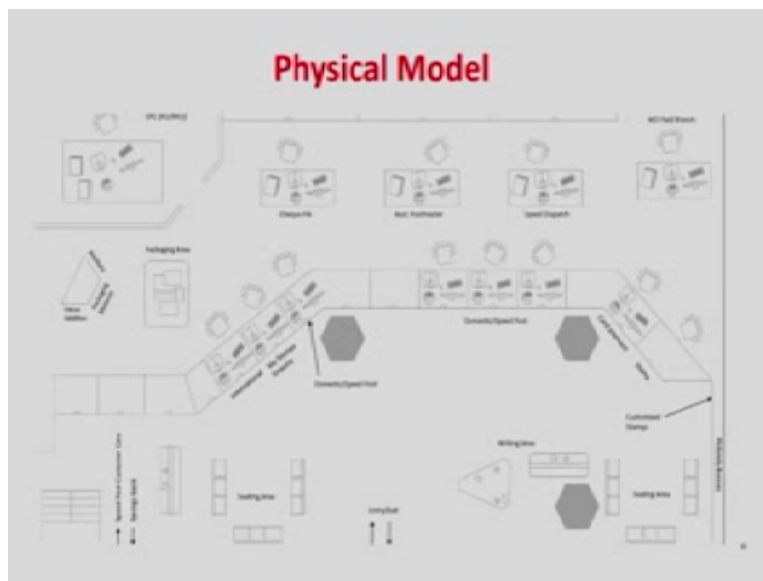


**Product Design and Innovation**  
**Dr. Debayan Dhar**  
**Department of Design**  
**Indian Institute of Technology – Guwahati**

**Lecture - 08**  
**Physical Model**

So let us move on to the physical model. The physical model as the name says it highlights how the physical structure of the space is when the contextual interview was carried out.

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In the slide you can see the physical space which has been highlighted of the post-office. This is exactly a physical layout, how the post-office and the space where the user carried out the contextual enquiry looks like. You can see the various desks and the space where the various executives and the professionals do sit, the entry and exit part, the seating area. So this is important because the physical space tells us about how entities, objects and the design of the environment has been while the user is performing the activity.

Many a time, it happens that inside can be drawn, but because of the design of the physical space there has been an issue. And so redesigning the physical space might put you into problem. So friends, this is in short the 5 models of contextual enquiry, that we discussed. We would now move on to the next part summarizing the insights from the contextual enquiry.

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## Insights from Contextual Enquiry

- Identify areas of breakdown.
- Focus on attitudinal data – they reveal a lot about users' preferences.
- Focus on areas of increasing productivity, efficiency and effectiveness.

Now how can we draw insights from contextual enquiry. First and foremost we have to identify areas of breakdown. Remember the portion where we discussed about the thundering bolt icon, and how due to various influences a task might not get completed. So we need to identify those areas of breakdown, need to focus on attitudinal data; they reveal a lot about user's preferences and finally we need to focus on areas of increasing productivity, efficiency and effectiveness. So this was all about contextual enquiry.

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## Interview & Questionnaire study

### Important Points to remember

1. **Anonymity of data:** The survey researcher should not be able to not identify the participants. Data collected in surveys in which the respondents are de-identified and all possible identifying characteristics are separated from the publicly available data.
2. **Confidentiality:** While collecting sensitive information, researcher need to ensure that identifiable research data will remain confidential and assure respondents that this is the case.

Now we will move on to the section of conducting interviews and questionnaire study. Friends, these 2 techniques conducting interviews and questionnaire study overlaps in a way, that both the techniques we need to define and design questionnaires and then those questionnaires would be given to the users for the feedback. Now where these questions are been delivered, other ways in which it has been named.

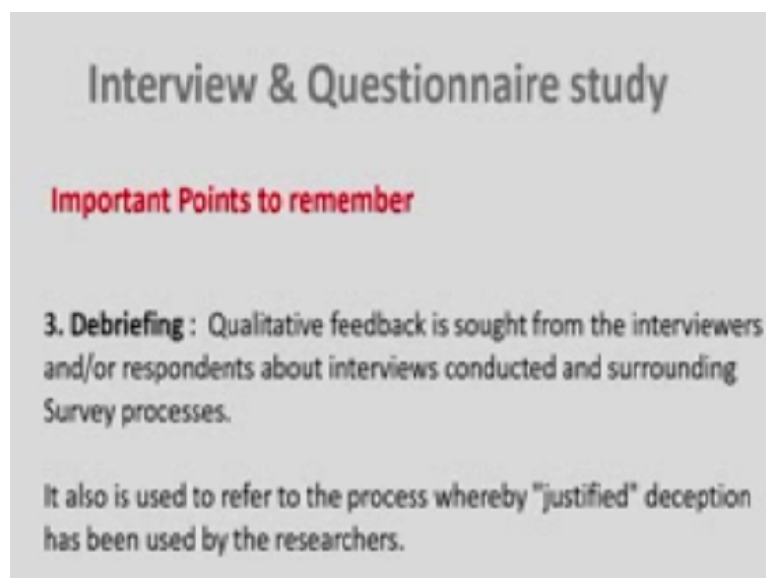
If you personally enquire these questions to users it is often called as an interview, if it is delivered through a printed paper and the respondents are asked to fill in the sheet, then this is called questionnaire study. Before we start these 2 techniques, let us quickly see some important points to remember. First of all, anonymity of data. Now what does it mean. As the survey researcher, we should not be able to identify the participants.

The data collected in surveys in which the respondents are de-identified and all possible identifying characteristics are separated from the publicly available data. This is very important. We will collect a lot of data that might be very crucial for your study at the same time, it might influence on the privacy. So to make sure that these data are safe, first of all the first thing that we need to do is, we need to remove all identifying information.

By identifying information, I mean information such as name, images, email-id, mobile number all this kind of identifying information through which you can relate a piece of questionnaire to that section. These should be removed. Second, confidentiality, while collecting sensitive information researcher need to ensure that identifiable research data will remain confidential and assure respondents that this is the case.

So the second most important part is, how do you secure or make sure that confidential data remains confidential.

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**Interview & Questionnaire study**

**Important Points to remember**

**3. Debriefing :** Qualitative feedback is sought from the interviewers and/or respondents about interviews conducted and surrounding Survey processes.

It also is used to refer to the process whereby "justified" deception has been used by the researchers.

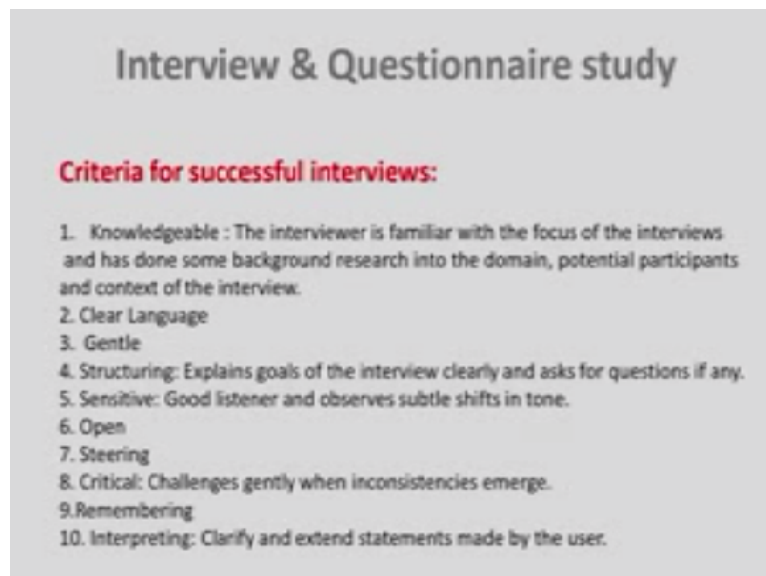
The third part is debriefing, qualitative feedback is sought from the interviewers and/or respondents about interviews conducted and surrounding survey process. It also is used to refer the process whereby justified deception has been used by the researchers. Debriefing can be interpreted in different ways. One way is after we conduct a study, you can have a briefing session that would actually give you more insight about the nature of the study being conducted whether there are issues that your respondents have faced.

