

Product Engineering and Design Thinking
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Module - 07
Product Complexity, Affordability and Design Thinking
Lecture - 33
Design Thinking Steps

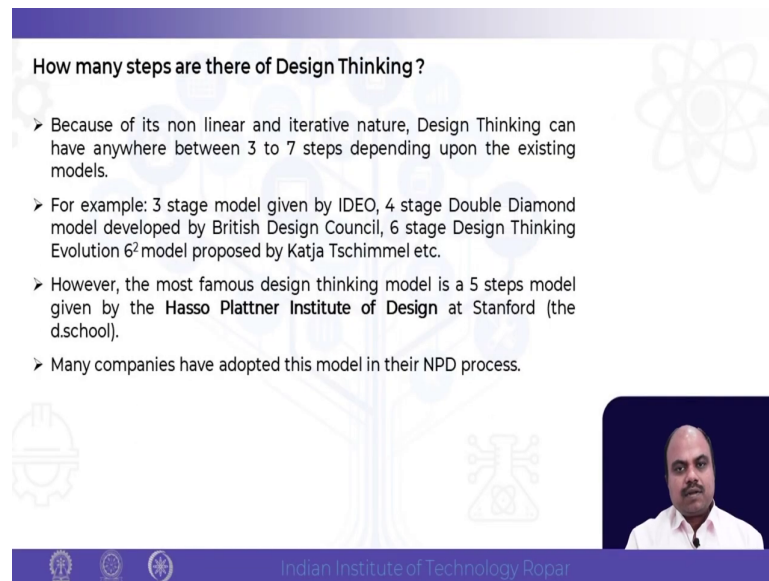
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Concepts Covered

- Steps of Design Thinking
- How to build a behavioral Profile
- Capturing Behavioral Signals
- How to select a problem



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How many steps are there of Design Thinking ?

- Because of its non linear and iterative nature, Design Thinking can have anywhere between 3 to 7 steps depending upon the existing models.
- For example: 3 stage model given by IDEO, 4 stage Double Diamond model developed by British Design Council, 6 stage Design Thinking Evolution 6² model proposed by Katja Tschimmel etc.
- However, the most famous design thinking model is a 5 steps model given by the **Hasso Plattner Institute of Design** at Stanford (the d.school).
- Many companies have adopted this model in their NPD process.

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Now, let us understand or learn about Design Thinking Steps. Actually in design thinking step there are so many design thinking models are available. And some models have 3 steps some model have 4, 5, 7 like that. So, there are existing various models and these steps are ranging from something like 3 to 7.

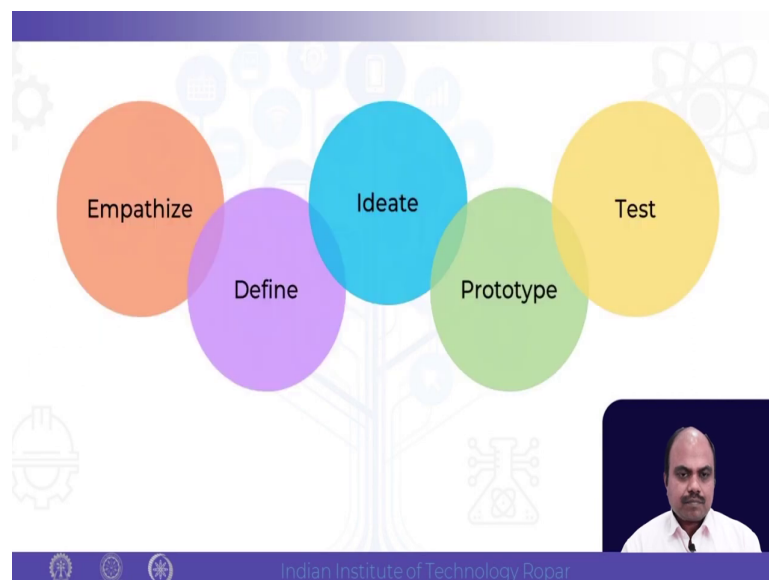
For instance, you see that IDEO they have given the steps number of 3 steps as 3. The Double Diamond method which is there that is having 4 step and that was designed by British Design Council. And the 6th stage design thinking model it is called 6 square. It is a model proposed by Katja. So, there are several models which are available for a design thinking.

However, the most commonly used model and which is widely used in many places is the 5 step model of design thinking. And in 5 step model we will learn about this one after some

time. This was originally developed by the Hasso Plattner Institute of Design at Stanford University. The d.school it is also called.

Now, this company is many companies actually they use their models in new product development some of them they are using their design thinking models some of them they little bit of customization they did. However, the idea is basically the same. We use design thinking method to understand the user make innovative products for the user.

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So, what are the five steps? What are the five steps? First is empathize or empathy. Empathy is where we will learn more about this one, but in general empathy is where we try to understand the user from their perspective. So, it is something like being as if we are the user and understand the user in depth.

So, that the product which we are making is very much related and relevant and exactly addressing the need of the user. There are different kinds of user what whatever kinds of user we are having the way of understanding the user in depth. Try to find out the pain pin points. Try to find out how they their lifestyle is. All these things are coming under empathy or empathize.

Once we empathize. Next one is define. We define what the problem is after understanding that. Exactly this is the problem. There could be some limitation to the problem. There could be some constraint to the problem. All these things we need to understand in the stage of defining.

