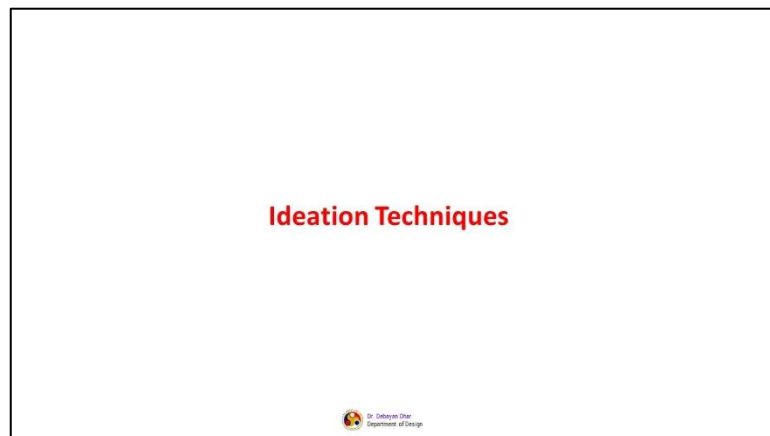


**Usability Engineering
Dr. Debayan Dhar
Department of Design
Indian Institute of Technology, Guwahati**

**Module - 09
Lecture - 30
Conceptualization and Prototyping I**

Welcome to module 9, lecture number 30. This is continuation of our module on Conceptualization and Prototyping I. Now, until now we have discussed about various ideation techniques, we have talked about creativity, we have studied several techniques in short, but we start now our intention is to talk about few specific techniques in detail. So, in this lecture which is also going to be a short one.

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We are going to study about a technique that is part of the ideation techniques.

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SCAMPER

- The SCAMPER method helps you generate ideas for new products and services by encouraging you to ask seven different types of questions, which will help you understand how you can innovate and improve existing products, services, problems and ideas. SCAMPER is surprisingly easy to start using and very efficient in innovation and ideations sessions.

Dr. Siddharth Shear
Department of Design

And which is most famously called as SCAMPER. We have talked about this in our earlier lecture in short. Now, this SCAMPER method helps you generate ideas for new products and services by encouraging you to ask seven different types of questions, which will help you understand how you innovate and improve existing products, services, problems and ideas.

SCAMPER is a surprisingly easy to start using and very efficient in innovation and ideation sessions. So, remember this situation. See whenever we are in the process of ideation so; that means, we are very clear about our persona, we know the characteristic of the person for whom we are designing. Also, we have a clear specific characteristic of the brief the design brief.

Now, with these two things in hand now we are in a situation to trigger our creative thoughts. Now, see the question arises that how do you come with unique novel and interesting thoughts. Well, that is until many decades earlier people used to think that this is a god given special skill or a characteristic of a person who is highly creative not necessarily.

Now, there are many literatures, there are many training workshops that has happened that has suggested that by incorporation of some specific techniques of some specific ways through which we visualize we can actually trigger thoughts in a person; in a person who wants to come up with some ideas.


In these perspectives SCAMPER plays a very important role. And it plays this role by allowing you to ask few questions. And what SCAMPER does is that it provides you with

a perspective of the kind of questions that you need to ask during the ideation process. And, this helps you guide your thoughts to channelize your thoughts in a way that new and novel ideas start emerging out of your the creating thinking session.

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SCAMPER

- **Historical Background**
- Alex Osborn, the originator of the brainstorming method, originally came up with many of the questions used in the SCAMPER technique. However, it was Bob Eberle, an education administrator and author, who organised these questions into the SCAMPER *mnemonic*.

 Dr. Debajyoti Dhar
Department of Design

Let us know about its historical background. So, Alex Osborn the originator of the brainstorming method. So, if you remember the brainstorming method where we discussed that it is a team activity where a person come up with ideas and then it is taken over by there the various teammates and subsequent ideas are generated.