This is one way of looking at debriefing. The other way of looking at debriefing is there are some studies where if you explain the main objective of the study, then your respondents will become biased. They will give you biased answers. Now in order to make sure that you conduct the debriefing but you do not disclose the actual objective, a deception is formulated. This is also called a debriefing session.

So initially before you start an interview or a questionnaire give an idea of what you are going to do and how you are going to make sure that the data would be confidential, secured and anonymity would be maintained and give an outline of the general objectives of the study. Studies where you think that your users will become aware of and become biased.

There you create deception or use words and statement in such a way that the respondent will not be able to understand the main intention of the study.

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Now criteria for successful interviews. Now, this is the first step of conducting an interview. As you progress throughout your user study, it is very important that for conducting an

interview the interviewer, means the design researchers should be knowledgeable. Why knowledgeable because the design researcher should know the focus of the interviews, and you should do some background study, research on that.

The second important issue is the questions that would be asked should be clear in nature. It means you should use a clear language, you should present yourself very gently, the question should be structured first of all you should explain the goals of the interview clearly, and then ask for questions if any. And you should also be sensitive towards the respondents, it means you should be good listener, and observer and you in a subtle way you shift your tone.

You should be open to criticisms; you should be open to the concerns raised by the respondents. And you should have the ability to state the interview towards its logical conclusion. That means whenever there is a way on issue where in the interview is getting delayed because of some questions or statements that are been made out of the context, you should be able to make sure that you pull back the interview on course and finish or take the interview to its logical end.

You should be critical in a way; you should challenge inconsistencies. That means whenever respondents are making answers that are inconsistency, that are inconsistency to the positions they themselves have taken in the earlier part of the survey, you should challenge them. But it should not be done rudely. It should be gentle enough to challenge those inconsistencies. You should remember the facts.

This is a very crucial piece of a directive, you should remember the facts, and based on those facts you should ask and formulate the next part of the questions. Interpreting, this is where your insight, your experience, your ability to analyse data would come handy. You have to clarify and extend the statements made by the user. What do you mean by extension? Extension means revisiting the same statements from different perspectives.

Remember the change of perspective that we have discussed earlier. Now these are some of the guidelines an interviewer should possess to conduct a good interview.

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## Interview & Questionnaire study

### Structured Interviews:

A verbal questionnaire, in which the interaction is limited by a script and a fixed set of Questions.

#### When to use it?

1. Obtaining general information like demographics, behaviors and relationships.
2. Assessing Knowledge about a subject.
3. Gathering information about stakeholders and their attitude towards a product and process.
4. Comparing results across different group of users on a fixed set of responses.
5. Asking specific questions after comprehending the broad issues of a particular domain or product.

Now we would study in short, the various types of interviews. The first interview, first type of interview is called a structured interview. Now what is a structured interview, a verbal questionnaire in which the interaction is limited by a script and a fixed set of questions. So you a fixed set of questions, and you know this is your format and you go and ask this question.

When to use this, a structured interview, obtaining general information like demographics, behaviours, and relationships, assessing knowledge about a subject. Gathering information about stakeholders and their attitude towards a product and process, comparing results across different groups of users on a fixed set of responses, asking specific questions after comprehending the broad issues of a particular domain or product.

These are the standard areas or the situations wherein you can use a structured interview format. How do you plan the structured interview?

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## Interview & Questionnaire study

### Planning the Structured Interview

1. Determine the goals of your structured interview study: Why are you conducting this structured interview?
2. Determine whether you will depend on intrinsic motivation to get people to accept your request for an interview or use some type of extrinsic incentive such as money, software, or gift certificates to increase response rates.
3. List the general questions or hypotheses that you want answered from the interviews.

First of all, determine the goals of your structured interview study. Why are you conducting this structured interview? Determine whether you will depend on intrinsic motivation to get people to accept your request for an interview or you use some types of extrinsic incentive such as money, software or gift certificates to increase response rates. Friends, there is a growing demand of using extrinsic motivators, but this is a choice you have to make.

Many a time, industries, academic institutions for sponsored research projects, they carry out interviews or user study with monetary incentives, because then you really get a good quality of data and when there is an incentive attached, people are serious, respondents are serious about giving good quality of data. Third, list the general questions or the hypotheses that you want answered from the interviews.

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## Interview & Questionnaire study

### Planning the Structured Interview

4. Create a pool of questions that address the general questions or hypotheses without defining the particular format of the question

For example, for the question "How do people prioritize the work that they perform daily?" you might need to know the following:

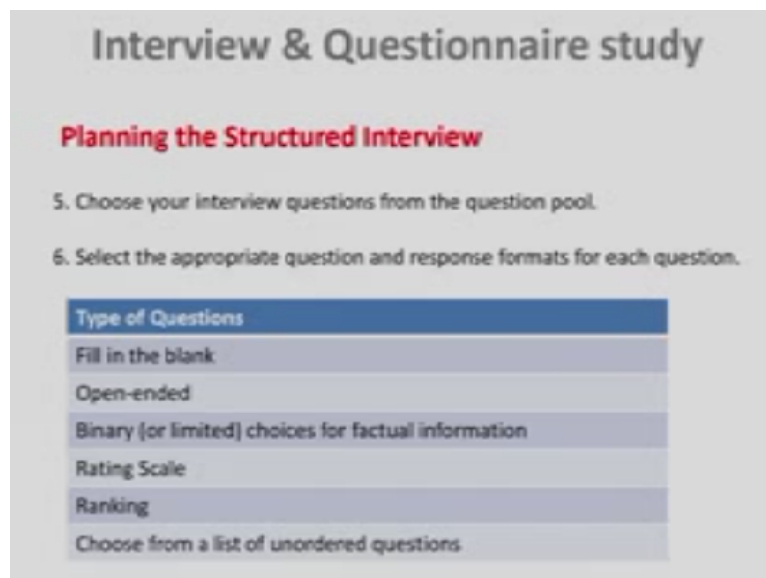
- What is the work that you do?
- How often do you do this work?
- What are the consequences of the work?
- Who assigns the work to you?
- Is there any official prioritization scheme in your organization (e.g., anything from the director automatically gets a high priority)?

Fourth, create a pool of questions that address the general questions or hypotheses without defining the particular format of the question. Now for example, you can ask questions like, for the questions like, I mean if you have an overall question like how do people prioritize the work that they perform daily. If this is your overall objective of designing and developing question, your following questions would be like this.

What are the work that you do? how often do you do this work? what are the consequences of the work? who assigns the work to you? is there any official prioritization scheme in your organization? likewise. So therefore while you are designing a set of questions, there would be one question that would highlight your intention of what questions you are trying to address or seek an answer to.

Based on those preliminary questions, you figure out set of questions that would allow you to get answer of those questions.

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Fifth point, choose your interview questions from the question pool, select the appropriate question and response formats for each question. So you can have question such as fill in the blank, open ended questions, binary means there are two values yes or no, like these, extreme values, rating scales can be used, ranking can also be used, and choosing from a list of unordered questions. These are the various formats of questions that you can choose or select.

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## Interview & Questionnaire study

### Planning the Structured Interview

7. Determine the best order of questions.

Use a funnel approach where you start with broad general questions and then proceed to more specific questions.