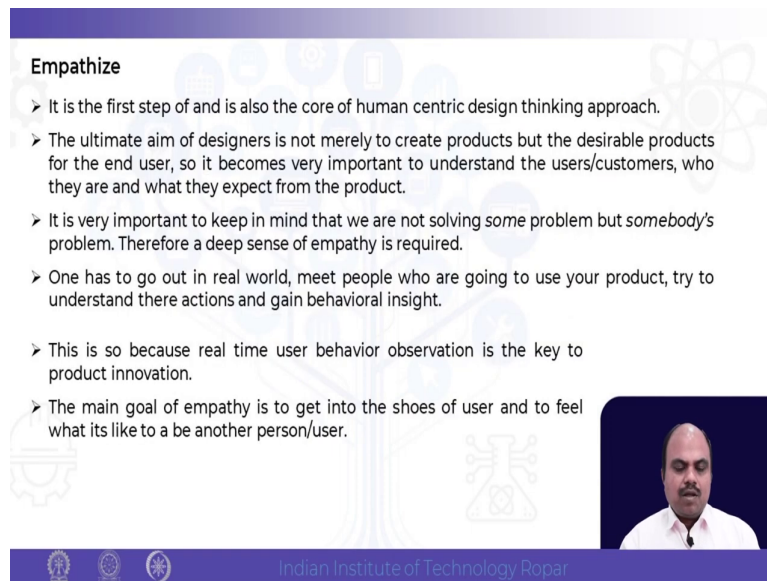
Once defining is over we ideate. We find out solutions. We use various methods like brainstorming. There are other ways also. We generate a lot of ideas. Select the best idea among all those ideas. So, basically, we find out the solution. This is the most important step among all the process. Please understand this is very much similar to the product design steps. However, among all these five stages, ideate regarded as the most important step in the entire five steps of design thinking.

Next is prototype. Prototype means where we prototype a solution. Prototype may be physical, prototype may be virtual. It could be a solution which is discussed. So, it is a solution where we make an actual working of prototype. And that can be tested later on. And that is what the next is last step last step of design thinking is, fifth step of design thinking is testing.

Where we take the prototype, put it in front of the customer, see the reaction or we actually take the prototype and put it in the solution for the system and we see how the it is functioning. If not, we have to take this back again and make this cycle again. So, repeating again because this is important.

First is empathize, second is define, third is ideate, fourth is prototype and fifth is testing. So, these five steps of design thinking it is generally followed in many of the companies. And we are also going to learn more about these design thinking process in depth and this one.

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Empathize

- It is the first step of and is also the core of human centric design thinking approach.
- The ultimate aim of designers is not merely to create products but the desirable products for the end user, so it becomes very important to understand the users/customers, who they are and what they expect from the product.
- It is very important to keep in mind that we are not solving *some* problem but *somebody's* problem. Therefore a deep sense of empathy is required.
- One has to go out in real world, meet people who are going to use your product, try to understand their actions and gain behavioral insight.
- This is so because real time user behavior observation is the key to product innovation.
- The main goal of empathy is to get into the shoes of user and to feel what it's like to be another person/user.

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So, first step is empathize and the idea is that making or understanding user-centric design approach. Human-centric means, human-centric means, you have to understand the user in depth. It is not merely you know creating a product, but is making a product which is desirable to the end user.

It is very important to understand the user and customer in depth. What they exactly want, what they expect from the product because as a designers we get some time influenced by our own liking, our own understanding. But that is not the right approach. It is also important to keep in mind that we are not solving a some kind of just problem. It is we are solving somebody else problem.

And the deep empathy is going to help us in understanding the actual problem is until unless we go to talk to the talk to the potential customer, potential users. Until unless we go and see

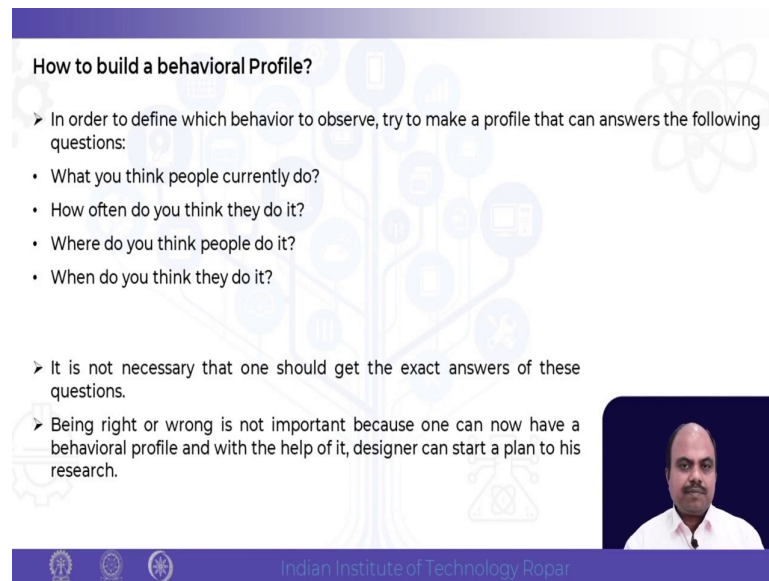
the lifestyle is difficult to understand what the customers are expected or what the user is going to expect from this product.

So, we have to go to the real world, meet people and see how they are going to use it. And behavior of these people very different from each other, very even from cultural to cultural is very different, country to country if a state to state is very different, each of the people. So, not all the everybody will be different. Everybody will be same then there are also people of different social structure, some people rich poor.

So, we cannot make products which are looking for everybody. Often some products yes, some products does have the aim, but most of the products are focused for this certain group of people who are going to use them. So, real behavior understanding is the key for product innovation.

The main goal of empathy is to actually you know go into the huge, serious shoe and feel what to be like to be another user. So, here you have to actually make the survey, user survey, in the field survey going to the user and feel what their what they feel is, what they feel about the product need we have to understand.

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How to build a behavioral Profile?

