Usability Engineering
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Module - 05
Lecture - 18
Requirement Analysis - II

Welcome to lecture number 18 of module 5. In this session we are going to discuss about some new user research techniques user study techniques and these are card sorting tree testing. We will also see how the myriad of techniques are plotted against some factors that would help us to understand when do we choose which kind of user research methods. So, let us begin.

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Today we are going to discuss about card sorting. You know the name itself tells us about these techniques. It comprises of some card something is written on it and it is being asked the users your representative users are asked to sort them out based on some similarities across the groups right.

So, let us see how card sorting is done or what is actually card sorting and how does it help us. The design team or the designers to understand the mental model of our users.

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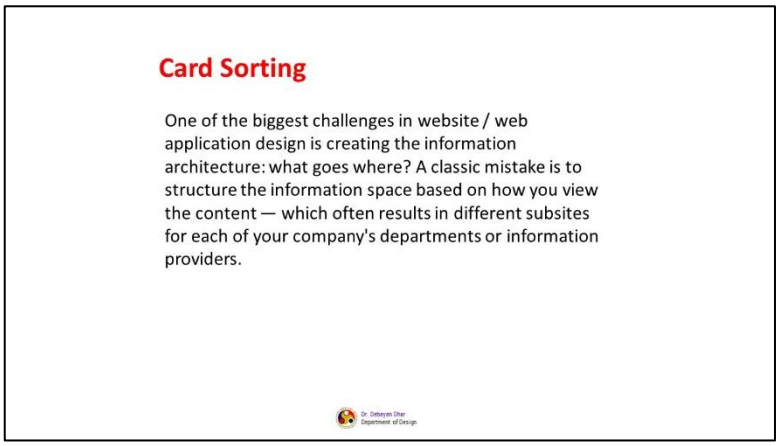

So, one of the biggest challenges in any web page or any application design is creating the information architecture. So, if you remember Jesse James Garrett's model we did talk about the information design the content design aspects of it now what kind of information goes where this is a primary concern of all designers.

So, a classic mistake is to structure the information space based on how you as in the design teams view, the content is. Which often results in different subsites for each of your organizations departments or information providers.

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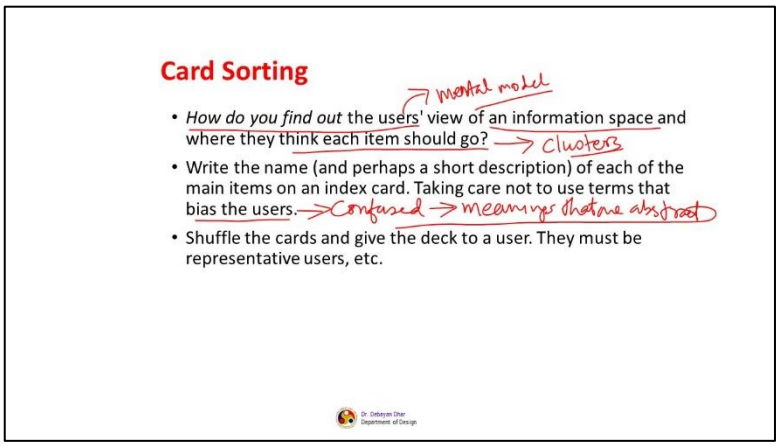

So, how do you find out the users view? When we say users view we mean the mental model of the user. So, how do you find out the users view? That means, the mental model of the user and why we are interested to know the mental model this is primarily because we want to come up with the conceptual model of the product and we need to ensure that

there is a high degree of accuracy or overlap between the mental model of the user and the conceptual model of the product right.

So, how do you find out the users view of an information space right. The structure how he is visualizing your web page his software the software the screen the UI right and where they think each item should be. So, essentially, we are talking about clusters right. So, write the name perhaps a short description of each of these main items on the cards. That is why we call it as card sorting right.

So, you can take cards, write the name of each items which you want which you think that would be there in your interface, put those you can put small descriptions to them as well. Now take care not to use terms that are biased; that means, the users get confused and have meanings that are highly abstract in nature meanings that are abstract in nature right.

