the assumptions and the implications.
· Proves extremely useful when you tackle problems that are ill-defined or unknown.
· Involves ongoing experimentation through sketches, prototypes, testing and trials of new concepts and ideas.

PROCESS OF DESIGN THINKING –



1. Empathize
The Design Thinking process starts with empathy. In order to create desirable products and services, you need to understand who your users are and what they need. What are their expectations in relation to the product you're designing? What challenges and pain-points do they face within this context?
During the empathize phase, you'll spend time observing and engaging with real users (or people who represent your target group)—conducting interviews, seeing how they interact with an existing product, and generally paying attention to facial expressions and body language.
As the first step in the Design Thinking process, the empathize phase encourages you to set your assumptions aside. Armed with first-hand insights, you'll be able to design with real users in mind. That's what Design Thinking is all about!

2. Define
In the second stage of the Design Thinking process, you'll define the user problem that you want to solve. First, you'll gather all of your findings from the empathize phase and start piecing them together. What common themes and patterns did you observe? What user needs and challenges consistently came up?
Once you've synthesized your findings, you'll formulate what's known as a problem statement. A problem statement—sometimes called a point of view (POV) statement—outlines the issue or challenge that you will seek to address.
As with anything in the Design Thinking process, the problem statement keeps the user in focus. Rather than framing your problem statement as a business goal—"We need to increase gym membership among over-50s by

30%"—you'll frame it from the user's perspective: "Over-50s in London need flexible, affordable access to sports facilities in order to keep fit and healthy."
By the end of the define phase, you will have a clear problem statement which will guide you throughout the design process. This will form the basis of your ideas and potential solutions.

3. Ideate
The third stage in the Design Thinking process consists of ideation—or generating ideas. By this point, you know who your target users are and what they want from your product. You also have a clear problem statement that you're hoping to solve. Now it's time to come up with possible solutions.
The ideation phase is a judgement-free zone where the group is encouraged to venture away from the norm, to explore new angles, and to think outside the box. You'll hold ideation sessions in order to generate as many ideas as possible—regardless of whether or not they're feasible! For maximum creativity, ideation sessions are often held in unusual locations.
Throughout this stage of the Design Thinking process, you'll continuously refer back to your problem statement. As you prepare to move on to the next phase, you'll narrow it down to a few ideas which you'll later turn into prototypes to be tested on real users.

4. Prototype
In the fourth stage of the Design Thinking process, you'll turn your ideas from stage three into prototypes. A prototype is essentially a scaled-down version of a product or feature—be it a simple paper model or a more interactive digital representation.
The aim of the prototyping stage is to turn your ideas into something tangible which can be tested on real users. This is crucial in maintaining a user-centric approach, allowing you to gather feedback before you go ahead and develop the whole product. This ensures that the final design actually solves the user's problem and is a delight to use!

5. Test
The fifth step in the Design Thinking process is dedicated to testing: putting your prototypes in front of real users and seeing how they get on. During the testing phase, you'll observe your target users—or representative users—as they interact with your prototype. You'll also gather feedback on how your users felt throughout the process.
The testing phase will quickly highlight any design flaws that need to be addressed. Based on what you learn through user testing, you'll go back and make improvements. Remember: The Design Thinking process is iterative and non-linear. The results of the testing phase will often require you to revisit the empathize stage or run through a few more ideation sessions before you create that winning prototype.

What do you mean by Creativity?
Creativity encompasses the ability to discover new and original ideas, connections, and solutions to problems.
According to Dr. Betty Edward "Creativity is the ability to find new solutions to a problem or new modes of expression; thus it brings into existence something new to the individual and to the culture.

What do you mean by Innovation?
Innovation refers to the ability of a person to develop something new based on his acquired knowledge.
According to Peter Drucker, "Innovation is the means by which the entrepreneur either creates new wealth producing resources or endows existing resources with enhance potential for creating wealth".
1. Difference between Innovation and Creativity--

S.NO.	CREATIVITY	INNOVATION
1.	Creativity is related to brainstorming and thinking about new ideas.	On the other hand, innovation is the process of implementing ideas and technologies so that the goods and services are renewed.
2.	The risk factor is negligible in creativity.	The risk factor is quite apparent in innovation.

3.	The word create / creativity was first used in the 14th century.	The word innovation came into being in the 16th century.
4.	Creativity is an imaginative process.	Innovation is a productive process.
5.	Creativity precedes innovation.	Creativity is succeeded by innovation.
6.	There is no money consumption in creativity.	There is money consumption in innovation.
7.	Creativity is immeasurable and cannot be quantified.	Innovation is measurable and quantifiable.
8.	Creativity may or may not involve an organization.	Innovation involves an organization for the production of services and goods.
9.	Creativity does not depend on materialistic things.	Innovation depends upon the monetary factor, i.e., how to implement the ideas into profit-earning.

Importance of Innovation/ role of innovation in organisation and industry

1. Solving Problems –
If your business provides services, you might realise that your customers do not have an avenue to share their opinions, complaints, and compliments.
So, to solve the problem, you could decide to operate a virtual office where customers' needs can be attended to within a short time. The customers will be happy and as a result, your sales will go higher.

2. Adapting To Change –
Change is inevitable and innovation is the method to not only keep your business afloat but also ensure that it remains relevant and profitable. So, when you develop an innovation culture, you remain relevant at all times.

3. Maximising On Globalization –
Markets all over the world are becoming more interlinked and greater opportunities are emerging in these new markets.
For instance, if your company hopes to tap into this market share, innovation is a must to enable you to capitalise on the opportunities opening up.

4. Facing Up The Competition –
To retain or establish your company's cutting edge, you can compete strategically by having a dynamic business that can make strategic and innovative moves and thus cut above the rest.

5. Evolving Workplace Dynamics –
The demographics in the workplace are constantly changing. Innovation is therefore critical to ensure the smooth running of the company.

6. Customers' changing tastes and preferences–
The current customer has a great variety of products and services available to him. Hence, the company must keep itself abreast of these evolving tastes and also forge new ways of satisfying the customer.