Avoid difficult, threatening, or emotionally laden questions at the beginning of the interview.

Ask most demographic questions at the end of the interview.

Organize questions by topic and indicate the topic when you start a new set of questions.

8. Use common "spoken" language for face-to-face and phone interviews.

Seven, determine the best order of questions. Now friends, this is very important, the order in which questions are asked or raised can also influence your respondents. The best way to avoid that is to use a funnel approach, where you start with broad general questions and then proceed to more specific questions. So you start with broad questions, then gradually you move towards more specific questions, avoid difficult, threatening, or emotionally laden questions at the beginning of the interview.

Ask most demographic questions at the end of the interview, organize questions by topic and indicate the topic when you start a new set of questions. Use common spoken language for face-to-face or phone interviews. So these are some of the guidelines which would make sure or ensure that you conduct a very good quality of interview session.

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## Interview & Questionnaire study

### Planning the Structured Interview

9. Make questions as specific as possible.

10. Avoid abstractions that might be simple for you, but complex for your participants.

11. Consider whether you need to provide a frame of reference for particular terms.

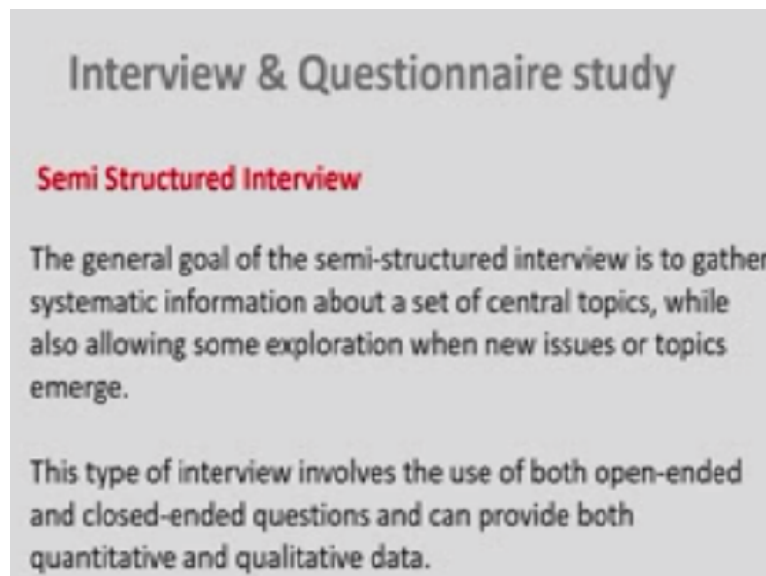
12. Pilot test the entire interview process

The ninth point is make questions as specific as possible. Avoid abstractions that might be simple for you but complex for your students. Now this is a very common problem that I have seen across in many of my designing students. There are terminologies they use acronyms in a way, that oh this acronym might my users might be aware of. This terminology my respondents might be aware of, be very cautious in using those things.

Be very specific, as if you would explaining certain stuff and as statement said avoid abstractions, consider whether you need to provide a frame of reference, this is very important for particular items. Many questions ideally, I have seen that do not constitute a frame of reference. The moment you provide a frame of reference, then what happens, the extent of evaluation or the nature of evaluation is very clear when you analyze or decode the data.

The most important part is after all these things; you should pilot test the entire interview process. Now with this, we will move on to the next part.

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**Interview & Questionnaire study**

**Semi Structured Interview**

The general goal of the semi-structured interview is to gather systematic information about a set of central topics, while also allowing some exploration when new issues or topics emerge.

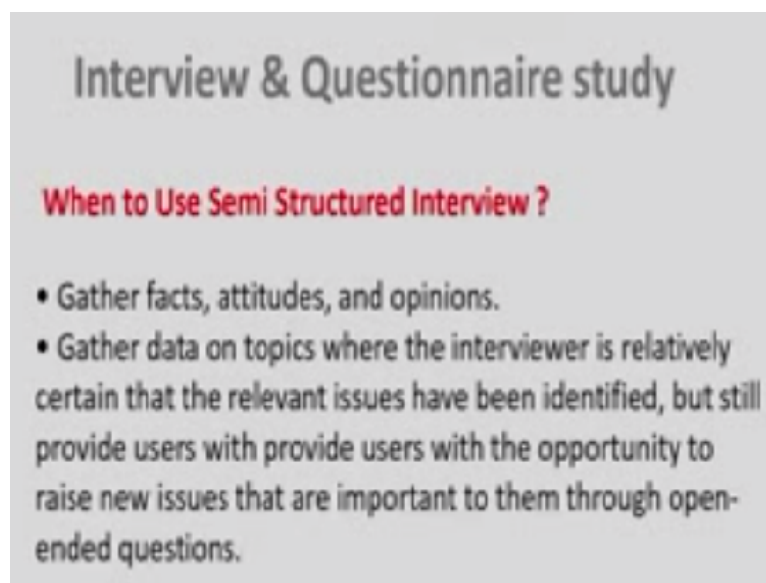
This type of interview involves the use of both open-ended and closed-ended questions and can provide both quantitative and qualitative data.

Now this is the general guideline that I have explained which is followed across all types of interviews or questions and design. It is not only for semi structured interview, but for all kinds of interviews you can follow this across all types of designing for interview sessions for any type of interviews and question your study. We will talk about next is semi structured interview.

Now the general goal of the semi structured interview is to gather systematic information about a set of central topics while also allowing some exploration when new issues or topics emerge. So it is not completely structured it is not also completely unstructured. It is in between, so you have some sort of structured questions and you also allow some room for deviations where you go for explorative sessions to deep into the context wherein you are unaware of that.

So this type of interview involves the use of both open-ended and closed-ended questions and can provide both quantitative and qualitative data.

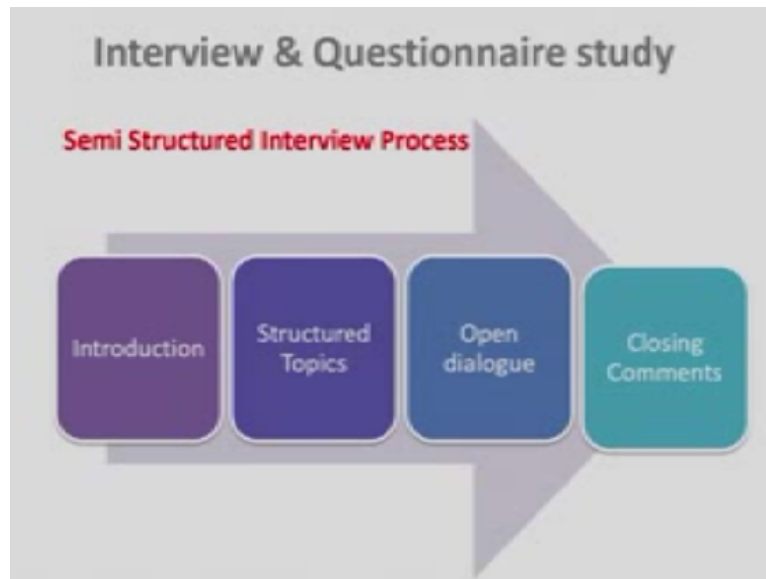
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Now when to use semi structured interview; when we want to gather facts, attitudes and opinions we use semi structured interview. When we want to gather data on topics, when the interviewer is relatively certain that the relevant issues have been identified, but still provide users with the opportunity to raise new issues, that are important to them through open-ended discussions.

So many a time it might happen that there are contexts, there are topics in which you might, as a researcher, you might feel that you have limited understanding, or you would like to have a detailed understanding of that is prevailing across your respondents, in those situations you go for a semi structured interview.