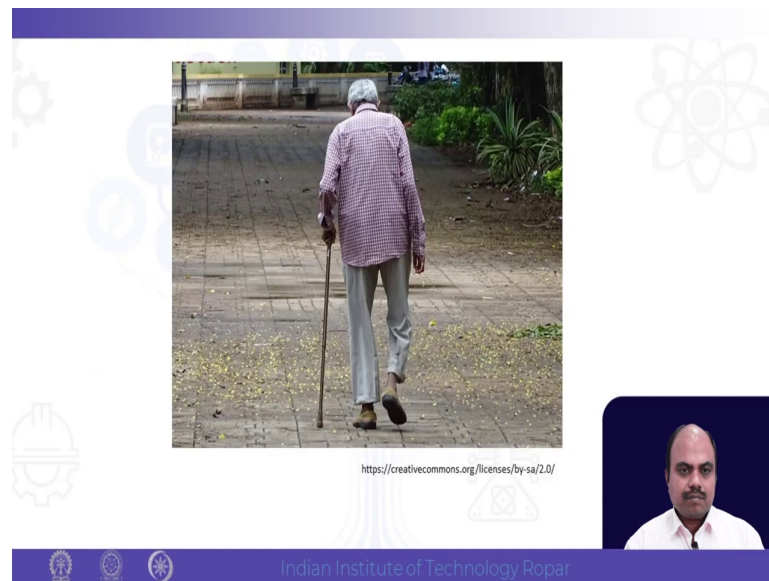
- In order to define which behavior to observe, try to make a profile that can answers the following questions:
 - What you think people currently do?
 - How often do you think they do it?
 - Where do you think people do it?
 - When do you think they do it?
- It is not necessary that one should get the exact answers of these questions.
- Being right or wrong is not important because one can now have a behavioral profile and with the help of it, designer can start a plan to his research.

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So, how to build a behavior profile? In order to understand the behavior, we have to observe and make a profile and maybe we have to ask a lot of questions. What do you think people currently do? How the questions are. How often do you think they do the one kind of activity? And why do you think people do it? Why do you think? These are all question, how the questions we need to ask to the users, to us also to understand the user.

We need to see that ok the user is doing these activities across the day from starting to the day and then how this life is going to go and how the product is going to be added. What do you think they do it? And here it is not necessary that one should get the exact answer for this. You know it is important that we should have a behavioral profile and understand the user in depth.

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So, now take for example, we this image we see that an old person and if you wanted to understand the old person in depth, we have to actually see what exactly he or she is leading the life. So, we can have an interaction with them and see how their how their life is.

So, how do you think we can do the empathy of the older people?

Sir what I think is that there are various ways that through which we can empathize with the target customer like for example, here you have said that for a older person. So, the first one is that we can either role play the person or the end customer that we are for whom we are designing the product. And but the best possible thing that what I feel is that what we can do is we can actually go to the person; observe his behavior his actions towards it.

For example, like for older person as we can see from the picture itself that a person is walking with a stick. So, definitely for older person there is a there are some difficulties in walking. So, there so, depending upon the activities that they perform in their daily life, we can be there.

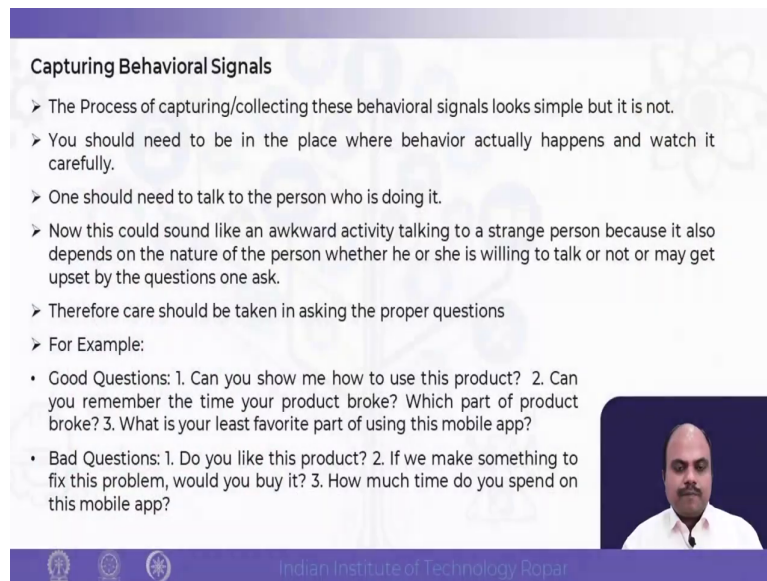
For example, if a person goes to visit a doctor or driving a car or reading a newspaper. So, for example, for driving a car we can say. So, what a designer should do is we can actually sit with the person, decide in the car itself in the side seat and they can observe the behavior, what are the feelings and what are the actions they perform while driving. So, because to pen down if I say that I have to tend to what the older person feels out.

So, that will be a complicated task because the feelings are very personal and complicated from their point of view. So, to be present with the customer to be there it gives a huge insights about the behaviors of the customer and we can understand more in a much better way about their problems. So, that they are feeling and we can design the product systematically. So, this is what I feel is that the true empathy we can achieve from the user itself.

Ok thank you.

Yes sir.

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Capturing Behavioral Signals

- The Process of capturing/collecting these behavioral signals looks simple but it is not.
- You should need to be in the place where behavior actually happens and watch it carefully.
- One should need to talk to the person who is doing it.
- Now this could sound like an awkward activity talking to a strange person because it also depends on the nature of the person whether he or she is willing to talk or not or may get upset by the questions one ask.
- Therefore care should be taken in asking the proper questions
- For Example:
 - Good Questions: 1. Can you show me how to use this product? 2. Can you remember the time your product broke? Which part of product broke? 3. What is your least favorite part of using this mobile app?
 - Bad Questions: 1. Do you like this product? 2. If we make something to fix this problem, would you buy it? 3. How much time do you spend on this mobile app?

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So, as you have seen in the example that capturing behavior signal is important. So, we possess in capture the behavior of these people. And then watch carefully what exactly they do and one should need to talk to the person who is actually doing those work. And now this is can you know sound like the awkward actually you go to the person and talk to, but this is what we are doing this is you know we cannot just sit in the chair and table and start doing drawing and designing.