Types of creativity

Deliberate: methodical, intentionally solve problem from different angles
Cognitive: anything having to do with intellectual activity i.e. Remember, thinking
Spontaneous: performed or occurred as a result of a sudden impulse

There are four types of creativity–

1. Deliberate and cognitive creativity: Deliberate and cognitive creativity is the kind that comes from sustained work in a discipline.
For deliberate, cognitive creativity to occur, you need to have a pre-existing body of knowledge about one or more particular topics. When you're being deliberatively and cognitively creative, you're putting together existing information in new and novel ways.
For example, Thomas Edison, the inventor of the electric light bulb as we know it, was a deliberate and cognitive creator. He ran experiment after experiment before he came up with an invention.

2. Deliberate and emotional creativity: instead of focusing attention on a particular area of knowledge or expertise, people who engage in deliberate, emotional creativity have a-ha moments having to do with feelings and emotions. You don't need to have pre-existing knowledge about a subject topic. Your feelings and emotions determine this creativity.
e.g. Some poems were written under the influence

3. Spontaneous and cognitive creativity: When spontaneous and cognitive creativity is taking place, the conscious brain stops working. It stops to give room for the unconscious part of the brain to work on the problem. If you need to think out of the box, you need to take it off your consciousness. Doing an unrelated activity, the prefrontal cortex connects information.
Isaac Newton thinking of gravity while watching a falling apple is an example of spontaneous and cognitive creativity. Notice that this type of creativity does require an existing body of knowledge. That is the cognitive part.

4. Spontaneous and emotional creativity: Ideas and creativity spring up when the brain and the prefrontal cortex are at rest. This is the kind of creativity possessed by great artists and musicians. It cannot be predesigned for as it happens at varying moments.

5. Spontaneous and emotional creativity doesn't require any form of existing knowledge. They often deal with skills such as writing, art, musical, and so on. When it happens, they are mighty as it gives more than what you are known for.

Types of Innovation

1. Incremental Innovation: It is a common type of innovation. In this, the existing technology is increased and utilized to have a greater output.

2. Disruptive Innovation: The other name of disruptive innovation is stealth innovation. In this, the new technologies are applied in the company to have a position in the market.

3. Architectural Innovation: In this type of innovation, the skills and technologies are updated and applied in different markets. It is done in order to increase customers and satisfy the existing ones.

4. Radical Innovation: Radical innovation is defined as the way of thinking during the process of innovation. New industries are formed with the help of this innovation.

Creative thinking:

Creative Thinking means looking at something in a new way in a new perspective in a new dimension. It is very definition of thinking out of the box.
Often Creative Thinking in the sense involves what is called lateral thinking or ability to perceive patterns that are not obvious in nature.
Creative thinking refers to using abilities and soft skills to come up with new solutions to problems. Creative thinking skills are techniques used to look at the issue from different and creative angles, using the right tools to assess it and develop a plan.

The focus on creativity and innovation is important because most problems might require approaches that have never been created or tried before. It is a highly valued skill to have individually and one that businesses should always aspire to have among their ranks. After all, the word creativity means a phenomenon where something new is created.
Creative thinking is a skill and, like any other, it needs constant exercise to stay sharp. You need to regularly expose yourself to situations in which a new idea is needed and surround yourself with like-minded people to achieve this goal.
Such a process is made easier with the use of certain techniques. They help get you on the right mindset and provide the basic structure to reach new ideas on demand.
Examples of creativity skills
Besides these creative thinking techniques we presented in this chapter, there are several skills you'll need to develop to enjoy the advantages of the techniques. Some of the creativity skills may include:
· experimentation
· opposing views
· asking questions
· communication
· organisation

What are the main benefits of creative thinking?

Developing your creative thinking skills is highly beneficial for any field of work. After all, every area needs people that can come up with the best solutions to the everyday problems that arise and creativity is critical to do that.
You can experience advantages such as these by developing creative thinking skills:
· ability to create the best solutions to daily demands, which provides value to clients and your own business;
· improvement on problem-solving for not only work-related matters but also those in your personal life;
· higher workplace involvement in daily activities and engagement, which is beneficial to a healthier environment;
· a better understanding of data — also known as data literacy — and how to present it through data storytelling;
· focus on self-improvement as you and your teammates will develop more soft skills.
· more effective teamwork and bonding, since people grow used to bouncing off original ideas and learn each other's creative traits.

How to develop creative thinking skills?

Now that you know exactly what creative thinking skills are, the next step in this process involves learning how to work on them. After all, stagnation can be the biggest threat to your creativity, as it requires constant stimulation.
Check out below the best ways to develop creative thinking skills for yourself.

1. Consume different kinds of content
Your creative thinking can be heavily benefited if you diversify the kind of content you consume in your daily life. After all, the information we absorb can be combined, remixed, and repurposed in several ways to provide solutions. However, this becomes impossible if there is no variety.
To do that, you can make use of the internet's vast selection of content types. Try to visit different blogs, YouTube channels, and social media profiles you are not used to — preferably those that deal with topics you do not usually consume.
This also works if you try to vary the forms as well as the content. This means engaging with different types of media, like text, videos, audio, and even more specific ones like e-books, podcasts, info graphics, and others.

2. Keep up with the trends
Much of your creative thinking can be influenced by the trends that are influencing the market right now and the ones that are coming up in the future.
Keeping up with the trends is not just about consuming all kinds of news related to your field. It is also necessary to develop a keen eye to distinguish what has the creative potential to get viral or not. This ability will be essential to the success of your strategies in marketing.

Being able to predict trends does not require a crystal ball. Instead, you need to understand how your business segment operates and where the innovation comes from. Having a problem-solving stance is critical for coming up with creative and original ideas.

3. Try to create something every day

When someone wants to lose weight, they come up with an exercise plan that requires a daily effort as commitment. The same concept applies to the workout of your creative thinking and technical skills required to stay sharp.

So, with that goal in mind, make sure to try to create something new daily. It does not have to be something large or significant, just anything new that derives from all the new references you are absorbing.

Such creations might also serve as solutions to everyday problems you or your community face. The most important part of this process is creating a habit of coming up with new things so it begins to come naturally to you.