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Now this is the process of semi structured interview you have an introductory session with your respondents where you conduct your debriefing, then the structured topics are presented. The structured set of questions are being presented, after that you raise each topic and you have an open dialogue where you ideally ask open-ended questions and look for the answers from your respondents.

Finally, you finish all the sessions and have some closing comments. This is the overall process of a semi structured interview. Moving on from semi-structured interview to unstructured interview. Now unstructured interviews are conversations with users and other stakeholders where there is a general topic and agenda, but no predetermined interview format or specific questions.

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## Interview & Questionnaire study

### Un Structured Interview

Unstructured interviews are conversations with users and other stakeholders where there is a general topic and agenda, but no predetermined interview format or specific questions.

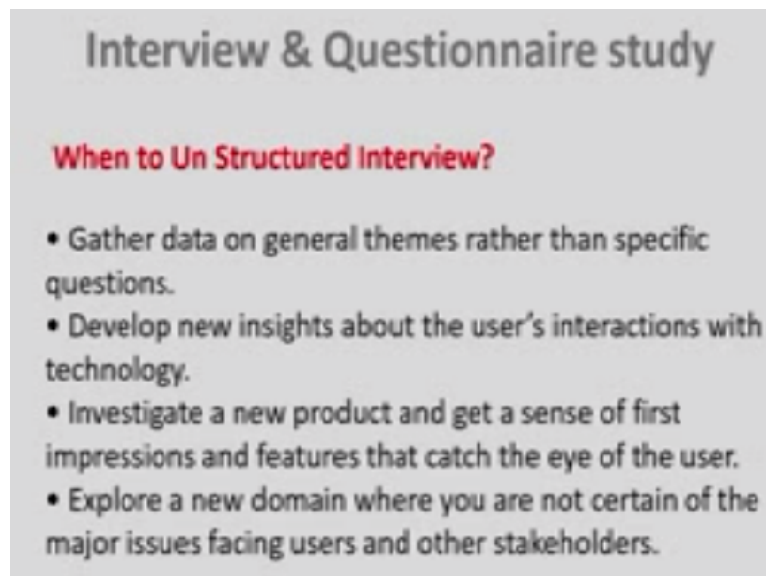
**Goal:** gather rich, in-depth data about the users or other stakeholders' experiences without imposing restrictions on what they can express.

Friends, this is very exciting it means, there is no predefined set of questions that you come up with for conducting in an unstructured interview session. It is completely open. But the goal is to gather a rich in-depth data about the users or other stakeholder's experiences without imposing restrictions on what they can express. So unstructured interview is conducted primarily when you want to explore a topic.

For example, say I am travelling to Botswana and I intend to understand about the market and nature of same as a coffee maker machine. Because I have limited understanding, I would go and simply ask respondents about their behaviours of coffee-making machines. I do not have any predefined question here with me, because I have no idea of how the coffee making machine is being accepted in the market.

So gathering general data on themes rather than specific questions, so I have no questions you just go as the situation and force, I raise questions. It is more like questions for from one section to the other.

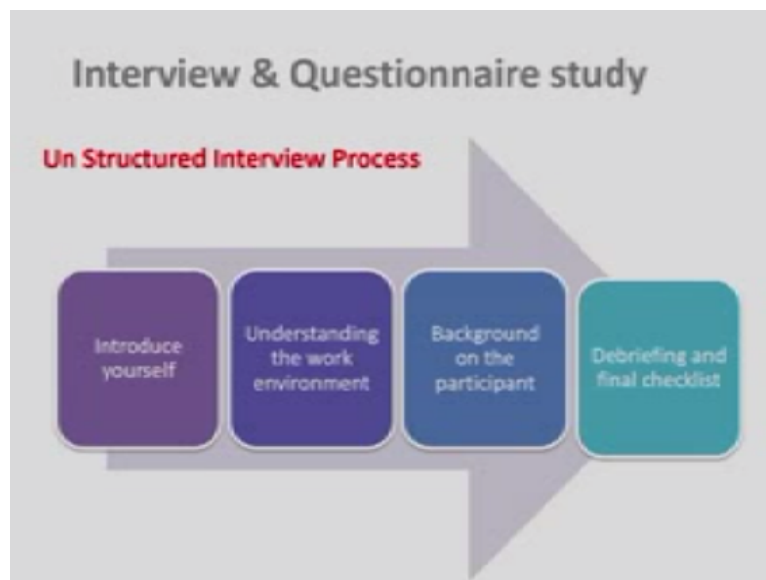
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Develop new insights about the user's interaction with technology, investigate a new product and get a sense of first impression, and features that catch the eye of the user. This is where the exploratory part comes into play. So in exploratory research or an exploratory study, we generally focus on the first impressions, capturing the first impressions of the end-user, explore a new domain where you are not certain of the major issues facing users and other stakeholders.

So for the example I have given, I have no idea no clue of the issues that people in Botswana face while using a coffee making machine. So I would generally go there and ask random questions that come up to my mind and start a discussion which is very open-ended and this would provide me with rich sets of behavioural and attitudinal data to create a more structured interview format later on.

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Now this is the process of non structured interview process. So you introduce yourself first of all, then you start understanding the work environment, after understanding the work environment, so how do you understand the work environment, you ask general questions about how do you use this product and what are the primary tasks you do and which tasks you most frequently use, this kind of questions and thereafter you ask some background on the participant.

And so you ask what are the influences that have influenced him to buy this product, so how does he work throughout the day, and where does it fit in these activities all this kind of background information apart from the main activity on task. After that you complete the debriefing and the final check. So you debrief the respondents about your scope and objectives.

See if you can, if you have got those goals being done with a sense of general exploratory research has been completed with the answers that you have received that ends your unstructured interview process.

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## Interview & Questionnaire study

### Focus Group Study

A focus group is a qualitative research method where a moderator (sometimes called a facilitator) guides a group of five to twelve participants through a series of questions or exercises related to a particular Topic.

The participants in a focus group are chosen because they have been (or could be) involved with a particular product, service, or situation, or because they share characteristics relevant to the topic at hand.

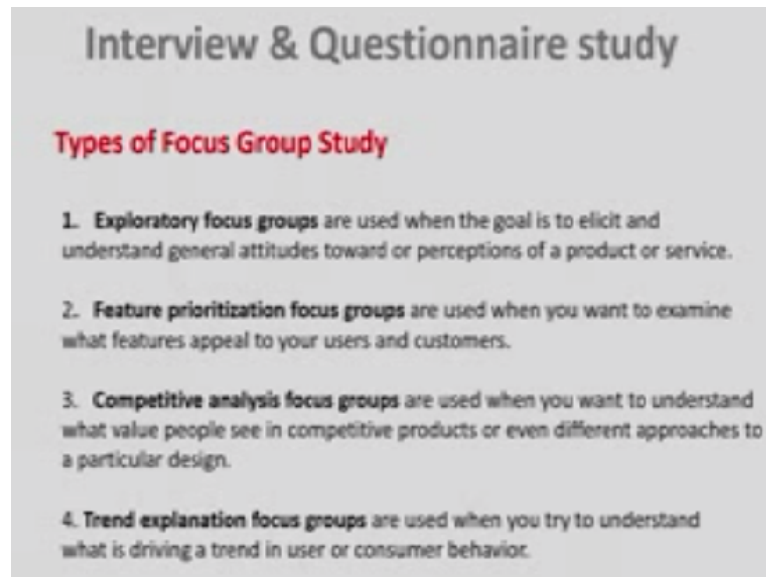
Moving on from unstructured interview process, now we will discuss about focus group study. Friends, this is a very important study that is being often referred by designers and in many industrial organizations you would face, you would see conducting these kind of focus group studies. A focus group study is a qualitative research method where a moderator, sometimes called as a facilitator, guides a group of 5-12 participants through a series of questions or exercises related to a particular topic.