So, do not use those terminologies see many a time what happens? If you use words that has a different frame of reference that has a different connotation it will create it will create a situation with your users that they would not able to recognize it and therefore, they would not be able to execute the next action set of actions.

So, these situations should be avoided. You we need to shuffle the cards and then put those things in front of the user the deck in the; to the user and remember again. The users whom you are employing for card sorting must be your representative users. It is not just that you call anyone and then conduct card sorting no right.

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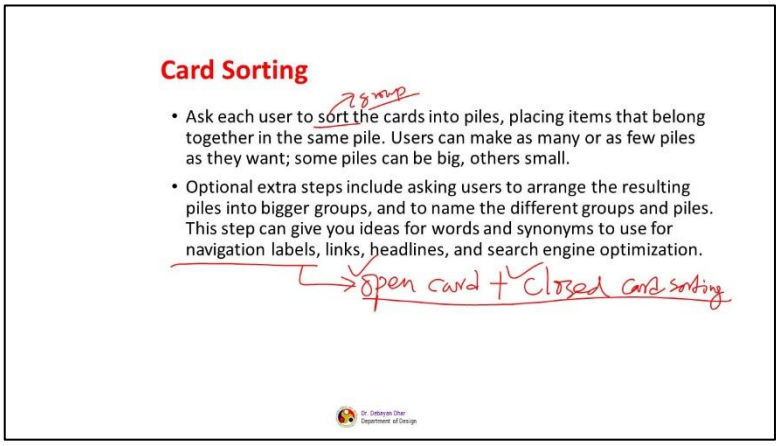

So, and then what you do is you ask each user to sort the cards into piles right. So, sorting is done. So, they are essentially grouping these cards into piles; placing the items that belong together in the same pile. Users can make as many or as few piles as they want. Some piles can be big others can be small.

Now, optional extra step includes asking users to arrange the resulting piles into bigger groups and to name the different groups and piles this step can give you ideas for words and synonyms to use for navigation, labels, links, headlines and search engine optimization.

Now, many a time you would realize that if you read literatures on card sorting you would identify that there are two distinct ways in which card sorting is carried out. One which is called the open card sorting the other one that is called the closed card sorting ok.

Now, in case of the open card sorting the users are given these cards and they arrange or group those cards according to the their interpretation of how it should be grouped. So, the groups or the piles that get formed the users has absolute openness to group them to cluster them according to their own interpretation according to the own meaning that they understand that these groups share right.

So, therefore, it is called open. While in the closed one you essentially what you do is as a design team they already provide some name of the groups and they have these cards they ask this their user representative users to now use the cards and group them only in those categories in terms of their understanding.

So, you have some say four or five categories you have those cards you ask them that ok you use these cards and then put those cards individual cards into any one of those four groups. So, those are the concepts of closed card sorting.

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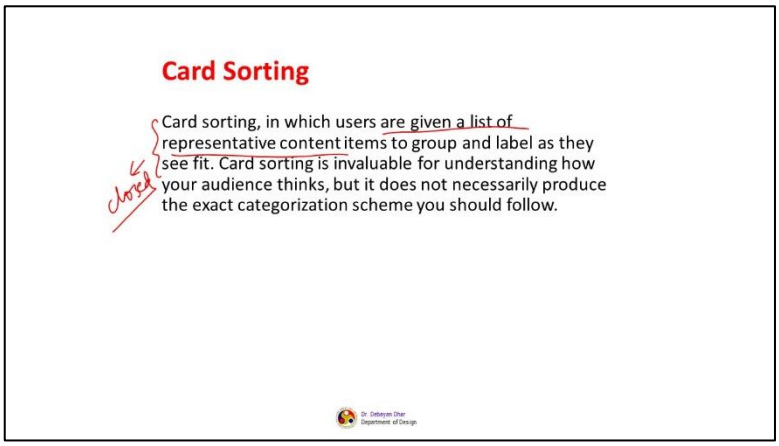

So, card sorting in which users are given a list of representative content items to group and label as they fit that is what we have been discussing about it is primarily known as the closed one because you the users are given a list of representative content right.