Until we ask the question right kind of question, I mean they will not we will not we will not read about interact interaction is important. And the care should be taken that we ask the proper kind of question because know when you ask the question which is influencing our designing that kind of question we need to ask.

Then for example, good question can be can you show me how to use this product then we will say ok this guy is this person is using this product in this way. And do you remember the same time what when the product broke what kind of thing is there. So, what is the favourite app and there is certain question a little bit we have to avoid like you know do you like this product ok.

Then of course, people will say yeah, I like the product or very less people will take I do not like the product. So, and then if you make something to fix this problem what will you buy it. See we have not shown the product right now solution and then we are telling the person that if I fix this one then will you buy it. It is a difficult question to answer for a person ok. Then how much time you spend on the mobile app? So, something it is yeah it is good for some extent, but some extent is not so, suitable also.

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"Our first-person experiences helps us from personal connections with the people for whom we are innovating. We have washed other people clothes by hand in their sinks, stayed as guests in housing projects, stood beside surgeons in operating rooms, and clamed agitated passengers in airport security lines - All this to build empathy"

- David Kelly
(IDEO founder and Sandford d.school creator)

Reference: David and Tom Kelly, Creative Confidence: Unleashing the Creative Potential within Us All.

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So, David Kelly he is the founder of IDEO and Sandford d.school creator. This is quote from him that “Our first-person experiences help us from personal connections with the people for whom we are in innovating. We have wash washed other people's clothes by hand in their sinks, stayed as guest in housing projects, stood beside surgeons in operating rooms, and clamed agitated person passengers in airport security lines - All this things they have done all these to build empathy.

So, you see this kind of this kind of empathy is not an easy job because the person or designer has to go and get involved not only asking question, but get involved with the people who are going to get empathy we have to have empathy. So, this is a kind of detail understanding is required of the user and this is what empathy is all doing.

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Famous Example

HUL Pureit

Courtesy: IndiaMART

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So, here is famous example of HUL Pureit. So, as you know in the (Refer Time: 16:11) a Unilever this are the this is a company which has started this Pureit and nowadays we will see other companies also. Originally these researchers I mean of course, the designers, but I will talk about design researchers and other engineers they actually went to the various places in villages and found what kind of pin point they are having.

They have found that especially Indian villages they do not have good water for drinking. Water is not safe for drinking. So, what they do? They take water; they boil and then start drinking. But boiling is not easy job. Boiling is going to change the taste. Of course, it is very good water there no doubt about it. It is going to reduce the minerals also. Contaminate definitely is going to go off it was fine, but boiling is going to take time. It is going to take effort; it is going to take energy.

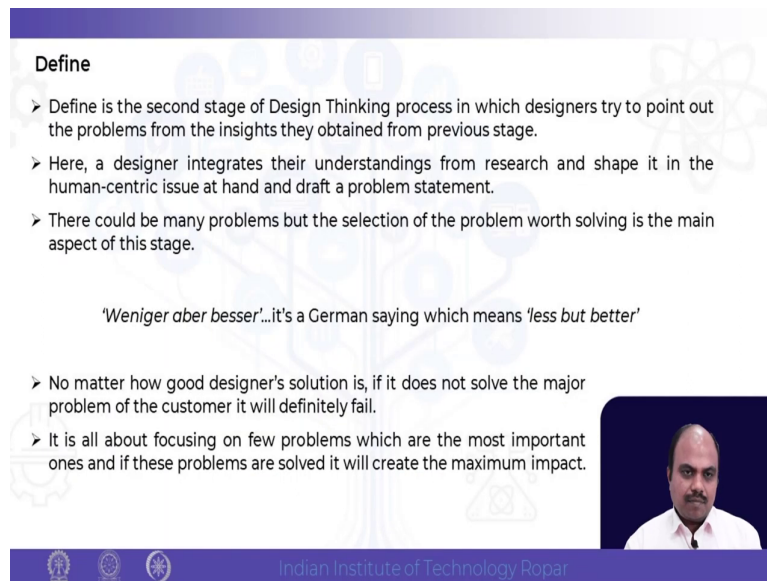
A electricity is something which is not always available in the villages always in the places. Solution is that we need to have a filtration method which is standardized according to something like US standard and then the water should be drinkable. It should not run on electricity. It should be economical.

So, ultimately with all these understanding they came out with this system Pureit. So, how it works? It is having some kind of filtration system and water is going to be on top of it and due to gravity, it is going to filter and then whatever filter is coming filtered water one can drink it is very good filter.

After something like 1500 litres of filtration you need to change that candle that cost is only 100 300 rupees. So, you can see this kind of understanding if it is not there coming up with this kind of product is very difficult. So, this is the why slowly it becomes successful.

There the company has made a lot of profit by selling this product and the reason is that they have actually understood the pin points of the people in the villages and this is a very good product also even now also I mean modern design has been changed, but something which is very good for the villages.

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Define

- Define is the second stage of Design Thinking process in which designers try to point out the problems from the insights they obtained from previous stage.
- Here, a designer integrates their understandings from research and shape it in the human-centric issue at hand and draft a problem statement.
- There could be many problems but the selection of the problem worth solving is the main aspect of this stage.

'Weniger aber besser'...it's a German saying which means 'less but better'

- No matter how good designer's solution is, if it does not solve the major problem of the customer it will definitely fail.
- It is all about focusing on few problems which are the most important ones and if these problems are solved it will create the maximum impact.

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Now, we are going to go for define. The second step of I this design thinking is the define. Define is where we are going to understand from the understanding, we are going to define the problem in depth. So, we are going to find out the problems and pin point this is exactly the problem is.

So, human centric issues is a problem and then you know draft the problem statement. So, problem statement is drafted and this is where this is going to also can help in you know many problems, but selection of problems and over solving is something which is very important what kind of problem we are going to solve.