4. Build a network for creativity

Get help from others to keep your creative thinking and technical skills in constant development. You can build a network of people with the same goals and put all these tips in action as a group.

Interacting with your peers is a great way to exercise your creativity. It is even better when these people are also creatively-oriented and contributes to coming up with original ideas as a network. Try to come up with group projects to create a solution to a common problem or innovate on a certain aspect of work.

Be careful not to surround yourself with people that think and create exactly like you. Seek as much diversity as you can while creating this network, since all this variety can be highly beneficial to everyone's ideas.

Realizing creative thinking skills require constant training is the first step in improving how you come up with new ideas. People who are experienced in this craft can improve every field of expertise. Consider the tips in this article and begin a process of self-improvement focused on honing your creative thinking skills.

Types of thinking-

1. Lateral Thinking-- Lateral means from the other side, which means a person can look for the answer differently, more like think outside the box. Most of the time, people are more likely to use logical thinking to solve a problem, as it's a more straightforward way. These terms first came to existence after being coined by a famous psychologist Edward De Bono, and these skills are often required in creative careers

2. Convergent Thinking-- Convergent thinking is said to be the problem-solving technique that helps in bringing back together different ideas from different people who are from different fields, in an attempt to provide the single best solution to the given problem.

This type of thinking is more of analytical skill. Convergent thinking is what you engage in when you try to answer multiple-choice questions or fill up a blank question in your exam. In this type of thinking, the main goal is to find a single correct answer meaning, there can't be multiple answers to the same question.

3. Divergent Thinking-- This type of thinking skill is the middle one that possesses both the qualities of lateral thinking and convergent thinking.

Divergent thinking is about solving problems that allow you to have multiple possible solutions, to find out which one of them is working. Most of the time, this happens in free-flow, or you can say it spontaneously. The main ingredients of divergent thinking are freewriting and brainstorming. Divergence ability is measured typically by producing many, or a significant number of complicated and complex ideas.

Implementing process in driving Innovation

1. Create dedicated innovation teams-- It is important to remember that there may be employees in your company who have the best ideas but are not good at communicating them. Therefore, it is important to have a team to help support and encourage idea sharing. If your company does not have the resource for a dedicated team this can be made up of members from different areas in your business.

2. Introduce an idea sharing platform-- You need to bring employees together to share and collaboratively generate ideas, whether in-person or virtually, the right platform is important.
For example, Dell Idea Storm provides a platform for anyone to submit their ideas, and to comment and vote on ideas from other people whereas HP organizes brown bag lunches for their employees to encourage them to discuss their ideas.

3. Create a screening process for all the ideas-- You need to have an idea screening processes in place so your employees know that their ideas are being considered. This can be done in different ways.
At Electrolux, cross-functional team consisting of design, research and development, and marketing professionals are involved in the screening process which involves ideas being tested with focus groups. Any design failing to achieve a 70% approval rating from the focus group is eliminated automatically. Whereas Google simply collects ideas from employees through emails at a company-wide suggestion box, and make the ideas available for all other employees to rate and comment on.

4. Employ innovation advocates-- Have a team of advocates on board who support the idea generation and innovation process. This group will inspire change throughout the organization by asking questions, supporting ideas, and demanding radical changes.
For example, at Boeing, a 'Phantom Works' group was created which supported the idea generation and innovation process by communicating between departments and sought ideas and technologies that could be applied in newly identified areas of the organization.

5. Encourage collaborative experimentation-- Organizations should employ collaborative experimentation to improve the chance of success at innovation. Communicating with stakeholders brings new ideas, corrects problems, addresses market needs, and speeds up the innovation process.
An example of this is when Google made prototypes of products such as Gmail and Google Earth available for existing users which helped with developments.

6. Communicate with your employees-- It is important for your employees to 'buy in' to your ideas and know as much as they can about the development of them.
For example, HP Labs uses electronic newsletters, informal coffee talks, and peer reviews to convey its latest innovation developments to employees. Having several venues for sharing information increases the likelihood that every employee will find a useful source for information about innovation and new ideas in the organization. This decreases uncertainty and negativity and helps people to be open to new ideas.

7. Be specific with your communication-- Beyond communicating to your employees, you need to let them know how the innovation affects them and the positive outcomes it could bring. For example, at PNC Bank, online learning courses for employees were tied to specific job skills so each employee could tailor their online learning to meet their objectives. In this way, employees could see how the innovative course offerings applied directly to their situation and could then decide how to invest their time.

Unit-2

Design thinking exercise

Design Thinking exercises are helping designers to understand users, and also identify their challenges and needs. Besides that, they are designed to reframe the way we approach innovation of a product while focusing on the end-user.

There are some design thinking exercises:

1. Six Thinking Hats:

"Six Thinking Hats" is a way of investigating an issue from a variety of perspectives, but in a clear, conflict-free way. It can be used by individuals or groups to move outside habitual ways of thinking, try out different approaches, and then think constructively about how to move forward.

The Six Thinking Hats technique gets you to look at a problem in six different ways. It takes you and your team beyond any instinctive positions, so that you explore a range of perspectives. That way, you can carefully consider each one, without having to argue your case or make snap decisions about what's "right" or "wrong."

Here's what each of the Six Thinking Hats represents:

Blue Hat: "the Conductor's Hat"

When you or your team are in blue hat mode, you focus on controlling your thinking and managing the decision-making process. You have an agenda, ask for summaries, and reach conclusions.

Green Hat: "the Creative Hat"

The green hat represents creative thinking. When you're "wearing" this hat, you explore a range of ideas and possible ways forward.

Red Hat: "the Hat for the Heart"

This hat represents feelings and instincts. When you're engaged in this type of thinking, you can express your feelings without having to justify them logically.

Yellow Hat: "the Optimist's Hat"

With yellow hat thinking, you look at issues in the most positive light possible. You accentuate the benefits and the added value that could come from your ideas.

Black Hat: "the Judge's Hat"

This hat is about being cautious and assessing risks. You employ critical judgment and explain exactly why you have concerns.