Now the participants in a focus group are chosen because they have been involved with the particular product, service or situation or because they share characteristics relevant to the topic at hand. So many a time, this kind of studies are conducted when the designers or the research group does not have a privy to the large sets of respondents, which generally is available for other people.

So they create a team of 5-12 respondents and conduct their initial inquiry sessions. So focus groups are generally held away from the participant's home or work sites and last from 1-3 hours. A focus group study is really based on a single element. Usually there is a series of 3 or more sessions to determine if there are any common and divergent patterns of them. So as I said across all studies, in specifically focus group study.

When you gather the data one of the main observation, you would conduct or do is to see the dominant themes or patterns that are being generated across the data, that is where we need to focus on.

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Now there are types of focus group studies. There are exploratory focus groups which are used when the goal is to elicit and understand general attitudes toward or perceptions of a product or service. Future prioritization focus groups, which are used when you want to examine what features appeal to your users and customers. Comparative analysis focus groups it seems when you want to understand what value people say in competitive products or even different approaches to a particular design.

Cloned explanation focus groups which are used when you try to understand what is driving a trend in user or consumer behaviour. Friends, these are the types of the focus group study as I have explained based on your nature of inquiry. You can decide which one you would like to prefer and when to use and this is actually the names are different and the names tells you about the objective of each focus group. So it allows you to decide on the focus and objective of each focus group study.

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## Interview & Questionnaire study

### When to Use Focus Group Study

- Attitudes, preferences, and opinions on a topic.
- to understand something about terminology and motivation.
- Information to help you understand confusing results from a quantitative study that you have already conducted.
- Reactions to product concepts.
- Feedback on competitors.
- General problems with a product or service.
- Descriptions of events that last over a period of time.
- Issues with current products or work environments

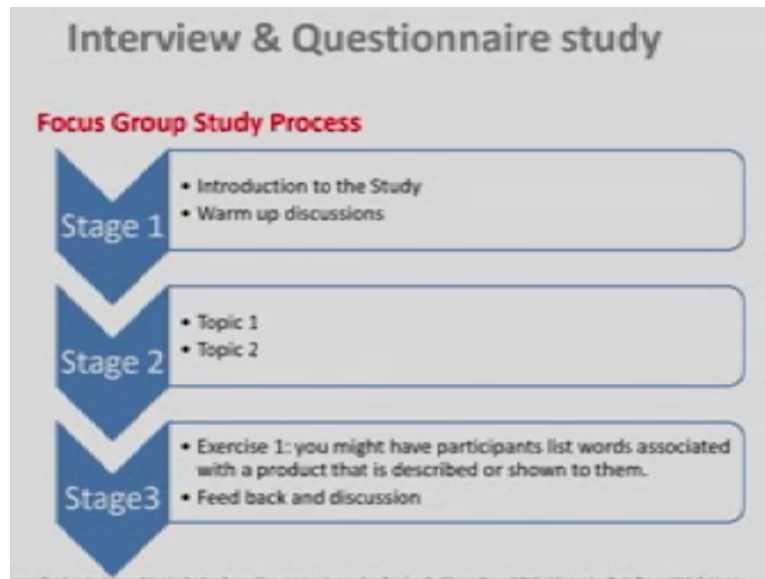
When should you use a focus group study. You should use a focus group study to observe attitudes, references and opinions on a topic to understand something about terminology and motivation, information to help you understand confusing results from a quantitative study that you have already conducted, reactions to product concepts, feedback on competitors, general problems with the product or service, descriptions of events that last over a period of time, and issues with current products or work environment.

See as I was explaining or reading those points one thing which you can observe is when you conduct an unstructured interview it was very open and exploratory in nature because you have hardly any idea of the issues that are being faced by the respondents, but when you come to focus group study the drastic difference that you observe, that you are very clear about your focus.

You know the kind of products that you are going to focus on. You know that you are going to investigate on the issues that are being faced by the respondents and what are the preferences. So ideally in choosing participants for focus group study you must keep in mind that these participants as I have discussed earlier are experienced in nature they are experienced in a way that they have either used that product or known a product or a service or been in those situations earlier.

That is how you get more insightful and retain data about their expectations, about the requirements, about their frustrations and motivations of while using a product.

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Now this is how a focus group is conducted. So the stage 1 starts with introduction to the study and warm-up discussion, so ideally it is a table, it is a big table where this participant sit along with the moderator and the moderator make sure that he/she controls the entire session. So then the moderator initiates the general discussions about why everyone is here and what is the purpose of being here and discussing the general rules of the discussion.

And then gradually the first topic and the second topic is initiated, discussion on the first and second topic is initiated. Now for example, a statement can be made by the moderator and the views across the board of the focus group and the participants can be measured and observed. Similarly, in topic 2 also, once a certain set of discussions has happened the moderator can gradually take the discussion to a different issue and again initiate a set of discussions.

After the discussions, an exercise can be planned or given where the moderator might have participants list words associated with the product that is described or shown to them. So it is a kind of exercise to which they can also interpret, you know their experience of using a product and list them as keywords that have been used, and finally feedback and discuss session happened at.

Now this is in short, a focus group study that are being employed across many organizations to study product use, to study experiential part of product use, to study the issues faced by the respondents while they use a product or continue to use the product. Now this was all about your interview types, of various types of interviews and direct observation techniques. So moving on to now we will discuss about few indirect observation techniques.

One of the most primary indirect observation technique is the questionnaire design. Now the idea is you do not go and visit the activity or the task, which is getting unfolded in that context, but you rather prepare a set of questions and then go on to the respondent and ask him/her to fill up the questionnaire. This is ideally questionnaire study. Now what are the steps required to design a questionnaire.

Now these are the steps, write out the primary and secondary aims of user study of your study, the focus the main objective of your study. Write out concepts information to be collected that relates to these aims. What are the concepts, what are the constraints, what are the information, which you want from your resources and how they are related to your study?

Review the existing literatures about that have already conducted this kind of studies and their insights and how to identify already validated. So many a time designing a questionnaire is tough, so many designers do what they take some existing questionnaires and use them in destiny. It is also possible; this is also acceptable. You can also do that you can also check for validated questionnaires and you can use them in your study.

You can compose a draft of your questionnaire, revise the draft, assemble the final questionnaire, write a detailed list of information to be collected and the concepts to be measured in the city this is what is important. You have to identify the concepts that you want to be measured by the respondents in your survey or the questionnaire study. Identify what exactly are you trying to identify.

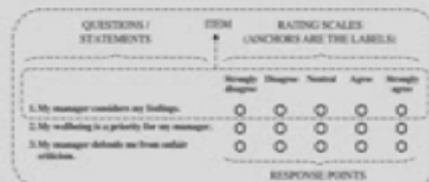
Are you trying to identify attitudes, are you trying to identify needs, are you trying to identify behaviours, are you trying to identify the demographics or some combination of this concept? So this is very important. Before starting designing a questionnaire, you must focus on these features of factors that help you design your questionnaire. For your benefit, let us discuss some type of questions through which you can design a good questionnaire.