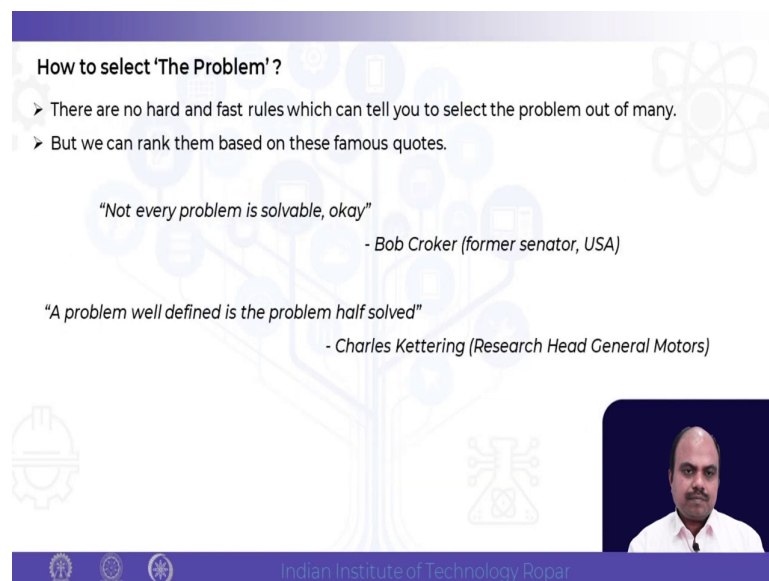
And this defining is important because we are going to evaluate also with respect to the definition of this problem which we have tried to we have defined it as a draft as a problem

statement. So, there is a saying in German that *Weniger aber besser* it means that 'less is better' which means that if you want to define a problem and find out the actual problem.

So, we have to be concise as possible. Now, no matter how good designer solution is, if it does not solve the major problem the customer is now going to definitely buy it. Advertisements if you do more advertisement some people will buy of course, initially, but later on it will not be successful.

So, we have to focus on the few problems and most important problem. So, these are the things these are the things which we need to define design a problem which we have to when we are understanding a problem from empathy here, we are defining very specifically this is the major problem and of course, there are some other sub problems.

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How to select 'The Problem' ?

- There are no hard and fast rules which can tell you to select the problem out of many.
- But we can rank them based on these famous quotes.

"Not every problem is solvable, okay"
- Bob Croker (former senator, USA)

"A problem well defined is the problem half solved"
- Charles Kettering (Research Head General Motors)

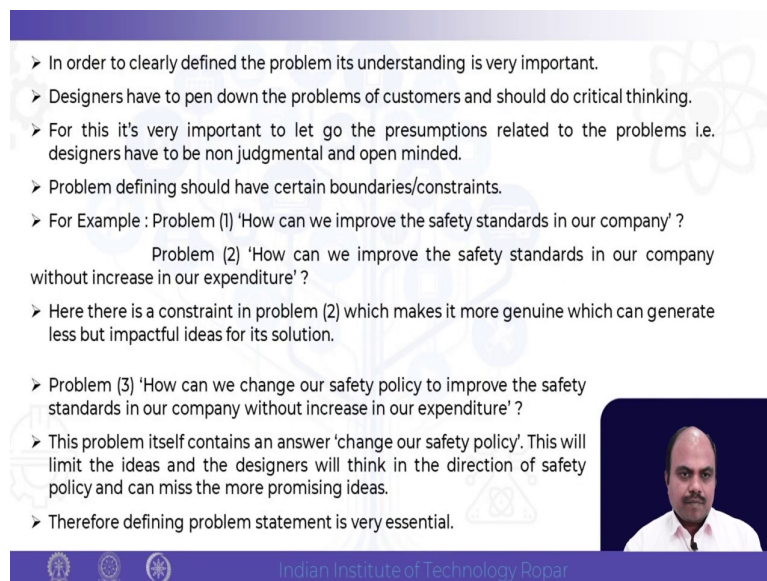
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So, how to select a problem? There is no hard and fast rule and there are also of course, there can be many problems. So, we need to rank there is a you know we can rank the problem.

So, there is some quotations which like to say that is “Not every problem is solvable, ok” which means that Bob is telling that we have to understand that we are not we cannot solve all the problem we have to solve which is a problem which you can which we are confident that “A problem well defined is a problem half solved.” Why?

Because when you are understanding the problem and finding out the exact focus of the problem is we have already understood that the solutions of this you will be focusing on this problem only. So, it is saying like that.

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- In order to clearly defined the problem its understanding is very important.
- Designers have to pen down the problems of customers and should do critical thinking.
- For this it's very important to let go the presumptions related to the problems i.e. designers have to be non judgmental and open minded.
- Problem defining should have certain boundaries/constraints.
- For Example : Problem (1) 'How can we improve the safety standards in our company' ?
Problem (2) 'How can we improve the safety standards in our company without increase in our expenditure' ?
- Here there is a constraint in problem (2) which makes it more genuine which can generate less but impactful ideas for its solution.
- Problem (3) 'How can we change our safety policy to improve the safety standards in our company without increase in our expenditure' ?
- This problem itself contains an answer 'change our safety policy'. This will limit the ideas and the designers will think in the direction of safety policy and can miss the more promising ideas.
- Therefore defining problem statement is very essential.

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So, in order to clarify clearly define the problem we need to understand understanding is very important. And designers have to have to paint down the problem of the customer and we have to use critical thinking for this. So, because this is important because there is a lot of pre presumptions which are there that is designs designers has to be non judgmental and open minded.

So, if designers think that this is a problem is not always true. Sometimes the problem is there in the mind of the user and until unless we understand it we should not assume that we have understood ok. So, it is not of course, not easy reason. So, when we have a problem of course, most of the time the problem comes with some constraints.