White Hat: "the Factual Hat"

The white hat represents information gathering. Think about the knowledge and insights that you've collected already – but also the information you're missing, and where you can go to get it.

The Benefits of Six Thinking Hats:

As well as improving the quality of your decisions, the Six Thinking Hats technique has some other benefits to offer:

More organized thinking. You can be confident that you've considered every angle, and it helps you to weigh up the information you obtain efficiently and accurately.

Improved creativity. It gets you to step away from your default positions and approaches. And comparing or combining different perspectives can sometimes spark novel thoughts.

Better thinking skills. It's a great way to strengthen important skills such as curiosity and critical thinking.

Stronger interpersonal skills. It encourages you to practice listening, questioning and answering. So it can also make you more persuasive, better at spotting when others need support, and more confident to resolve conflicts when they arise.

Greater inclusivity in teams. It requires people to set aside any preconceptions and to focus on seeing things from the same perspective for a while. Debate still happens, but it's based on shared understanding – which can help everyone to feel included.

2. “Five whys” or “Nine Whys” exercise:

That exercise focuses on asking questions that start with why. These questions will eventually lead to a better understanding of a certain thing. Designers use that exercise to clearly understand the root cause of the user’s problem.

Like the previous exercise, this one is also conducted in pairs and takes almost 15 minutes. One designer is interviewing another designer for 5 minutes, and then switching roles. Start with “What do you do when working on __?”.

Designer 1: “What do you do when working on that search page design? Please make a short list of activities.”

Designer 2: *makes the list of activities before designing*

Designer 1: “Why is that task important to you?”

Continue asking these questions five times, nine times or until another person can’t go any deeper because they have reached the underlying purpose. When that person gets stuck, ask “Does a story come to mind?”. Later, share insights.

Because of the simplicity, the exercise is also helping designers to reveal when a strong purpose is missing in a meeting. Once the meeting identifies the main purpose that is unambiguous, everyone has more freedom and opportunities.

3. Mind Mapping:

Mind mapping is a note-taking system that uses images, colour, words, and numbers arranged in a connected, radiant, and hierarchical structure. Tony Buzan, Chairperson of Brain Foundation, U.S.A., is the originator of this technique.

Mind mapping is a concept that will assist one to make plans and decisions. In other words, it is an important technique that improves the way one records information, and supports and enhances their creative problem-solving.

Mind maps can also be used to describe the different personalities and roles that exist within management teams, and is a useful framework for thinking about how personalities may (or may not) work well together.

Mind maps help people to learn things more effectively. They are now being used throughout the world to improve the quality of learning, thinking, and working.

Techniques of Mind Mapping

There are many independent techniques of mind mapping which serve a specific purpose like creative and report writing, reading, visual memory, meeting notes, speeches, re-structuring of ideas, originality, etc. These techniques are:

1) Mnemonic Mind Map Technique: The word mnemonic means mindful. Mnemonic techniques involve the use of imagination and association in order to produce a new and memorable image. These are concerned with the various techniques involved in storing facts. ideas, and concepts in one's memory and their retrieval. For example, if one uses striking images for coding data, the connection built is so strong that it remains so and the image seen in future will prompt immediate retrieval of the idea associated.

2**) Computer Mind Map Technique**: With the introduction of computer based mind mapping in the last couple of years, mind mapping has become even easier. Mind mapping software such as Tony Buzan's iMindMap utilises the true principles of mind mapping and duplicate the non- linear thinking process of the brain, creating an explosion in creativity, innovation and knowledge sharing. Computer based mind mapping software enables to arrange information in expandable and collapsible topic trees. It enables to embed documents, links, notes and other data within the structure of map, transforming it into the equivalent of a powerful visual database.

3) Hierarchy-Based Mind Map Technique: A hierarchy-based mind map is similar to a flow chart. though in function it acts as a dynamic, graphical outline that helps the user organise his thoughts. In effect, it takes the old hierarchical outline, makes it into a graphic and adds a free-flow aspect to it as one idea branches off from another.

4) Creative Thinking Mind Map Technique: Creative thinking mind map utilises all the creative thinking skills. They generate ever-increasing mental energy as the mind mapper moves towards his/her goal. They allow the mind mapper to view a great many elements all at once, thus increasing the probability of creative association and integration. They enable people's brains to track out ideas which normally lie in obscurity on the edge of their thinking.

4. Deconstruction

This design thinking exercise asks designers to revisit their understanding of the core problem for the purpose of clarifying it. According to Shannon Lue Chee Lip, an independent consultant who uses design thinking frameworks to help social good organizations create strategic plans for success, this exercise helps ensure designers are solving the core issue rather than just treating the symptoms.

Take for example if you were tasked with designing a new phone for the elderly. It might be tempting to jump straight into ideating features like large buttons or speech-to-text capabilities, but if we step back and decompose the problem-if we ask ourselves, what's the purpose of a phone, anyway?-we open up a whole new world of design possibilities. Rather than designing just another accessible phone concept, we might find ourselves creating entirely new ways for older people to relay their thoughts to another person physically distant from them." Lip explains.

This kind of decomposition challenges designers to reframe their understanding of the challenge at hand, acknowledging any biases they might bring to the design process and opening themselves up to new ideas that might never have surfaced otherwise.

5. Thumbnail Sketching

Peter Donahue, who works as a full-time freelance designer, prefers "good, old-fashioned thumbnail sketching" as a design thinking exercise. Donahue usually creates twenty or more quick, small sketches of a design to help identify and solve key visual problems. He explains, "this is my go-to ideation method. There's a lot of talk about rapid prototyping in the maker community, and I see thumbnail sketching as the purest, most rapid form of that method."

6.SCAMPER

is a creative problem-solving technique that can be used for brainstorming and developing new products or services. The acronym stands for:

S-Substitute, C-Combine, A-Adapt, M-Modify, P-Put to another use, E-Eliminate,

R-Reverse.

SCAMPER is a lateral thinking technique that encourages people to think differently and generate innovative solutions. It can help people improvise and overcome obstacles in the problem-solving process.

DESIGN THINKING WORKSHOP

Introduction

A design thinking workshop is a creative problem-solving session that is based on the principles of design thinking. These workshops are activity-based and they are often done in person but they can also be done remotely.