So, card sorting is invaluable for understanding how your audience thinks, how your visitors to your software applications how your representative users think, but it does not necessarily produce the exact categorization scheme that you should follow. It does not produce it can give you an overall structure of how your user you know classifies a groups information, but it does not give you an exact structure.

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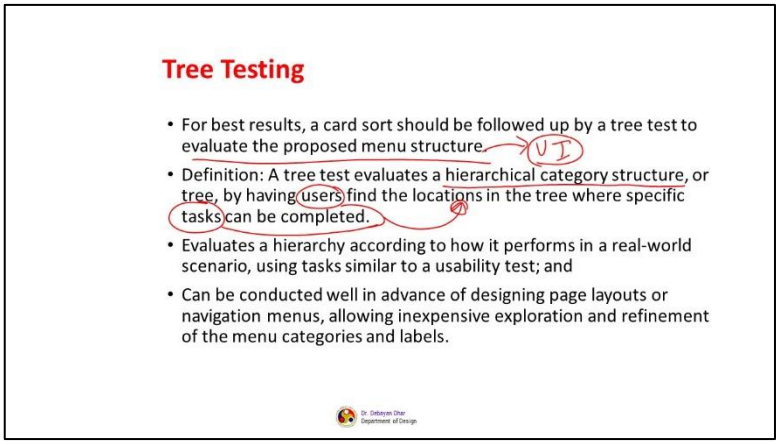

For the best results to understand the exact structure we use another technique and that is called tree testing. So, for best results a card sort should be followed by a tree test to evaluate the proposed menu structure. So, see now we are coming to the UI elements

proposed menu structure. So, what is a tree testing? By definition a tree test evaluates a hierarchical category structure understand this.

It evaluates a hierarchical category structure or tree by having users find the locations in the tree where specific tasks can be completed. So, it is always linked with task and the objective of the users of this community of the users is to identify the locations ok. So, it is hierarchical in nature.

So, tree testing evaluates a hierarchy according to how it performs in a real-world scenario and it uses tasks similar to a usability test. It can be conducted well in advance of designing page layouts or navigation menus allowing inexpensive exploration and refinement of the menu categories and labels.

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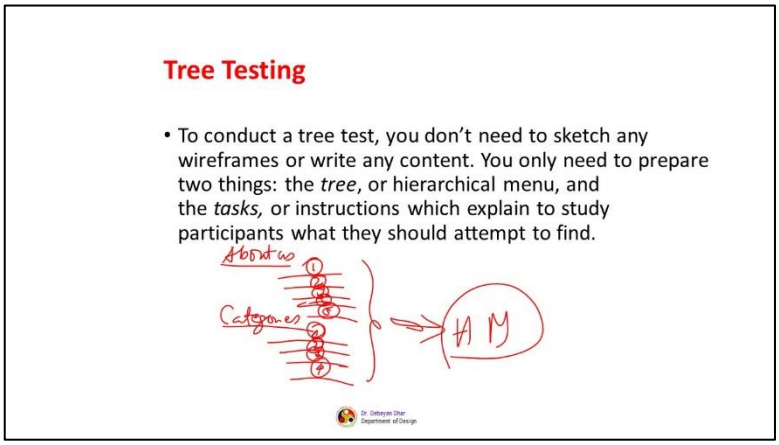

So, to conduct a tree test, you do not need to sketch any wireframes or write any content. You only need to prepare two things; the tree or the hierarchical menu right; that means, you have menus like this ok, contents written like this. You can say you can you have say my webpage has about us and this is content number 1, 2, 3 you know 5 then again we have here categories probably something like that and then we have all these structures right hierarchical menu.

And so, in a tree testing you have this hierarchical menu and then you have the tasks or the instructions which explain to study participant what they should attempt to find.