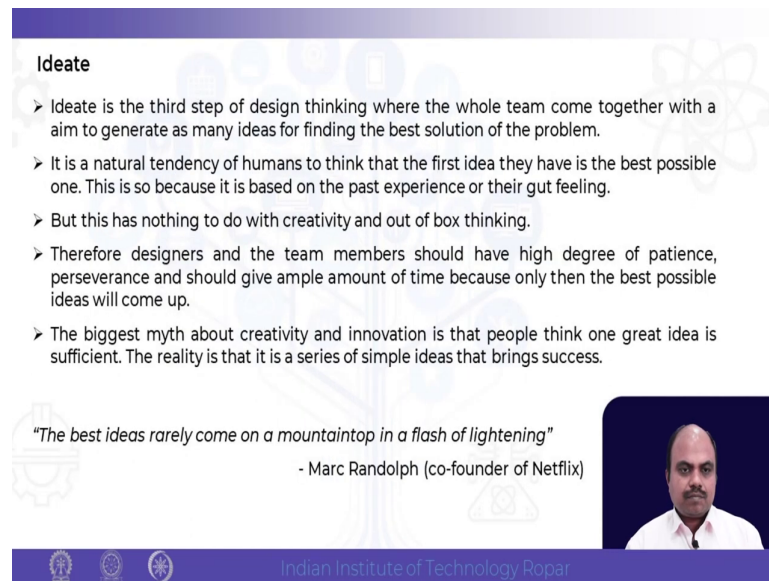
So, for example, how can you improve the safety standard of our company? This is the standard these are like a standard or this is a state forward question. However, if we have this one that - how can you improve the safety standards of our company without increasing our expenditure?

Then there is a constant is there and within the constant if you want to work then the problems then the solution which you are going to come it will be more useful for the company because the previous solution previous problem if you take solution will come.

But that means the price ultimately it will not be implemented, but this is the something which is important that we are going to work it is better to work with some constraints also. So, you know here is contextual problem two like what makes is more genuine and we can generate less, but impactful ideas in the solution this is what it is. And then how can we arrange our safety policy to improve the safety standard in the company without increasing the or expenditure?

So, here we are going to add some more constraints to this one like this we make the define the problem such a way that the main problem is focusing on the main agenda. However, constraints we are adding to make the solution more applicable for us or to the user. So, we have to define the problem in depth.


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Ideate

- Ideate is the third step of design thinking where the whole team come together with a aim to generate as many ideas for finding the best solution of the problem.
- It is a natural tendency of humans to think that the first idea they have is the best possible one. This is so because it is based on the past experience or their gut feeling.
- But this has nothing to do with creativity and out of box thinking.
- Therefore designers and the team members should have high degree of patience, perseverance and should give ample amount of time because only then the best possible ideas will come up.
- The biggest myth about creativity and innovation is that people think one great idea is sufficient. The reality is that it is a series of simple ideas that brings success.

"The best ideas rarely come on a mountaintop in a flash of lightning"
- Marc Randolph (co-founder of Netflix)



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Next is the important thing is coming to coming is the ideate. So, in ideate the first thing is ideate is the third step in the among the five steps of design thinking. And here we generate lots of ideas more ideas are better and then naturally the tendency of you know design as many times ok I like this idea because I have generated it.

Or this is my first idea ok seems to be a good idea this kind of confidence is not always good because it has been found that more and more we think about the idea the solutions will be better. An out of box thinking is something which is important and then if you have high patience as a designer and ample time you have to spend is true for even for research also right. If you do research and we are thinking about a problem for more then we are getting better idea.

The creativity innovation you should understand that we should generate more and more and more solutions that is going to be make us more creative. So, Marc has given a very good quote in this one “The best idea really come on a mountain top in a flashing of lighting” which means that indirectly it is telling that you should generate more and more better ideas. He is a co-founder of Netflix.

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> Most widely used technique in ideation phase is brainstorming.

> Here are some rules of brainstorming adopted by IDEO .

1. Sharpen the focus: Start with a problem statement that is broad enough but not fuzzy.
2. Mind the playground rules: Build on the ideas of others; stay focused on the topic; encourage wild ideas; defer judgement; one conversation at a time; be visual.
3. Number your ideas: It helps the pace and motivates team to reach certain milestones.
4. Jump and build: When ideation reaches a plateau, take a small deviation, or go back to previous idea to infuse new thoughts.
5. Remember to use the space: Share your ideas in a visual medium that everyone can see and contribute towards.
6. Stretch your mental muscles: Do a little warm-up or give participants some pre-work before they turn up for the session.
7. Get Physical: Frequently convert ideas into prototypes, preferably in three dimensions.

Reference: Kelly and Littman, The Ten Faces of Innovation: IDEO's Strategies for Beating the Devil's Advocate and Driving Creativity throughout Your Organization.

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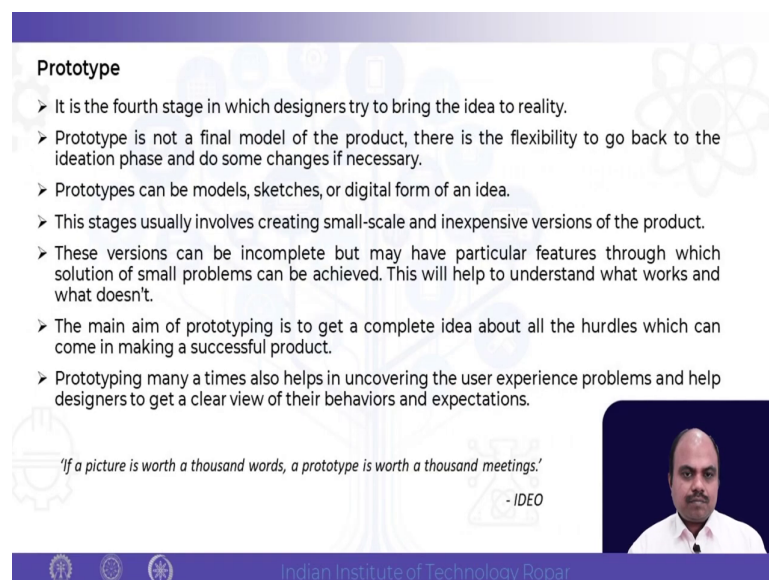
So, what we see here that there are so many techniques for idea generation and the one of the most commonly used technique for idea generation or ideate is a brainstorming. This is very common in industry and there are certain rules are there for brainstorming one is then sharpen the focus, start with the problem and then broad away and there is broad enough.