The activities of a design thinking workshop are organised according to the three phases of the design thinking process: empathy, ideation, and prototyping.

1) Empathy: Getting to grips with a real user problem and building empathy for the target users/customers.

2) Ideation, Innovation, and Problem-Solving: Generating as many ideas and potential solutions as possible.

3) Prototyping and Testing: Building low-fidelity prototypes of the ideas generated, ready for testing on real or representative users.

Design thinking workshops are all about collaboration and problem-solving. As a designer, one might hold a Design Thinking workshop with his direct team in order to tackle a tough design challenge he has been struggling with.

However, Design Thinking workshops are not just for designers; they are also increasingly used to teach professionals how to innovate and problem-solve, Throughout the design career, one might find himself running Design Thinking workshops for clients going into different organisations and showing them how they can apply Design Thinking to their own business challenges.

Goals of Design Thinking Workshops

Design thinking workshops help design teams to create feasible and user-focused solutions to design problems. This helps the team to design better products faster, reduce costs, and increase profits. Other goals include:

1) Improving the problem-solving skills of the team. These skills are transferable to other design problems within the team.

2) Creating a sense of community in the design team because workshop participants have to collaborate in order to get a solution.

3) Giving the team a competitive edge by producing innovative and industry-leading ideas.

Implementing Design Thinking through a Workshop

The design thinking process is made up of activities that are done before the workshop and during the workshop.

Step 1: Planning and Preparation: Before you can run a design thinking workshop, there are some things that need to be in place first, they include:

1) Workshop Objectives

2) Workshop Location

3) Workshop Agenda

4) Workshop Materials

Step 2: Introduction: Welcome all the participants to the workshop and brief them on what they should expect during the workshop. Share the following information:

1) The main objective of the workshop and the problem that it is going to solve.

2) A schedule of the workshop activities.

Step 3: Kick off the Meeting Using an Icebreaker:

Use fun icebreaker activities to help your team loosen up before the workshop begins. This will make it easy for them to collaborate and share their ideas.

Step 4: Introduce Design Thinking Make a brief presentation on what design thinking is the phases of design thinking, and its benefits. This presentation is useful even for designers who

are already familiar with the design thinking philosophy because it brings everyone up to speed and ensures that you are all on the same page.

Step 5: Empathising with the User: This is the first step in the design thinking process where you encourage the workshop participants to put themselves in the shoes of the user. This will help them to start generating ideas on what the user needs from the product. One can use activities such as role- playing and creating an empathy map to help the participants really understand the needs, wants, feelings, and language of the user.

Step 6: Get more Specific on the Problem: After the empathy exercise, participants are better placed to really narrow down on the problem that the user faces. Ask the team to create a problem statement that will guide the rest of the design thinking workshop.

Step 7: Come up with Ideas and Possible Solutions: The next design thinking step is ideation where the team suggests possible solutions to the problem that they identified in step 6. Use techniques such as brainstorming to come up with a list of potential solutions. Give the participants a chance to discuss their solutions and then come up with one refined solution.

Step 8: Create a User Journey Map: After settling on one solution, get the team to map out the steps that users will take so that they can solve the problem. These steps can be downloading an application. setting up an account, adding their bank details, and then sending money. Give them enough space and sticky notes to create a step by step representation of the user journey.

Step 9: Prototyping and Testing: This is the final step in the design thinking process where participants will create prototypes of their solution. Ask the users to create screens for each step of the user journey and then ask them to add functionality to their screens in the form of buttons. Once again, give the team some time to compare their prototypes and then ask them to vote for the best prototype.

Step 10: Describe the Next Steps and Close the Workshop: Close the workshop by explaining to the team the next steps such as turning their prototypes into wireframes, high fidelity prototypes, and actual user testing. This is also a good time to ask your design team what they learned from the design thinking workshop. Don't forget to ask for feedback so that you can improve your design thinking workshop facilitation skills.

Benefits of Design Thinking Workshops

Design Thinking workshops are growing in popularity across industries due to their effectiveness in business innovation and problem-solving. The term "design thinking" it has tripled in popularity in the past five years, according to Google Trend. Despite the name, Design Thinking workshops are not just for those in design. Any business can benefit from a design thinking workshop, from marketing to product and sales. The various benefits of design thinking workshops are as follows:

1) Learn about the concepts behind this powerful new paradigm, how to apply it and when to apply it.

2) Learn to dirty your hands by using some of the key tools that are part of Design Thinking.
3) Feel the impact of Design Thinking in various domains through the case studies.

4) Uncover opportunities and hidden potential in organisation.

5) Learn the framework that helps build digital ecosystems.

6) Align various stakeholders and leaders towards a single purpose.

7) Create real business impact over sustained periods of time.

8) Create a culture of design and empathy in organisation.

Unit-3

Design Thinking in various Sectors

Design Thinking in Banking

Design thinking is a creative problem-solving approach that focuses on the needs of the customer. In the context of banking, design thinking can be used to create products, services, and experiences that are more user-friendly and effective. This can help banks to better serve their customers and differentiate themselves in a competitive market.

Additionally, using design thinking can help banks to identify and solve problems in new and innovative ways, leading to improved efficiency. The main value of design thinking in banking is that it can help to create more satisfying and effective experiences for customers, leading to increased loyalty and revenue for the financial company.

Design thinking in banking involves empathy for the user, the ability to define problems and create ideas, prototyping and testing, and iteration. Potential benefits of using design thinking in banking include:

1. Improved customer experience

By putting the needs and preferences of customers at the center of the design process, banks can create products and services that are more user-friendly and effective.

2. Increased efficiency

Design thinking can help banks identify and eliminate unnecessary steps and processes, streamlining operations and making them more efficient.

3. Increased innovation

The iterative nature of design thinking allows banks to quickly test and refine new ideas, increasing the likelihood of developing successful, innovative products and services.

4. Improved risk management

By actively seeking out diverse perspectives and testing and iterating on new ideas, banks can mitigate the risk of introducing faulty products or services to the market.