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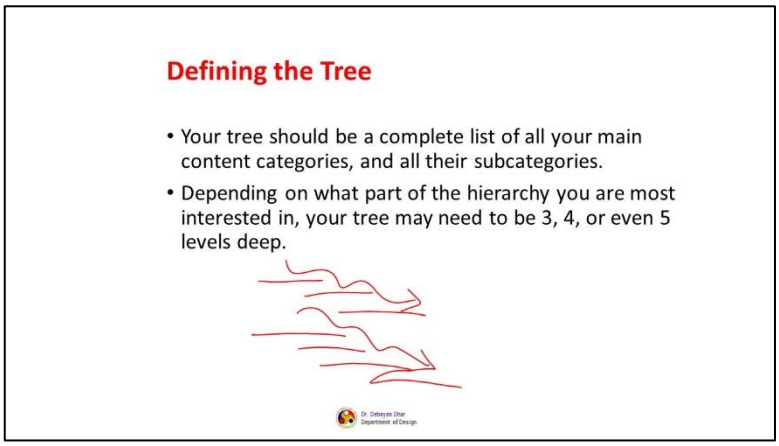

So, your tree should be a complete list of all your main content categories and all their subcategories and depending on what part of the hierarchy you are most interested in your tree may need to be 3, 4 or even 5 level deeps ok. It can be 3, 4, 5 levels deep.

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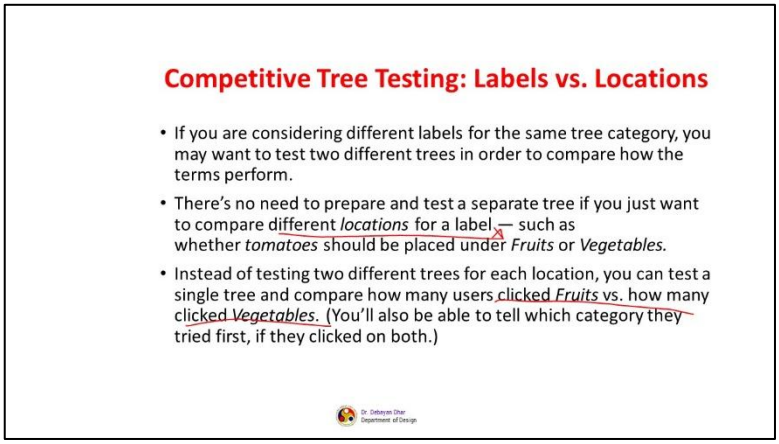

Now, we need to understand about how a tree testing is done or even how comparative tree testing is done. So, if you are considering different labels for the same tree category, you may want to in test two different trees in order to compare how the terminologies perform. There is no need to prepare and test a separate tree if you just want to compare different locations for a label ok, identify this. Examples; you can consider the examples of whether tomatoes should be placed under fruits or vegetables.

Now, instead of testing two different trees for each location you can test a single tree and compare how many users clicked fruits versus how many clicked vegetables. So, by doing

that you actually understand how your users are actually trying to categorize this information in terms of their semantic relationships you will also be able to tell which category they have tried first if they clicked on both.

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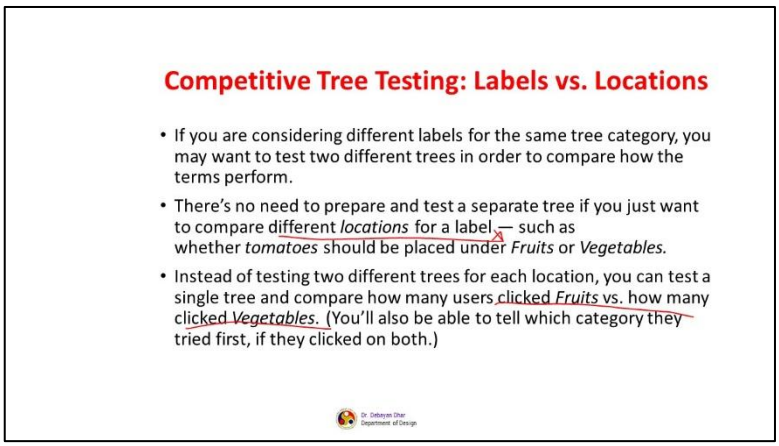

Now, preparing to test for a tree conducting a tree test you could conduct a tree testing using a paper prototype prepare your tree in a spreadsheet where you can easily visualize and edit it, then simply copy paste the entire hierarchy into any tree testing tool there are many tree testing tools available nowadays. You can search in Google and figure out that.