So, he was the first person who came up with this concept of SCAMPER and originally, he came up with some questions which is used in this SCAMPER technique; however, later it was Bob Eberle, an education administrator and author who organized these questions. The questions the seven questions that are that the that we are going to discuss. He organized those seven questions into the SCAMPERed mnemonic ok into the SCAMPER framework.

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SCAMPER

SCAMPER refers to a series of thought sparkers or provocations which help you to innovate on an existing product, service or situation by looking through different lenses. There are seven provocation lenses in the SCAMPER method:

- Substitute — ①
- Combine — ②
- Adapt — ③
- Modify (Also Magnify and Minify) — ④
- Put to another use — ⑤
- Eliminate — ⑥
- Rearrange — ⑦

Dr. Ashwini Shear
Department of Design

Now, SCAMPER refers to a series of thoughts sparkers or provocations which help you to innovate on an existing product service or situation by looking through different lenses. See we talked about perspective change, we talked about the earlier techniques, where we had talked about how perspective change from different work profiles can help us in looking at the same problem from different roles playing situations right.

Similarly, SCAMPER also allows you to provoke this question so, that it helps you to look the situation from different perspective. Now, there are seven provocation lenses in this SCAMPER method. So, what are they? These seven provocation questions can be classified into these seven categories. This is a Substitute, Combine, Adapt, Modify, put to another use, Eliminate and Rearrange.

These are these seven categories based on which these questions have been categorized right. So, by the name itself if you see its name substitute you know combine adapt modify; that means, either magnifying or minify you know, put to another use eliminate rearrange you would be able to understand what essentially these words or these categories are trying to provoke or are trying to tell you.

How they are trying to force your thought to go into a particular direction of ideation by using these as a technique right. Now, let us go in detail of each of these categories.

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SCAMPER

How to use SCAMPER:


First, take an existing product or service. It could be an existing product, service or idea which you want to improve or which could be a great starting point for future development.

Then, simply go down the list and ask questions regarding each of the seven elements. Please see our step-by-step guide below.

Apply the questions to values, benefits, services, touch points, product attributes, pricing, markets and essentially any other related aspect you might be able to think of that has relevance to your ideation needs.

Look at the answers that you came up with. Do any of the answers stand out as viable solutions? Could you use any of them to create a new product, or develop an existing one?

Take the good ideas and explore them further.



Now, before you start listing down the questions it is important that you realize how do you use SCAMPER. So, first you know I am taking an example of an existing product. So, first take an existing product or a service.

So, the question is that say probably you are designing a product that is already existing you are working on the redesign new design of that product, it is a redesigned project. Now, it could be an existing product service or idea which you want to improve or which could be a great starting point for future development that is the situation that is at our hand. Now, simply go down the list and ask questions regarding each of these seven elements right.

You are supposed to ask questions to yourself to your own self. I mean while you are in the process of thinking you ask these questions to themselves and these seven elements are based on what we have discussed here. Substitute, combine, adapt, modify, put to another use, eliminate and rearrange right. So, you ask questions regarding each of these seven elements and then you follow a step by step guide that I have just listed down.

Apply the questions to values, benefits, services, touch points, product attributes. So, these are the characteristics where you can apply each of these questions. Pricing markets and essentially on any other related aspect that you might be able to think of that has relevance to your ideation needs. Look at the answers that you came up with do any of the answers stand out as viable solutions, could you use any of them to create a new product or develop an existing one, take the best idea.

So, you will get many ideas that would come based on the elements that we have discussed and the questions that you are going to ask. Take the good ideas and then explore them further look out at the detailing aspect of it.

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SCAMPER

Substitute

Overall, the question to think about here is this: What can I substitute or change in my product, problem or process? You should think about substituting part(s) of your product or process for something else.

Guiding questions:

- What can I substitute so as to make an improvement?
- How can I substitute the place, time, materials or people?
- Can I substitute one part for another or change any parts?
- Can I replace someone involved?
- Can I change the rules?

 Dr. Sahayam Dhar
Department of Design

So, now, we will start up we will start with each of these elements and see the questions that would guide you to ask this thought-provoking situation or come up with ideas that are thought provoking in nature.