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# Questionnaire study

## Types of Questions

- **Aided Recall:** Respondents are provided with number of cues to facilitate their memory of particular Responses.
- **Aided Recognition:** A form of Aided recall wherein a respondent is asked if he/she was aware of something prior to being asked about it.
- **Attitude measurement: Multi-item scales**



Reference: Questionnaire design and interview techniques illustrated here contains information from Employment of Focus-Group Method by Gordon, Paul; Thousand Oaks & Internet Techniques for 20 Practitioners. A User-Centred Design Approach Within. Questionnaire Content involves the measurement process and needs for individual differences  
<https://www.researchgate.net/publication/344104100>

What are the types of questions that you can put or use in your questionnaire? Questions like aided recall. Respondents are provided with number of cues to facilitate their memory of particular responses. So aided recall it means when you ask a question, you provide cues for the respondents to answer that question. For example, cues may be there can be a memory mark or there can be a landmark for example.

If you are taking 2 series of interviews or you are said taking 2 series of questions and design you can ask about a specific event that might have occurred post the last questionnaire that the respondent has filled up or you can give him specific cue about situation. For example, if you are asking something about market, you can talk about that can you talk about some directions, but necessarily you do not talk about specific items.

You talk about generic statements that would provide him with the way of delving deep into those statements and getting some information out for you. Aided recognition a form of it is also a form of aided recall where any respondent is asked if he/she was aware of something prior to being asked about it. So it is an aided recall only, as I said, but the respondent is asked whether he or she is aware of something prior.

Before asking the main questions, a question is asked to verify whether the respondent is aware of the situation. Once there is an acceptance and then we convey the next questions and get followed in. Attitude measurement, there are multi item skills. For example, as it is shown in this figure if you can see all right these are the question statements and these are the response items. So if you can see strongly agree, disagree, neutral, agree, strongly agree.

They are the multiple items through which the user can rate in any of these sections. So these are called bi-entity item scales which can be used for attitude measurement.

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**Questionnaire study**

**Types of Questions**

- **Balanced Question:** A question that presents the respondent with both sides of an issue.
- **Bipolar Scale:** A type of rating scale characterized by a continuum between two opposite end points.

Extremely dissatisfied   -3   -2   -1   0   +1   +2   +3   Extremely satisfied

- **Bogus Question:** A fictitious question, included in the questionnaire to help the researcher estimate (respondent related measurement error) the extent to which respondents are providing ostensibly substantive answers to questions they cannot know anything about, because it does not exist.

References: Questionnaire Design and Interview Schedules (Second Edition) by Robert K. Merton, reference from Encyclopedia of Survey Research Methods by Graham, Paul J., Thousand Oaks, CA: Sage Publications, 2010; Questionnaire Design: Methods, Measures, and Models for Behavioral Research

Balanced question, a question that presents the respondent with both sides of an issue. It presents the good part of it as well as bad part of it. Many a time, I have seen that questions are loaded in nature. For example, they only ask one part of the one side of the story. They do not talk about the other part of this story. When you design equation in that way, in that fashion, it makes sure that the respondents would be biased.

So the answer to those questions will be biased in nature. Therefore, to avoid those kinds of situations it is important that you ask balanced questions. Bipolar skills, a type of writing skill characterized by a continuum between 2 opposite ends. As you see, what do you mean by continuum of 2 opposite ends, you see these are the opposite ends, extremely satisfied and extremely dissatisfied and there are the ratings where 0 stands for neutral.

These type of skills are called bipolar skills. Bogus question, this is an interesting. A fictitious question included in the questionnaire to help the researcher estimate. It is also a measure of respondent rated measurement error, the extent to which respondents are providing ostensibly sustentative answers to questions, they cannot know anything about because it does not exist. See friends, respondents are very smart; they behave as if they know everything.

Now, in this process of providing answers to your questionnaire, many of the respondents fake a lot of answers, to make sure that how do you catch hold of those respondents of their way of answering questions are wrong, you can fit in a bogus question. This question is a fictitious question; it does not actually exist.

This kind of question, the content does not exist but if you see that the respondent is answering those questions also in a very authoritative manner it actually makes you understand that okay this respondent might be faking the answers. This is a very intelligent way of figuring out a fake and truthful respondent.

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**Questionnaire study**

**Types of Questions**

- **Branching:** A skip pattern technique that ensures that respondents are asked only to those questions that apply to them.
- **Double barreled Question:** Questions that ask more than one construct in a single survey question. Ex- Do you agree or disagree with the following statement: Managers in my organization are helpful, but the lack of diversity in the organization is disappointing.
- **Likert Scale:** A multiple item scale where each item uses a set of symmetrically balanced bipolar response categories indicating varying levels of agreement or disagreement.  
(e.g., Strongly Agree, Agree, Disagree, Strongly Disagree).

Reference: Questionnaire Design and Interview Schedules. Downloaded from Encyclopædia of Quality Research Methods by London, Paul J. Download Date: 8. November 2016, 14:00. Copyright © 2016, Walter de Gruyter GmbH. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without prior written permission from Walter de Gruyter GmbH.

Branching a skip pattern technique that ensures that respondents are asked only those questions that apply to them. For example, you want to ask something about usage of cars. So you should first ask then do you own the car. Now if that respondent says yes, then you can move forward in to discussion. For example, you can choose not to design in this way also, but this kind of questions are called branching.

A double-barrelled question, questions that ask more than 1 construct in a single survey. What do you mean 1 construct in a single survey? For example, do you agree or disagree with the following statement. What managers in my organization are helpful but the lack of diversity in the organization is disappointing? These are actually tough questions because there are 2 statements which we are referring here as constructs are being raised, which are diagonally opposite to each other.

Now to think about these questions and answering those questions is really tough and it takes a long time for the respondent to answer those questions. Likert scale, this is the most extensively used scale and preferred by designers. It is a multiple item scale where each item he uses a set of symmetrically balanced bipolar response categories indicating varying levels of agreement or disagreement.

So you can see for example almonds are delicious. When I say the statement almonds are delicious and but I end up with some categories for the respondents to select. For example, strongly agree, disagree, agree, strongly disagree, but this kind of respondent statements are considered to be as in agreement or disagreement and that is called as Likert scales.

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The slide is titled "Questionnaire study" and has a sub-heading "Types of Questions". It features a diagram of a Likert scale with a horizontal line and a vertical line intersecting at the center, with tick marks on both sides. Below the diagram, there are three bullet points:

- **Paired Comparisons:** Respondents are asked to choose between a set of items using a binary scale that indicates which of the two choices are most preferred, most pleasant, most attractive or any other judgment.
- **Ranking & Rating Questions**
- **Semantic Differential Techniques:** A type of rating scale for measuring attitudes designed to identify the connotative meaning objects, words and concepts.

References: Questionnaire design and response options illustrated from examples referenced from Encyclopedia of Questionnaire Research by G. J. G. van der Kamp, P. J. van der Kamp & J. van der Kamp. A User-Centered Design Methodology: Methods, Theories, Contexts and Applications for Non-commercial purposes and partly for educational discussion.

Paired comparisons respondents are asked to choose between a set of items using a binary scale that indicates which of the 2 choices are most preferred, most pleasant, most attractive or any other judgement. For example, you can see, this is an example of semantics so we can discuss about paired comparison. So in paired comparisons what happens to items are placed at the end of this scale and they either go towards one direction of selecting an item or another direction of selecting an item.

For example, if you talk about selecting product A versus product B, so one end of the scale would go toward selecting product A and the other end will go towards selecting product B. This kind of scales are called paired comparisons. Ranking and ratings questions which we already discussed earlier are the types of questions. Semantic differential technique is also a very widely used question format by designers.

A type of rating scale for measuring attitudes designed to identify the connotative meaning of objects, words and concepts. Friends, this if you see in the previous slide, this is an example of semantic differential scale now if you see all the features of this scale are put into, these are all bipolar. It is a bipolar scale only a rating scale where the extreme ends of the scale has 2 semantically different items.