The spreadsheet should be formatted in your home page with your home page in the top cell of column A; then lower levels listed out in columns from left to right. Make sure to list only one category on each row. So, that your levels will be correctly parsed when you import the hierarchy. This is about how do you make sure that whatever is there in the excel whatever you created gets imported into the tree testing tool.

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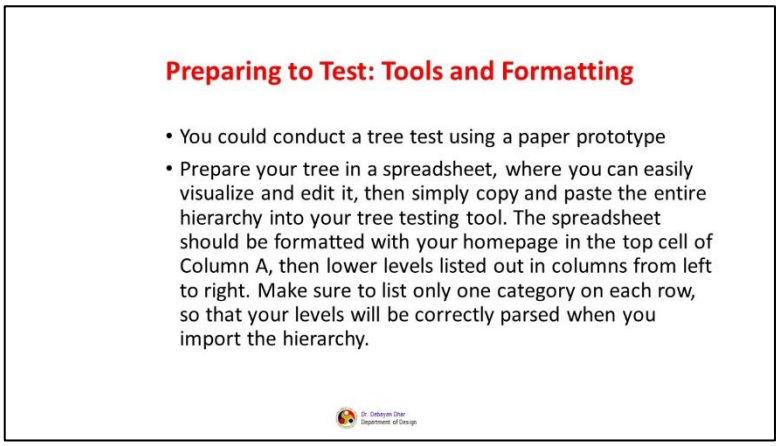

Now, coming down to tree testing tasks. So, the tasks that you ask your users to complete are just as important at the tree itself; first you need to decide which categories and labels to target. Ideally you should include tasks which target key website goals; that means, we are now discussing about the primary features of your product and user tasks such as finding your most important product.

Now, potential problem areas such as new categories proposed by stakeholders or participants in a card sort need to be carefully understood and identified. Label or location comparisons. So, when you are focusing on how to identify these labels correctly and how to put which kind of category under which label you need to test out the alternate structure of the hierarchy.

Any alternate labels or locations for the same category; remember the example of tomatoes ok. Need to be extensively studied and understood from your users from the perspective of how they figure out the task and complete their goal. For each task that you write you should also define the correct answer that is very important.

Otherwise any tree testing tool that you use will not be able to give you the codes for the tests. And corresponding to where the information is actually located within the tree. This information allows the testing tool to automatically calculate success rates for each task.

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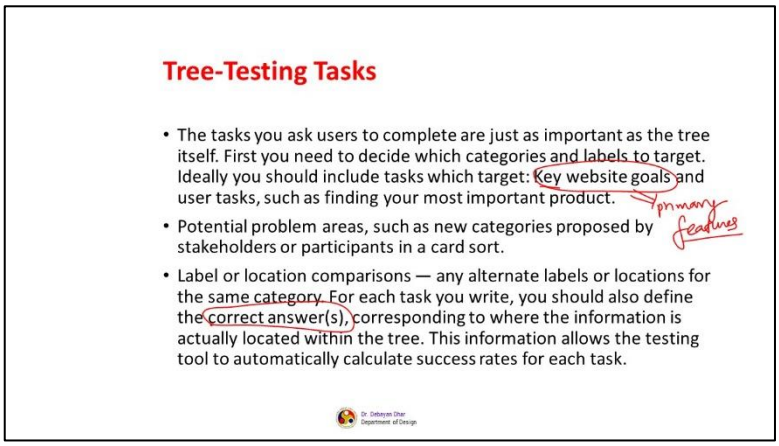

Now each task that you test that you should test a category label by asking the user to find something contained in that category. We will take an example here as with the usability testing task, tree testing task instruction should avoid terms that give away the answers ok avoid this.