5. Enhanced teamwork and collaboration

Design thinking encourages collaboration and co-creation among team members, fostering a culture of innovation and cooperation within the organization.

Explore each stage of design thinking in banking:

1. Empathize Digital Banking Users

At the Empathize stage, we collect a large amount of data about business goals, customer needs and pain points, and product features, thus researching the wire context around the product. Our aim is to feel and emphasize with the problem we are trying to solve. To achieve this, we need to step into the shoes of the customer and business owner.

2. Define Core User Problems and Value

At the Define stage, we analyze and synthesize collected data to define the core problems and prioritize key data. The main purpose is to understand what value we could bring to customers and why they would prefer it over other solutions. To achieve this, we need to approach data analysis from these different angles: business, psychology, user behaviour, competitors, marketing, technology, etc.

3. Ideate Digital Banking Solution

At the Ideate stage, we start to generate multiple hypotheses about what our solution could be. Our main goal is to uncover the best way to solve the previously defined problems. To achieve this, we need to step out of the box and create dozens of potential solutions.

4. Prototype Digital Banking Product

At the Prototype stage, we take dozens of previously generated ideas about how our end solution could look and work, moving toward designing the final version. We check all the solutions based on previously generated user scenarios, business goals, etc. at the Synthesis stage. In this way, we narrow down multiple solutions into one or more that are delivered as visual prototypes and could be tested by users and business owners.

5. Test Banking Prototype

The final Test stage is needed to ensure that our visual prototype provides the needed solution according to the previously defined problem. If it is not, we then return to the first stage and repeat the process.

How to Implement Design Thinking to Transform Banking Services:

To use design thinking to transform banking services, use the following steps:

1. Understand the needs and wants of customers

Conduct user research and empathy mapping to understand the pain points and unmet needs of customers in their banking experience.

2. Generate ideas to solve problems

Use brainstorming and other ideation techniques to generate a range of possible solutions to the identified problems.

3. Prototype and test solutions

Create physical or digital prototypes of the solutions and test them with users to gather feedback and refine the design.

4. Implement and iterate

Based on the feedback from user testing, implement the solutions and continue to iterate and improve them based on ongoing feedback and user testing.

5. Communicate and educate

Communicate the changes and improvements to customers and educate them on how to use the new services.

By following these steps, design thinking can help to transform banking services into more user-centered and effective solutions that meet the needs of customers.

What is the role of design thinking in the banking sector?

Design thinking is a popular approach used by many companies to improve their digital services. Such companies as Google, IBM, Amazon, Apple, Tesla use design thinking to better understand the needs and preferences of their customers and to develop digital services that are user-friendly, intuitive, and effective.

In the banking sector, design thinking is used to improve the user experience by identifying and addressing the needs and challenges of bank customers. This could involve conducting user research to understand their needs and preferences, developing user- centered solutions, and testing and refining those solutions through prototyping and feedback. By applying design thinking to the user experience in banking, financial institutions can create products that are more likely to be successful and meet the needs of their customers.

Design Thinking in Education

Design Thinking in Education is a method for defining and resolving difficult problems. Design thinking entails creating a large number of thoughts. Teachers educate students to describe challenges with an open mind, construct prototypes, and refine them via numerous iterations until they have a viable solution. It places a strong emphasis on rapid prototyping and learning from mistakes.

Importance of Design Thinking in Education

Design thinking holds significance in the field of education in a number of ways. Some of them are:

1. Design thinking is the belief that everyone can contribute to a better-desired future and a method for taking action when confronted with a challenging task.

2. In education, that type of optimism is desperately required. From teacher feedback systems to daily routines, classrooms and schools worldwide face design issues.

3. No matter where they fall on the scale, educators' obstacles are genuine, complex, and varied. As a result, they necessitate fresh viewpoints, tools, and techniques.

Benefits of Design Thinking in Education

There are some undeniable benefits of design thinking in education that you need to be aware of. These include:

1. Design thinking enables students to be open-minded and balanced by focusing on multiple ideas rather than just one, even if they aren’t all brilliant.

2. This is far more efficient than investing all the effort on one idea that may or may not be required; instead, open and outward thinking can lead to multiple good ideas.

3. Empathy is the need of the hour. We can acquire empathy without even recognizing it by teaching empathy through design thinking.

4. Design thinking helps students to be innovative and come up with new solutions to challenges.

Educational design has been focusing on the question of how to get ‘manageable bundles’ of existing knowledge into people‘s brains. But we are headed into a world where humans as being a container of mere knowledge is way less needed than humans as being confident and creative designers of the future. As Sir Ken Robinson, well-known British education and creativity expert, states: “Creativity is as important now in education as literacy and we should treat it with the same status.”

Bringing design thinking to education means emphasizing our human talents and abilities. Design thinking has proven to be an effective approach for making changes across a variety of professions such as research, business, and management. In fact, it is well known that design thinking has been successfully applied to education in K-12, undergraduate, graduate and professional training.

Design thinking has proven to be an effective approach for making changes across a variety of professions such as research, business, and management. In fact, it is well known that design thinking has been successfully applied to education in K-12, undergraduate, graduate and professional training

Character education-

Character education is about the acquisition and strengthening of virtues (qualities), values (beliefs and ideals), and the capacity to make wise choices for a well-rounded life and a thriving society.

1. Creative Confidence

Creative confidence is a term introduced by Tom and David Kelly in 2012 and is an inherently optimistic way of looking at what’s possible and believing in your ability to create change in the world around you. The hypothesis is that most people are born creative, but it needs continuous practice or it gets diminished. Design thinking continuously motivates you to strengthen your ‘creative muscle’.

2. Adaptability

Consistently adapting to changing circumstances and environments and embracing new ideas is one of the key characteristics of design thinking. Innovation in its nature is unpredictable and therefore you get constantly challenged to rethink and dare to go in new directions.

3. Social and cultural awareness

Design thinking provides a framework for interdisciplinary collaboration, as its core is a we-culture of mutual creation. Diversity does not only get tolerated but promoted as being a crucial part of the process. You work together with people that are different from yourself. You immerse yourself in life worlds that are possibly foreign to you. Consequently, you consistently are confronted with and learn more about new perspectives and point of views.