So semantics meaning was different which are opposite in nature. So if you see good, you will see bad which is you say weak, active, passive, wet, dry, cold, hot, meaningful, meaningless. So these are all the semantically opposite items that are being placed across the ends of the scale and then there is a rating. So either you go towards good or go towards. It is a paired comparison only, but not between products or objects.

It is a paired comparison between 2 semantically different expressions, meanings. So this is called a semantic differential technique. So friends with these, we come to an end on user study. Now this is how all the important aspects of user study that we have explained, you can utilize in your design process. Friends, keep in mind 1 important thing is doing an user study is not difficult but selecting the right technique for conducting a user study is difficult and getting insightful, meaningful data, detailed data.

These are not abstractions, are really difficult, so therefore choose your technique wisely. We have discussed many techniques, some direct observation techniques, some indirect observation techniques. You need to choose your technique ostensibly enough to make sure that you get a good insight from your user study. Now we would move on to need and problem identification.

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## Need/ Problem Identification

- Identify breakdowns and pain points.
- Identify dominant pattern of frustrations.
- Identify areas wherein tasks can be completed more effectively and efficiently.
- Identify areas where references are drawn and compared.
- Identify points which respondents ignore or misunderstand.

Friends, now with this detailed analysis of user's study, we will now be taking short span in covering the next part of the sessions. Now, how do you identify need? See while you are conducting a lot of user study, you have a detailed set of data, how do you identify need from those data. The first and foremost point that you should keep in mind is you need to identify breakdowns and bring more pain points.

The moment you identify breakdowns and pain points; those can be considered as need or problem that requires investigation. Identified dominant patterns of frustrations across your user study for conducting a user study for say for 10-15 people, now across that user study if you are identifying a dominant pattern of frustrations expressed by your user, then those frustrations are the need or the problems that you need to work on.

Identify areas wherein tasks can be completed more effectively and efficiently. Now while going for user study while conducting the user study we have observed across all the users that the sequence of steps that are being taken by the user to achieve the task is really, really long and exhaustive and you feel that it can be reduced to a minimum number of steps or in other ways right in minimum number of functions to complete that task.

And the efficiency can be increased that becomes your problem statement that need. Identify areas where references are drawn and compared. For example, during your user study you would realize that many a time your users refers to metaphors, like this product, like that product, like this experience, like that experience. The moment we are drawing references, they are comparing they are using metaphors, it is an insightful activity.

Because it is telling you that the current experience is not to that extent which they have anticipated. That is an area where you should focus on. So it is a mean in problem identification, can be applied to the same insight here as well. Identify points which respondents ignore or misunderstand. Many a times you will see there is a product. This is the way the product are use, some of the features they really do not understand.

You do not skip those features and they use the bare minimum features through which they can complete the task. Those are the areas which are the need, which can be considered as need for your design process or identified problems for your design process. So friends, these are some of the insights, which I have discussed through which you can identify your need or problem statement.

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**Market Study/ Product Study**

- Competitive Analysis: Identify correctly your competitors and study their core strength and weaknesses.

	Competitor 1	Competitor 2	Competitor 3
Primary Tasks			
Secondary Tasks			
Price			
Unique features			
Material			
Color			
Form			
Strengths			
Weaknesses			

Next we will move on to market study or product study. Friends, earlier while discussing about user study, we discussed about a session of competitive analysis. Now market study or product study is very important. Why? It is important because it allows you to see your competitors that your respondents provide or that the 1 your respondents. You need to break that zone and become the first choice of your respondents.

So unless and until you study your competitors and how and why they are dominating the market, you will not be able to design a product that will break even into the choice of your respondents or users. So market study and product study can also be called as comparative

analysis. You analyze products in the market based on some factors and you evaluate the features the extension to which are being preferred by the respondents.

I will provide you with the list of table. You can see the table here. This is the table where you can stack completes 1, completed 2 and completed 3 in the rows, 1-3 and this is an example you can design your own features list as well and these are some of the features that can be used. You can identify the primary tasks.

You can identify the secondary tasks of the product, what the product does, price of the product, the unique features of the product, material used for construction or developing the product, colour of the product, form of the product, strengths and weakness of this product.

These are in general some of the features or the characteristics based on which all these products. This is one product, this is the second product, this is a third product. These products are compared and once you compare them, you would be able to have a detailed observation or detailed insight or which competitor, which product has unique features, which one do you want to take, refer to and want to extrapolate from that part.

So this template can be created by you also. You can also come up with these features, alright or you can also use these features which we have just explained and conduct your competitive analysis or market study or product study.

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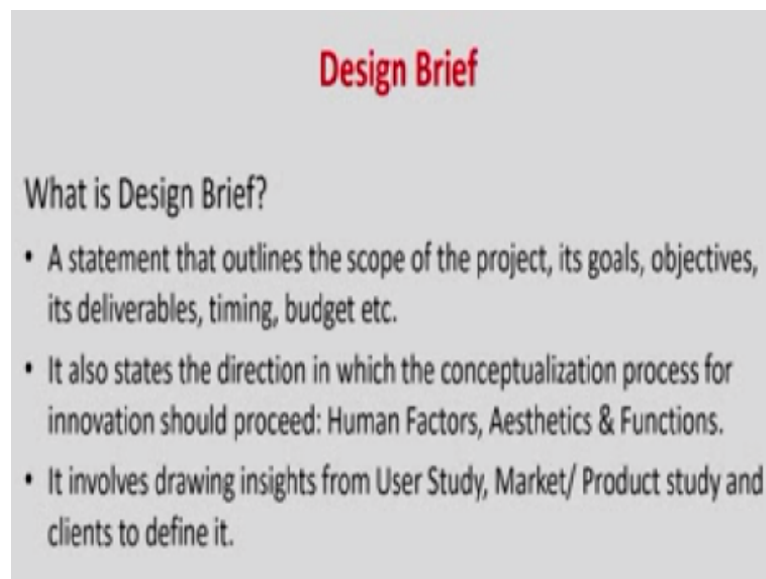
**Market Study/ Product Study**

- Draw insights from your competitive analysis
- Create benchmark so that your product must have the bare minimum features that dominates the market.
- Use the findings to define the design brief.

Now drawing insights from market or product study. Draw insights from your competitive analysis, create benchmark. You have to create a benchmark of the main and unique selling propositions in such a way that your product must have these bare minimum features that dominates the market. See if you blindly start designing a product, you might lose or you might never be able to appreciate those features will dominate the market.

You have to identify those features, so competitive analysis allows you to identify those features and use these findings to define the design brief.

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**Design Brief**

What is Design Brief?

- A statement that outlines the scope of the project, its goals, objectives, its deliverables, timing, budget etc.
- It also states the direction in which the conceptualization process for innovation should proceed: Human Factors, Aesthetics & Functions.
- It involves drawing insights from User Study, Market/ Product study and clients to define it.

Now, this is where we will talk about design brief. So what is a design brief? A design brief is a statement that outlines the scope of the project, it's goals, it's objectives, it's deliverable, it's timing, budget, etc. So in short, it is a blueprint of the entire project what are the goals, what are the objectives, what are the processes to be followed, who are the stakeholders, the timelines, the budget, price, everything, in short not in detail.

It also states the direction in which the conceptualization process for innovation should proceed. For example, from user study and your competitive analysis, it says that the market lacks products that has considered serious human factor or issues as typically products are good. They have good functions, but when it comes to human factors, the products lack. So for you the objective is to come up with a product that has a reach consideration of human factor attitudes and preferences into it.