The first one is substitute - now overall the question to think about here is what can I substitute or change in my product. See this is a very very important question. What can I substitute or change in my product?

It can be a problem with a feature, it can be a problem with call to action feature, it can be a problem with the graphical user interface, it can be a problem with the way the product is hosted somewhere, it can be a problem with the interaction type, the way the your user is communicating the interaction messages the interaction techniques or it can be a problem with the entire process itself of how each stakeholder is being connected with the system and how data is being communicated across each channels.

Now, you should think about substituting part or parts of your product or process for something else; that means, you have to come up as something else you should think about a situation or a new idea in order to substitute that what is already existing.

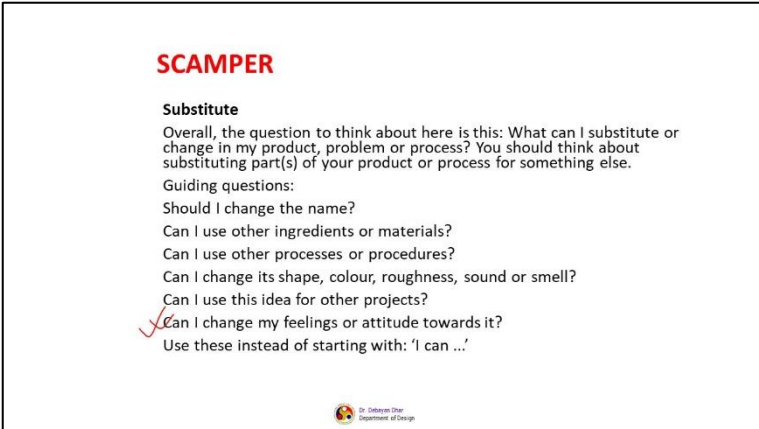
And the guiding questions for this one can be what can I substitute so, as to make an improvement? So, the idea is to consider something as an improvement right. How can I

substitute the place time materials or people? Now these are some of the examples that I have quoted, but you can add something else to it.

How can I how can I substitute the call to action feature, how can I substitute the primary activity with something else, how can I substitute the secondary activities, how can I substitute the color palettes the grade system.

You can use up any of those characteristics and ask this question. Third one - can I substitute one part for another or change any parts? So, if I change the part from here and substitute with another, what will happen? How will the product perform? How will the product be perceived by our user? These are essential questions for you to ask. Can I replace someone involved? Right. Can I change the rules the way the product functions the product actually interacts?

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SCAMPER

Substitute

Overall, the question to think about here is this: What can I substitute or change in my product, problem or process? You should think about substituting part(s) of your product or process for something else.

Guiding questions:

- Should I change the name?
- Can I use other ingredients or materials?
- Can I use other processes or procedures?
- Can I change its shape, colour, roughness, sound or smell?
- Can I use this idea for other projects?
- ✓ Can I change my feelings or attitude towards it?

Use these instead of starting with: 'I can ...'

Dr. Dilipkumar Dhar
Department of Design

Then should I change the name of the product? Can I use other ingredients or materials? Can I use other processes or procedures? Can I change the shape color roughness sound smell or the any of the visual characteristics? Now, I am using these questions from the perspective of industrial product design also, because SCAMPER was originally used for industrial product design.

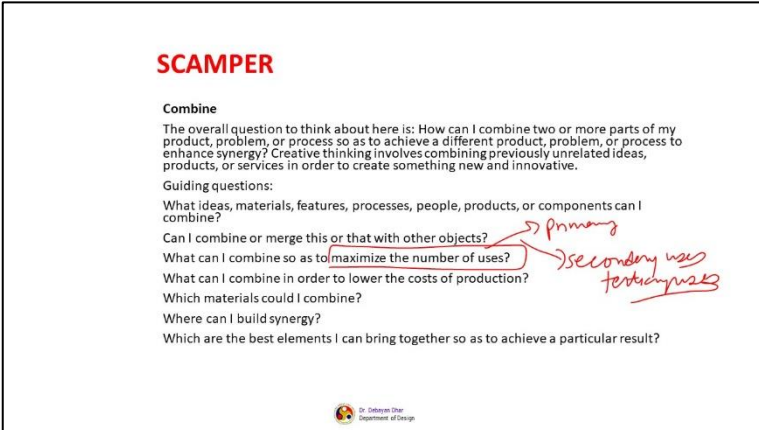
So, you would see the questions asking attributes and characteristics of industrial product. But it can be suited for your software product or the graphical user interface product also if you replace the characteristics of the product with the one of industrial products. Now, can I use this idea for other projects? Can I change my feelings or attitude towards it? This is a very very vital question you know. Can I change my feeling or attitude towards its?