Skills-

Skills have always been subject of educative discussions, and there is always the question of what skills are relevant in the future.

1. Creativity

Creative confidence requires creativity. Design thinking helps you apply, explore and practice creativity. It prompts you to use both of your hemispheres, meaning the logical as well as the intuitive side of your brain. As an open-ended and playful approach, design thinking gives you the necessary freedom to be an explorer of the unknown.

2. Collaboration

Complex problems can only be solved through collaboration among people with different skills, backgrounds, and perspectives.

3. Critical thinking/problem solving

Design thinking is a human-centered approach toward problem solving. It provides you with a framework of how to tackle complex problems. Design thinking reminds you to always be a questioning thinker as it prompts you to examine and test propositions of any kind which are offered for acceptance.

Learning to learn-

Learning to learn engages learners to build on prior learning and life experiences in order to use and apply knowledge and skills.

1. Curiosity & Motivation

Albert Einstein once said: “I have no special talents. I am only passionately curious.” Curiosity and motivation play an essential role in design thinking. Design thinking encourages you to acknowledge that you may know some things, but still there is so much to explore! In design thinking, you constantly try to adopt a beginner’s mindset and explore things from different perspectives. Quite often it results from the empathy you’ve built for users, because you get intrinsically motivated to improve their experiences.

2. Reflection

Reflection is constructive questioning about what you do and why you do it and then deciding about the next steps in the future. This is a central facet of the iterative working process in design thinking. You constantly get feedback from yourself, your team and the users.

3. Patience

Patience is a virtue. There is no magic tool to solve a problem; there is no shortcut to innovation. Same holds true for design thinking; it’s not the easy solution some people would wish for. Nevertheless, design thinking provides you with an ongoing process you can trust that a useful solution will emerge eventually. Through its richness in variety, design thinking gives you the confidence that it’s okay that good things take time.

Design Thinking in Retail

Retail industry is posed with new challenges every day- technological advancements, evolving customer expectations, supply chain and digital disruption, to name a few.

Innovation in retail industry must quickly adapt, using design thinking to become customer-first and drive sustainable and profitable growth.

Five strategies for applying design thinking

In the digital era, businesses need to add elements of design at the heart of every brand experience. By design, these experiences elevate the consumption of personalized content and experiences at every touch point.

1. Merge products to create new and better ones:

Design thinking becomes essential in supporting a fusion which remains the key to creating a next gen futuristic design. Such fusion products require an understanding of the end users expectations and design thinkers can bring in the ideas to create a friction-free customer experience.

2. Provide enhanced experience during customer interactions:

Design thinking can help retailers provide the most satisfying experience during customer interactions. For example, drones are likely to change the way we deliver products that have been bought online. In such scenarios, store managers and staff should be trained to be sensitive to customer asks. Even small events like a reliable return policy can enrich customer experience.

3. Improve virtual screen design:

New concepts, navigational skills, and designs will define the virtual screens which the customers are so accustomed to today. Simulative design will allow customers to hold the product and evaluate its dimensions before making a purchase decision.

4. Create strategic brand value:

Retailers need to intuitively understand and design products and experiences that are in sync with market expectations. Personalization offered by such brands to customers, based on market intelligence, will determine their win.

5. Revive store experiences:

Through creative and immersive in-store designs, unique virtual reality experiences, innovative ways of personalizing services, and special store-driven loyalty programs, store experiences could be made more exciting and rewarding for customers.

Key aspects of creating design-led customer experiences

1. Understand the customer’s needs and perspectives:

The Design thinking prioritizes consumer’s perspective as primary element in establishing. Resolving core consumer pain points will lead to a product that is consumer oriented thus, offering a delightful experience to them.

2. Create Personas:

By developing personas of the customer base, businesses can come closer to the psyche of the consumer. The persona should include an image of the imaginary customer, demographic profile, attributes, and motivations, needs, pain points, and actual customer quotes.

3. Empathy mapping:

Empathy mapping, a collaborative process to gain deeper insights about consumers, can provide a complete picture of the customer and what actions they might take because of their beliefs, emotions, and behaviours.

4. Mapping the customer's experience journey:

Customer journey maps enable businesses to understand the consumer needs and hence build relationships by solving for those at every touch point. According to a research, customer journey maps improve marketing return on investment by 24 percent and shrink sales cycles by 16 percent.

5. Create product roadmaps and prototypes:

Creating product roadmaps and prototypes before launching the final product minimizes the chances of errors and leaves scope for further development. Iterating with customer feedback is an efficient way to create customer experience prototype, these pilots can lead to secure outcomes before scaling the product.

6. Product testing with the end user:

Product Testing with the end consumer is one of the most essential steps of a design thinking process. Simulated environments are created for users to experience the products and then their interactions are measured using various tools like heat maps, touch maps, screen flows, user analytics platforms, etc.

Design Thinking in Infrastructure

Design thinking refers to the application of a discipline that tries to understand human behaviour in order to develop or improve products or services. As opposed to customary approaches that rely excessively on analyzing and answering questions by working out the last detail, the design thinking paradigm is centered on collaborative experimentation and rapid prototyping.

Traditional planning methodologies rely heavily on top-down approaches the plans are first made and strategized, and only then are the citizens informed about it. These plans are usually made without involving the citizens in the process, and as a result, often fail to reflect the problems faced by citizens on the ground. Consequently, citizens naturally have a lesser degree of ownership of these top-down plans and responsibility towards maintenance of public infrastructure. While participatory planning approaches seeks to address these gaps by working with the citizens in understanding their problems, they rarely. "Close the loop" by seeking feedback from the citizens after the plan is prepared. Thus, the ownership of the plan by the citizens is not guaranteed. Additionally, this also precludes any further refinement of the existing plan

Design Thinking provides us a framework to overcome the flaws of the traditional participatory planning approaches in the following ways- first, design thinking enables the creation of an infrastructure plan that places citizens at the heart of the process. A process of deep empathizing will enable the development of a granular understanding of the problems faced by citizens. Second, the design thinking method also facilitates a process of refinement of the plan through continuous prototyping and testing.