Let us take an example here and our example is for example, you want to evaluate the starting a business category on a New Delhi state government tree. So, you have a web page its the webpage of the government New the Delhi state government and it says it is a New Delhi state official page from where you can make sure that you gather information.

So, that you can start your own business or you can go for a startup. Now if that page is there what you need to do is; you can ask your people or your representative users to find information about starting a business right. So, you are moving to say for example, you put it in this way that you are moving to New Delhi next year and once you arrive you would like to supplement your income by opening a side business providing lawn care services.

Find out what regulations you will need to follow. This is what brief that you must give to your participants in order to ensure that they figure out what where do they reach what do they need to find out to make sure that they understand the requirements of starting a business in New Delhi.

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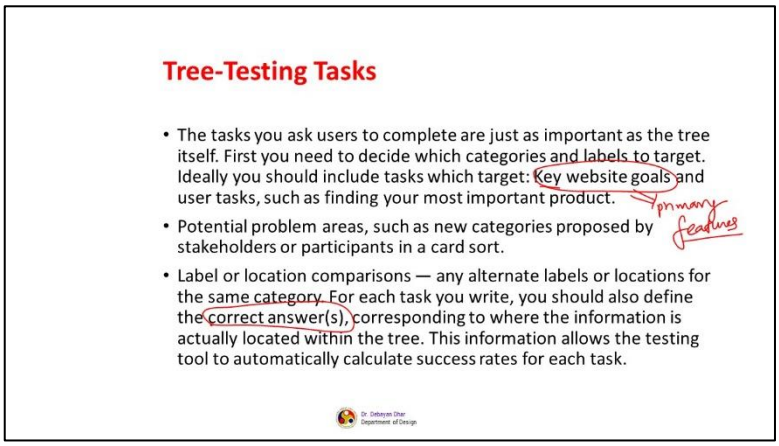

So, you are considering opening a lawn care service. See if there are any resources on this site that can help you begin the process see the way the task has been frayed. I will go back to the last slide where one way of putting the same thing is you are moving to New Delhi next year and once you arrive you would like to supplement your income by opening a side business providing lawn care services. Find out what regulations you need to follow.

If you see this is in a very vivid detail that the brief has been given in comparison to see the next one. You are considering opening a lawn care service see if there are any resources on this site that can help you begin this process there is a difference between these two brief statements that you give to your users is not it?

So, the first example gives the way the answer by using the exact label terminologies starting a business. So, you are actually in the first brief you are giving away your exact terminologies while the second is long and packed with extraneous words. Because the moment you give them your specific terminologies you are making them their responses would always be biased ok.

So, that the user might easily mistake so, there is an extraneous word that a user might easily mistake for the main point of the task if they are quickly scanning. The third option avoids both the label terminologies and misleading details. Just again if you remember what we have discussed that you should ensure that this kind of misleading things are should not be given.

The first one actually gives the main objective; for example, when you say that you want to open a side business and provide a lawn care service. You are moving to New Delhi and

once you arrive to you would like to supplement your income by opening a side business providing lawn care services look at the words and then look at this one. You are considering opening a lawn care service see if there are any resources on the site that can help you begin this process right.

So, the exact labels are being given away in the first one the last one that I have discussed not in this one. And this is what you should avoid. Because if you provide your users the exact things then it is becoming very easy for them to figure out what they want.

So, ensure that exactly specific words are not given. Similarly, the second one there are some extraneous words though it is little bit you know that the user might easily mistake for the main point of the task right. So, there are these issues that you need to figure out while the first one was very specific was giving away this specific terminology.

Second one which says you are considering opening a lawn care service see if there are any resources on this site that can help you begin the process; these are extraneous words any resources and the user might easily mistake. So, you need to be very careful in choosing the words when you give an activity to your user to figure out what he wants.