Now, the moment you ask this question, the important aspect is how do you change; and an element say for example, a feeling or attitude can only be changed you if you have some design cue. If you have any feature or there is some trigger element is there that induces that mood or that feeling inside you. It can be a product, it can be a feature, it can be a service, it can be the way it looks like. How do you induce that? So, that is a very essential part of it right.

Use these instead of starting with I can. Now, while you have these questions listed. Your task becomes easier if you start answering these questions with the statement ok, I can do this, I can do that, I can replace this feature with that feature, I can replace this way of looking at the interface from that perspective, I can replace the way the functions have been grouped together, affinities have been grouped together.

I can replace the logical structure of the information architecture and put it into a in different way. These things can be asked and answered while you are trying to substitute things.

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SCAMPER

Combine

The overall question to think about here is: How can I combine two or more parts of my product, problem, or process so as to achieve a different product, problem, or process to enhance synergy? Creative thinking involves combining previously unrelated ideas, products, or services in order to create something new and innovative.

Guiding questions:

- What ideas, materials, features, processes, people, products, or components can I combine?
- Can I combine or merge this or that with other objects? *primary*
- What can I combine so as to maximize the number of uses? *secondary uses*
- What can I combine in order to lower the costs of production? *technology*
- Which materials could I combine?
- Where can I build synergy?
- Which are the best elements I can bring together so as to achieve a particular result?

Dr. Debayem Dhar
Department of Design

The next one is combine - now the overall question to think about here is how can I combine two or more parts of my product problem or process so, as to achieve a different product problem or process to enhance energy.

Now, here you are combining things you are trying to combine two different entities all together and come up with a new product concept of a product. So, creative thinking you know involves combining previously unrelated ideas. For example, if I ask someone that ok you have shoes, now can I incorporate the traditional sweeping materials in the shoes

and make a shoe that will sweep your house as you walk? No these are unrelated ideas absolutely you will not see no products in the market.

Now, whether this would be useful or not, remember this is not at this stage that you are going to think about. At the stage of ideation your simple goal is to come up with as many ideas as possible. So, therefore, any unrelated elements can be related to come up with new ideas. And the guiding questions are, what ideas, materials, features, processes, people, products or components can I combine? Can I combine or merge this or that with other objects?

What can I combine so, as to maximize the number of uses see? So, you are not only addressing to the primary use, but also you are focusing on other secondary and tertiary uses; secondary and tertiary uses, is it not? Right. What can I combine in order to lower the costs of production? What which materials could I combine? Where can I build synergy? Which are the best elements I can bring together so, as to achieve a particular result. See these are some of the ways through which you can think how you can combine two unrelated things.

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SCAMPER

Adapt

Overall, the question you need to think about is: What can I adapt in my product, problem, or process? Think about which parts of the product or process you could adapt so as to solve your problem.

Guiding questions:

- Which part of the product could I change?
- Could I change the characteristics of a component?
- Can I seek inspiration in other products or processes, but in a different context?
- Does the history offer any solutions? *implication → through a person's*
- Which ideas could I adapt, copy or borrow from other people's products? *change*
- What processes should I adapt?
- Can I adapt the context or target group?
- What can I adapt in this or that way in order to make this result? *undergo*

Dr. Dharmendra Kumar
Department of Design

And think about something which is absolutely unique or different.