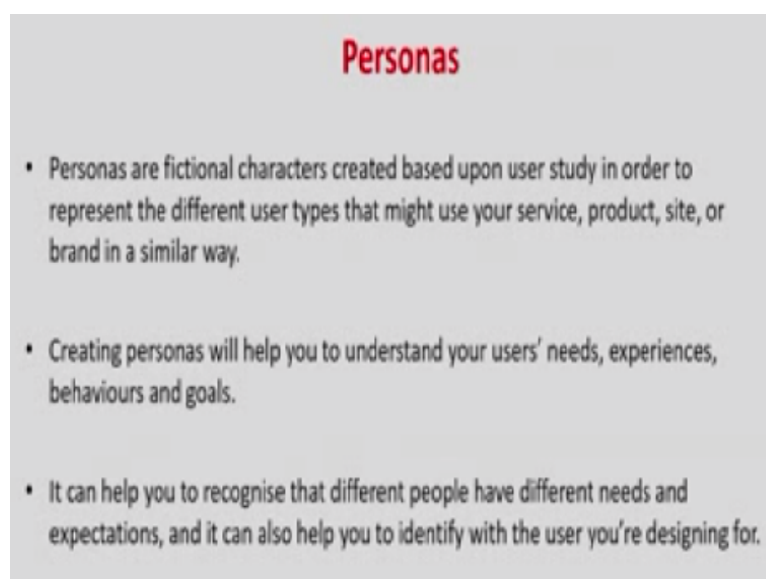
So it also now states the direction in which your conceptualization process shall move. It involves drawing insights from user study, market study, product study and clients to define it. So if this is in short about design brief, what should design brief consists of or what should it have.

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First of all, it should have a background motivation, why this product or this concept is important, it's goals and key objectives, who are the target audience, what are the purpose and function of the product, the timeline and deliverable. Design should talk about the design and development process and how would you measure the success of the product. So, this is in short what should constitute a design brief.

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Now we will move on to personas. Friends, this is a terminology, which might be very new to all of you. For designers, this is one of the most preferred terminologies, personas. Now why personas are required? See, during user study designers investigate 10s and 1000s of users. So it is not possible to keep in mind or remember each one of them while the designer to conceptualize a product for them. So therefore what designers do?

They aggregate those users and the dominant features that are being observed in among all those features are taken, constituted and a fictitious person is created that represents those dominant features. This is called a persona. So personas are fictional characters created based upon user study, in order to represent the different user types that might use your service, product, site or brand in a similar way.

Creating personas will help you to understand your user needs, experiences, behaviours and goals. It can help you to recognize that different people have different needs and expectations and it can also help you to identify with the user you are designing for.

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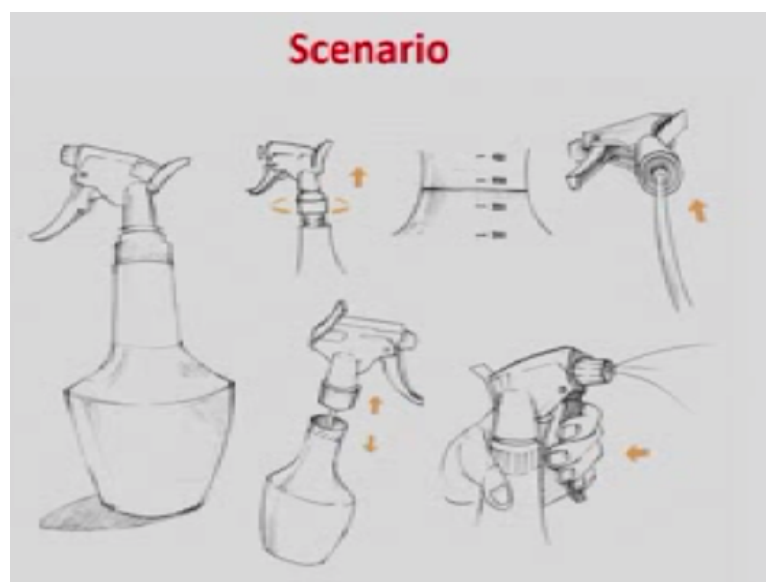


Generally, there are 3 types of personas, 1 is goal directed persona specific to task. So you only talk about the dominant tasks that you observe across the area. The task has been defined that is called a goal directed personas. Role-based personas, so role based personas are also goal directed persona, but then it has a lot of background information being presented into it. Third one is the engaging personas.

When you combine goal directed and role-based, it is called engaging persona. Many a time, generally designers use engaging personas. I will show an example of an engaging persona that is used. This is a persona. I have created my own image for your reference, but you can use any fictitious image. See the personal profile is being mentioned here and a brief about what he does. This is a profile of a buyer of an SUV. So who he is and his basic descriptions are given here.

His requirements are stated here and his background and his attributes are stated here and these are some of his preferences of features that he likes. This is called a person, engaging persona. Now based on this, the designer starts the conceptualization process. Now after personas are created, it would be very important that you also create a scenario. What is a scenario? A scenario is this.

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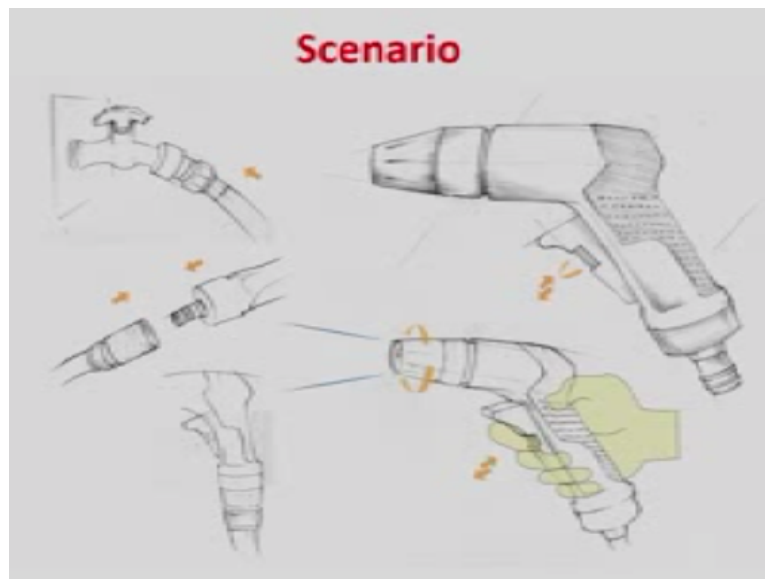


This is one of the drawings of one of my students. A scenario, as it says, it illustrates the way a current activity is being performed. You can also use storyboards like this can become one of this storyboard, this can be another storyboard, this can be other storyboard, this can also be taken as another storyboard or this can be another storyboard, so like this you can also segregate boards and create content inside it. Here my student has not done it.

So here, this is the storyboard of how a bottle like this can be opened or opened and refilled. So he has talked about the steps. These steps how it is being opened and then how the levels are being absorbed and then how it is taken out and then how it is being used. This is a

scenario. So a scenario is a description of how a product is being currently used, but these types of scenarios are often called scenarios without design intervention.

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Once your conceptualization process is over, then you can come out with the scenario that can be called as a scenario with design intervention. Now these are the 2 types of scenarios. So basically friends, scenarios provides you a detailed a visual depiction of how an activity is performed, how a product is being used in order by your users. It is a visual way of depicting the product use.

So these are some of the important things and things that should be considered in the design process. So with this, we have come to the end of module 2. So in this module, we have discussed about various user studies, techniques for conducting observational user study and indirect forms of user studies. We have also talked about personas, scenarios, design brief, requirements/need identification and also we have talked about marketing products technique.

So this in short completes your module 2. My colleague would take care of those next modules, which would go in deep into the other facets of design process. Hope you have received a brief idea of the discussions and you can utilize these topics in your design process as well. Thank you for being part of this course.