And then you know mind the play playground rules which means that you focus on the idea and differ judgment do not judge each other's idea and then be more visible interactive. And

then number of your ideas: you can put numbering of the ideas and build each other's each other's idea. And then jump and build: When ideation reaches plateau a small deviation and go back to the previous idea and then change it modify it and then give a particular space.

So, and then stretch your mental muscle which means that you give the participants and little warm up the practice is required. So, all these things we are what we are trying to do we are trying to make products which are a generate ideas which are more improved and out of the box and of course, prototype is possible that is if that is and then we again use the same technique to generate more and more ideas.

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Prototype

- It is the fourth stage in which designers try to bring the idea to reality.
- Prototype is not a final model of the product, there is the flexibility to go back to the ideation phase and do some changes if necessary.
- Prototypes can be models, sketches, or digital form of an idea.
- This stages usually involves creating small-scale and inexpensive versions of the product.
- These versions can be incomplete but may have particular features through which solution of small problems can be achieved. This will help to understand what works and what doesn't.
- The main aim of prototyping is to get a complete idea about all the hurdles which can come in making a successful product.
- Prototyping many a times also helps in uncovering the user experience problems and help designers to get a clear view of their behaviors and expectations.

'If a picture is worth a thousand words, a prototype is worth a thousand meetings.'
- IDEO

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Now, the fourth step for design thinking is a prototype. Here we are trying to bring idea into reality. So, where the prototype is not the final model, but it is you know it is a; it is a product which we are making and in testing we are going to test with the user. So, here it can be

models, it can be sketches, it can be digital form. So, what you should select is select it will basically it will select a model that type of product or the solution which we are expecting.

So, for some kind of solution models may be enough, some kind of solution sketching may be enough, for some kind of written material may be enough, for some kind of things we may make actual working model maybe use IT manufacturing to make the models. And then some kind of sometime it will be incomplete and the versions can be incomplete, but it should have the features to explain the people this is the idea which we are having.

And the main aim of the product is to get the complete idea of all the hurdles and which can make a successful product. So, and then prototypes can be of can be of many times and multiple times it could be there. So, from idea another quote which is quite interesting, if a picture is over 3000 words a prototype is over 3000 meetings, which means that when we have prototype, we can easily know this is the product which we are going to give to the customers and this is going to reduce lot of confusions.

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➤ Prototyping is all about like interacting with end user in advance, providing them a small scale solution to the problem and getting a feedback from them in test phase.

➤ This non linear and iterative approach not only helps in avoiding wastage of large amount of money in experimentation but also secures user trust and boost design team morale by making them believe that they are moving in right direction.

➤ Advantages of early stage prototyping:


1. Converts ideas from abstract form into a physical form.
2. Design team have something to show the work in progress.
3. Iterations can now be perform therefore the test phase can be started simultaneously.

➤ Innovative companies like Apple considers prototyping as heart of new product development.

'Demos were fundamental to our work at Apple. We used them to highlight the potential, explore the concepts, show the progress, prompt the discussion, and drive the decisions for making our products. Software demos need to be convincing enough to explore an idea, to communicate a step toward making a product, even though the demo is not the product itself, it serve as the primary means to turn ideas into software'

- Ken Kocienda (Former Designer in Apple)

Reference: kocienda, Creative Selection: Inside Apple's Design Process During the Golden Age of Steve Jobs.



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So, prototyping all this you know like you know interaction and end of the advance providing a small scale solution and then getting the feedback this is something which is which is done in the testing phase and prototype is where we make the product and try to see the testing is done later on.

And then we also need to see that it is not a is a we should also avoid wasting lot of money because in the prototyping it is a something like expensive product process; the process which we have if we make the product and then we show it to the user something not possible.

So, we make the prototype and show it to the user. So, but also, we need to have some idea how much to prototype and when to prototype. There are some advantage of course, for all

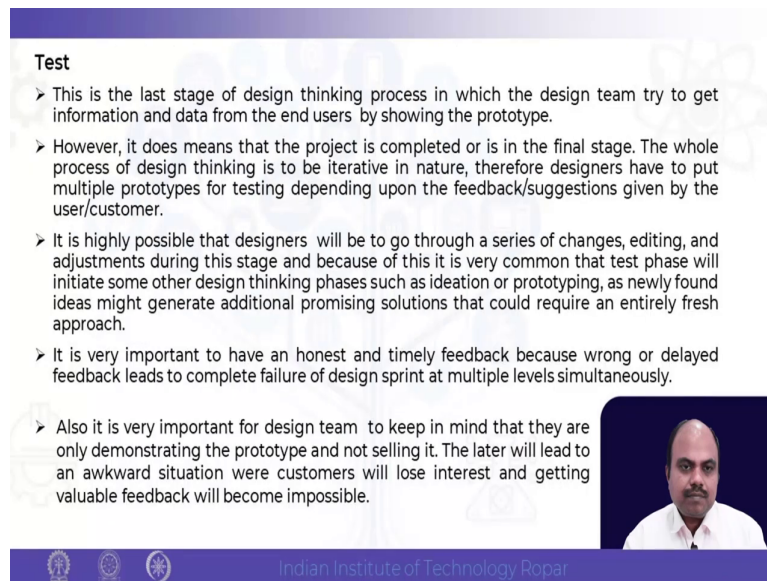
the prototyping that it converts the abstract form this is the idea which we are having and the physical form is something which is very valuable and this can be shown later on to the user.