The third one is adapt - now overall the question that you need to think about is what can I adapt in my product problem or process, think about which parts of the product or process you could adapt so, as to solve your problem. Now, the guiding question should be which part of the product could I change? Could I change the characteristics of a component?

Can I seek inspiration in other products? Inspiration you are getting trying to get inspired from other products and processes which can which are being used in different context but you want to borrow that and use it in a completely new and different context. Does the history offer any solutions if you look at the historical aspect does that offer any solutions? Which ideas could I adapt copy or borrow from other people's products?

So, in design we do not focus on copy or something, we only focus on inspiration, but remember there is one aspect of in inspiration that whatever you get inspired from has to undergo through a process of change, through a process of change it has to undergo. The idea has to undergo a process of change, you cannot directly use something and say that it is my own concept, no.


You can get inspired it has to go through a process of change and those change aspects can be incorporated and then you can call it inspiration. Instead of looking at being copying or borrowing, we rather say that we are focusing on inspiration right. What processes should I adapt? Can I adapt the context or target group? What can I adapt in this or that way in order to make this result.

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SCAMPER

Modify (Also Magnify and Minify)

Overall, the question you need to focus on is this: What can I modify or put more or less emphasis on in my product, problem, or process? Can I change the item in some way? Can I change meaning, colour, motion, sound, smell, form, or shape? It's time to magnify or exaggerate your idea, product, problem, or process—or to minify it. These questions will give you new insights about which components are the most important ones. Think about changing part or all of the current situation or product. Alternatively, distort the product in an unusual way.

 Dr. Dibyanshu Dhar
Department of Design

So, this is the third element that is adapt which we have discussed about. The fourth one is modifying which is also known as either you magnify or you minify. Now overall the question that you need to focus on this is what can I modify or put more or less emphasis on in my product problem or process. Can I change the item in some way? Can I change meaning color motion sounds smell form or shape? It is time to magnify or exaggerate your idea product problem or process or to minify it.


Now, these questions will give you new insights about which components are the most important ones think about changing part or all of the current situation of the or the product alternatively distort the product in an unusual way.

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SCAMPER

Modify: Guiding questions-

- What can I magnify or make larger?
- What can I tone down or delete?
- Could I exaggerate or overstate buttons, colours, size...?
- Could I grow the target group?
- What can be made higher, bigger, or stronger?
- Can I increase its speed or frequency?
- Can I add extra features?
- How can I add extra value?
- What can you remove or make smaller, condensed, lower, shorter or lighter—or streamline, split up or understate?
- What can I change in this way or that way so as to achieve such and such a result? (Also Magnify and Minify)

 Dr. Debajyoti Dhar
Department of Design

And some of the questions that would help you to ask that; what can I magnify or make larger? What can I tone down or delete? Could I exaggerate or overstate buttons colors or size something blah, blah, blah etcetera.

Characteristics - could I grow the target group? What can be made higher bigger or stronger? Can I increase its speed or frequency? Can I add extra features? How can I add extra value? What can you remove or make smaller condensed lower shorter or lighter or streamline split up or under state? What can I change in this way or that way so, as to achieve such and such a result.

These are the questions that would allow you to either think from the perspective of either magnifying or minifying anything any aspect of the concept that you are trying to conceptualize.

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SCAMPER

Put to Another Use

The overall question to consider here is this: How can I put the thing to other uses? What are new ways to use the product or service? Can I reach out to other users if I modify the product? Is there another market for the product? It's time to work out how you may be able to put your current product or idea to other uses and purposes.

Guiding questions: Context Use

What else can it be used for?
How would a child use it?—an older person?
How would people with different disabilities use it?
Which other target group could benefit from this product?

 Dr. Siddhant Dhar
Department of Design

The fifth one is put to another use - now the overall question to consider here is how can I put the thing to other users? So, here we are talking about context of use. This is the most important aspect that we are focusing. How can I put the thing to other users? What are new ways to use the product or service? Can I reach out to other users, if I modify the product? Is there another market for the product? It is time to work out how you may be able to put your current product or idea to other uses and purposes.