It is hard to get excited about infrastructure, but it is crying out for a more holistic, multidisciplinary, innovative and longer term perspective, one that can evolve and meet our needs rather than the current band-aid approach that has resulted in a crippled infrastructure not much evolved from the last great build period between the 1940s and 1960s. What is missing is strategic innovation consider, for example, the impact of intermodal freight transport and how that revolutionized the movement of goods: or the development of the electric power grid, and how it revolutionized energy provision and use. What new systems are required today? What new systems will be required for tomorrow? Infrastructure also needs to be looked at in the context of some important related issues such as sustainability, climate change (concrete production produces significant greenhouse gases) migration (new centers of population. urban blight, etc.) and local natural resource availability.

Design Thinking in Health Sector

• Design thinking is an approach to innovation that produces more-comprehensive solutions than other process improvement strategies.

• Design thinking involves four main components: empathy, multidisciplinary thinking, rapid solutions deployment and continual improvement.

• Health plans and other healthcare organizations can apply design thinking to solve some of the industry's most urgent challenges, such as improving the customer experience.

Many leading hospitals are starting to focus more on understanding the patient experience to solve these kinds of problems, as well as to improve overall patient experience and to lower costs. Yet it's not always easy to get key stakeholders to consider nonclinical aspects of this type of work

One of the most promising approaches for understanding patients' experiences has been design thinking, a creative human-centered problem-solving approach that leverages empathy, collective idea generation, rapid prototyping and continuous testing to tackle complex challenges Unlike traditional approaches to problem solving, design thinkers take great efforts to understand patients and their experiences before coming up with solutions. This thorough understanding of patients (for example, those who regularly miss appointments) is what guides the rest of the process and because design thinking involves continuously testing and refining ideas, feedback is sought early and often, especially from patients.

Design thinking has already taken hold in health care, leading to the development of new products and the improved design of spaces. Yet it remains underused in addressing other important challenges, such as patient transportation, communication issues between clinicians and patients, and differential treatment of patients due to implicit bias, to name just a few If more leaders embrace design thinking, they can leverage a deeper understanding of patients to solve such problems, achieving better clinical outcomes, improved patient experience, and lower costs along the way.

Designing a Patient Centered Experience

How might design thinking be applied t the persistent and costly problem of no-shows? In Mary's case, she couldn't explain her concerns through the standard patient experience survey, which is initiated after an appointment and which comprises general questions focused on the medical visit Were it not for the hospital administrator's initiative to ask Mary what was going on her concerns may have gone both unnoticed and addressed.

This tailored, human-centered approach of problem solving is the foundation of design thinking Hospitals versed in design thinking would identify this general challenge and then assign a team of task force (ideally a multidisciplinary one) to spend weeks or even a few months studying the patients it affects. The team would use qualitative research methods such

as surveys focus groups and observations to better understand people's experiences. They would seek out patterns and aims to define the real problem at hand. For instance team investigating several noshows would quickly see that many cases do not necessarily involve a patient's forgetfulness or time management. They'd find that the issues faced by patients like Mary is often more socioemotional than organizational.

After this phase, the team would brainstorm possible solutions, and rapid prototyping to test them. Depending on the proposed solution, a prototype could be anything from a physical mock-up to a skit or a flowchart. For example, if the team wanted to design a screening process to identify individuals with transport-related concerns, they could design a simple computerized simulation that illustrates how that process might look and feel to both patients and staff. Once created, this prototype would be tested by relevant stakeholders and perhaps even outside parties to collect critical feedback. Often, the feedback indicates when or how to modify solutions, or whether to go back and gather more information. The result is a solution focused on what will most help the patient.

Addressing a Broader Spectrum of Patient Challenges

There are already a few promising examples of design thinking being used to create a better experience for patients. For instance, the department of obstetrics and gynaecology at Mayo Clinic used design thinking to remain prenatal care. They wanted to better meet the expectations and needs of expectant mothers, who desired a greater emphasis on the emotional experience of pregnancy, rather than just the clinical side of it. Through interviews with and observations of local expectant mothers, the design thinking team learned that it was extremely important for these women to have a sense of community. So, the department created online care communities, facilitated by nurses and other pregnancy advisers. The result was an overall improvement in how prepared and empowered these expectant mothers felt.

Design thinking can be used to address challenges in a vary of domains related to the patient experience Consider reimagining the emergency-room waiting experience. Because care is prioritized based on the severity of a patient's condition, wait times are difficult to predict. Patients and their families often spend hours waiting to be seen and treated Design thinking may uncover new ways of helping patients feel comfortable and safe during such long waits. An approach that starts with investigating the patient's perspectives, including their greatest pain points, may give administrators ideas for how to make the emergency room experience more bearable.

The benefits the Design thinking vision can bring to healthcare are many, but the benefits related to patients are probably those that cause more social concern, precisely because it is something that affects us all, because at some point in our life will have to go through that. Among the benefits design thinking application has brought to healthcare, we can highlight the user experience improvement when interacting with machines (reducing anxiety and fear), the improvement of the professional-user communication (the doctor-patient communication or pharmacist-consumer) or the increase of comfort and mobility of patients.

Shift

1. Shifts to Value-based Care

Healthcare is moving beyond the walls of hospitals and into communities and the role of healthcare providers is shifting We're seeing new questions like, what do we do about loneliness; as it turns out loneliness is as much of a killer as smoking and diabetes. These types of questions lead to a better understanding of patients and creating whole ecosystems of care.

2. Shift from Being Reactive to Proactive.

Everyone is empowered to get to know their bodies and their health before anything is wrong with them. Health is becoming this process of self exploration, which creates entry points for people into healthcare offerings. We're seeing a shift from healthcare to consumer products that can help us better understand who we are.

3. Balance High Regulation with Experimentation

Privacy and risk committees often block tools out of security controls. But there's opportunity to invite people to be fully informed about the choices they make in terms of the technology they use and give them the choice to opt into the tools. We should have high standards of privacy and make sure our tools are secure, but there's still room to experiment and use informed consent to prototype tools that may not be ready for prime time yet.