And design teams can work on something which is you know work in progress that also we can show in between. Prototype we need not be you know everything is complete and then we are doing in between also we can do. Then iterations it could be done simultaneously or one by one. Like Apple they consider prototypes very important.

Ken the former design in Apple this is the quote from him that 'Demos were fundamental to our work at Apple. We use them to highlight the potential explore the concept, show the progress, prompt the decisions, and drive the decisions for making our product.


A software demos need to be convincing enough to explore an idea to communicate a steep towards making a product, even though the demo is not the product itself, it serves as a primary means to turn ideas into a software.' So, that is what the importance of prototype is here.

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Test

- This is the last stage of design thinking process in which the design team try to get information and data from the end users by showing the prototype.
- However, it does means that the project is completed or is in the final stage. The whole process of design thinking is to be iterative in nature, therefore designers have to put multiple prototypes for testing depending upon the feedback/suggestions given by the user/customer.
- It is highly possible that designers will be to go through a series of changes, editing, and adjustments during this stage and because of this it is very common that test phase will initiate some other design thinking phases such as ideation or prototyping, as newly found ideas might generate additional promising solutions that could require an entirely fresh approach.
- It is very important to have an honest and timely feedback because wrong or delayed feedback leads to complete failure of design sprint at multiple levels simultaneously.
- Also it is very important for design team to keep in mind that they are only demonstrating the prototype and not selling it. The later will lead to an awkward situation were customers will lose interest and getting valuable feedback will become impossible.



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Now, the finally, we are going to the fifth step of design thinking that is the testing phase of test. So, this is last stage of design thinking or fifth step and here we test the prototype of the product with the users which means that we gather data we collect the data from the user.

And see how they are filling of the product what is their feedback is. So, of course, there are some techniques we have on this; however, the most important thing is that the product when it is final stage, we have this multiple product which we prototype and we can get feedback and suggestions from them.

So, this is the product which you are thinking of are we telling about this is the product which you like or do you think this is the any changes are required what do you feel about the product do you think you are going to use it. Also, the various questions can be coming, but


until we show to the user and also sometime you know verbal and informal information also you can get it.

So, you have to have a you know series of changes also possible editing is also possible and this is a basically a testing phase which is of course, important and feedback from the user is where we are going to take in various ways. So, this is we should understand that we are trying to demonstrate the product we are not selling it ok.


We are not trying to look at you going to buy it or not ok do you think like it or no, you going to understand what the product feel what the sorry, what the users feel when they see in the product what the customers is going to seen, why they are interested, why they do not have interest in this one?

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- Jake Knapp in his book *Sprint*, has described how to conduct interviews of customers in order to validate ideas.
- According to him, only five customers interaction are enough to get a complete idea about your prototype. The only trick is, that a designer should know the right customer whom the prototype has to be shown, i.e. designer should get the right customer which not only can give honest feedback but also some ideas which might come handy.
- Design thinking is an approach towards innovation and it becomes successful at the intersection of what is desirable for users, what is feasible from a technological point of view and what could be economically viable.



Reference: Jake Knapp, John Zeratsky, and Braden Kowitz, *Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days* (New York: Simon & Schuster, 2016)

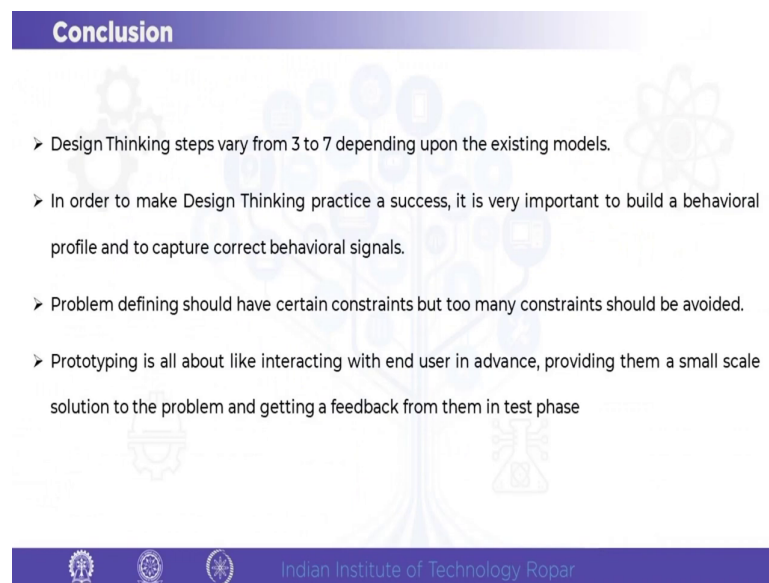


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Next is Jake Knapp in his book on Sprint, he has described how to conduct interviews and how to validate it. So, according to him, the five customer interactions are enough for a complete idea of the prototype and this is the only trick that a designer should know the right customer with whom the code I should be shown not on the customer.

Design should know get the right customer in which not only to give the honest feedback, but also give the ideas which might come. And design thing is approach toward innovation is very important to approach to innovation and it becomes successful the interaction of what is desirable to the users, what is feasible and technological point of view and what seems to be an economic and viable options for the designing.

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Conclusion

- Design Thinking steps vary from 3 to 7 depending upon the existing models.
- In order to make Design Thinking practice a success, it is very important to build a behavioral profile and to capture correct behavioral signals.
- Problem defining should have certain constraints but too many constraints should be avoided.
- Prototyping is all about like interacting with end user in advance, providing them a small scale solution to the problem and getting a feedback from them in test phase

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Thank you.