Now, guiding questions for it can be what else can it be used for? How would a child use it? An older person, a person with the specific difficulties, especially abled persons how would people with different disabilities? Yes, use it which another target group could benefit from this product right.


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SCAMPER

Put to Another Use

Guiding questions:

What other kind of user would need or want my product?
Who or what else may be able to use it?
Can it be used by people other than those it was originally intended for?
Are there new ways to use it in its current shape or form?
Would there be other possible uses if I were to modify the product?
How can I reuse something in a certain way by doing what to it?

 Dr. Siddhant Dhar
Department of Design

Some other questions for put to another use are what other kind of user would need or want my product? Who or what else may be able to use it? Can it be used by people other than those it was originally intended for?

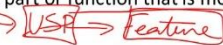
Are there new ways to use it in its current shape or form? Would there be other possible uses if I were to modify the product. See now here the focus in focus is on other possible uses for example, if you go to Punjab you many a time you see Lassi is being prepared in washing machines, that is a classic example of how a product can be made used in other situations in other context, how can I reuse something in a certain way by doing what to do by it. These are some of the things about put to use.

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SCAMPER

Eliminate

Your overall question to consider here is: What can I eliminate or simplify in my product, design, or service? Think of what might happen if you were to eliminate, simplify, reduce, or minimise parts of your idea. If you continue to trim your idea, service, or process—you can gradually narrow your challenge down to that part or function that is most important.

Guiding questions: 

- What can I remove without altering its function?
- Can I reduce time or components?
- What would happen if I removed a component or part of it?

Dr. Debprasad Ghose
Department of Design

The next one is eliminate the sixth one - here the guy the overall question to ask is what can I eliminate or simplify in my product design or service. Think of what might happen if you were to eliminate, simplify or reduce or minimize parts of your idea.

If you continue to trim your idea of service or process, you can gradually narrow your challenge down to that part or function that is the most important; that means, in that case what happens? You end up focusing your unique selling proposition feature of the product.

Because you will start substituting things which are not very important or which are not primary in nature; thereby you come down to a situation where you only have the feature that is the main stay for your product, for your software. So, the guiding questions here would be what can I remove without altering its function? Can I reduce its reduced time or components? What would happen if I removed a component or part of it? Right.


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SCAMPER

Eliminate

Guiding questions:

- Can I reduce effort?
- Can I cut costs?
- How can I simplify it?
- What's non-essential or unnecessary?
- Can I eliminate the rules?
- Can I make it smaller?
- Can I split my product into different parts?
- I can eliminate what by doing what?

 Dr. Debprasad Ghose
Department of Design

For eliminate some of the other questions are can I reduce effort? Can I cut costs? How can I simplify it? What is non-essential or unnecessary? Can I eliminate the rules? Can I make it smaller? Can I split my product into different parts can I eliminate what by doing what? These are some of the questions that would be that would help you to focus on eliminate.

The final one that we are going to discuss is rearrange - now overall the question that should guide you is how can I change reorder or reverse the product or problem? What would I do if I had to do this process in reverse? Some of the guiding questions can be what can I rearrange in some way? Can I interchange components the pattern or layout, here we are focusing on layout?

Can I change the pace or schedule? What would I do if part of your problem product or process work in reverse? Can I rearrange what in what way such that something of this kind whatever I think about happens?

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SCAMPER

Rearrange

Overall, you have to ask yourself this question: How can I change, reorder, or reverse the product or problem? What would I do if I had to do this process in reverse?

Guiding questions:

- What can I rearrange in some way – can I interchange components, the pattern, or the layout?
- Can I change the pace or schedule?
- What would I do if part of your problem, product or process worked in reverse?
- I can rearrange what in what way such that this happens?

 Dr. Debprasad Ghose
Department of Design

These are some of the questions that would help you to ask about more specific questions about the ideas that you come up with. And this way you would be able to come up with more ideas that may help to solve your problem in much more unique way. In subsequent lectures, we will discuss more about other techniques in Ideation.