So, the important take away from here from this discussion is that you ensure that you do not give out the specific terminologies and labels you also ensure that you do not use words that are extraneous in nature; that means, confusing and beyond the scope of your user.

So, what is the third option for us? The third option should be that you ask the person to identify ways through which this person can ensure that he or she can start a different income source. So, while phrasing the task you must ensure that each task should test a category label by asking the user to find something contained within that category.

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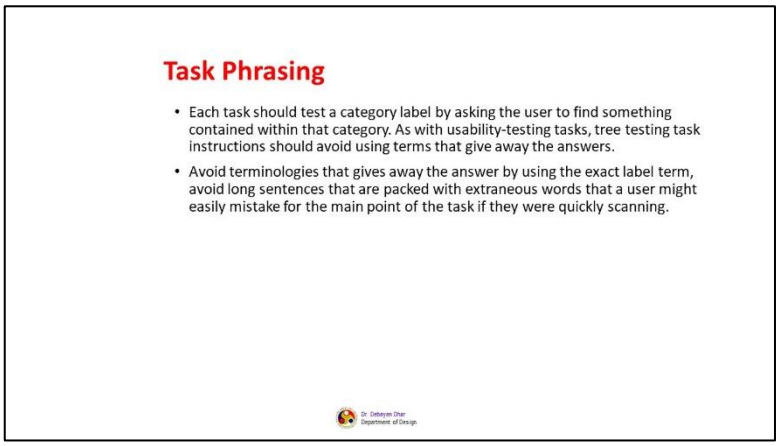

You know as with the usability test tree testing task instructions should avoid using terms that give away the answers if you ask specific words and those terminologies are present in your structure then there is no sense because your user will directly figure out those issues.

So, avoid terminologies that gives away the answer by using the exact label term avoid long sentences that are packed with extraneous words that a user might easily mistake for the main point of the task if they were quickly scanning it. So, this was in short about card sorting and tree testing.

What we will now understand is about how these different user research methods are stacked up in some categories and when do we choose which type of user research methods. So, when to use which user research methods.

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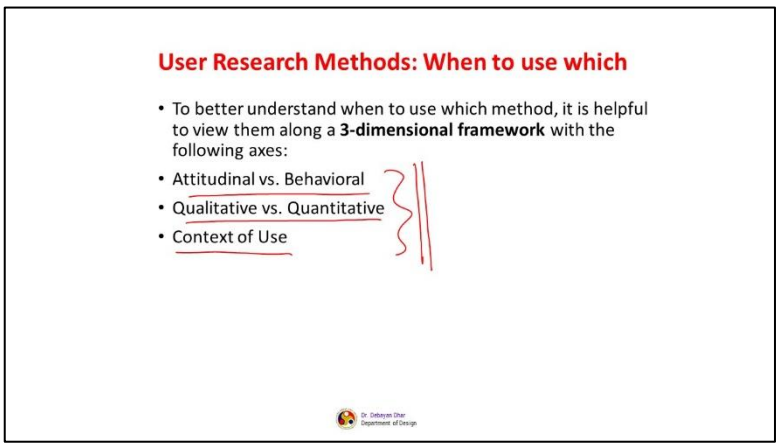

Now, to better understand when to use which method it is helpful to view then along a three dimensional framework and the frameworks that we are referring is we have already discussed that and the framework that we are referring to are this attitudinal versus behavioral qualitative versus quantitative and context of use.

So, whenever you want to choose a particular user research method to conduct an analysis of an existing product and identify your requirements specifically or whether you do not have any product you just have a user study or a user segment and you want to study them and figure out an issue you must focus on these main dimensions for your user study.

Are you focusing on attitudes or behavior are you focusing on qualitative aspects of users or the quantitative aspects of your users are you focusing on the context of use. If you understand these three or if you look at user study from various tools and techniques that we have discussed right from contextual inquiry to protocol analysis to card sorting.

If you understand all these techniques and realize that these are the three dimensions based on which this can be stacked up or classified you will understand when would you choose which kind of user research method.

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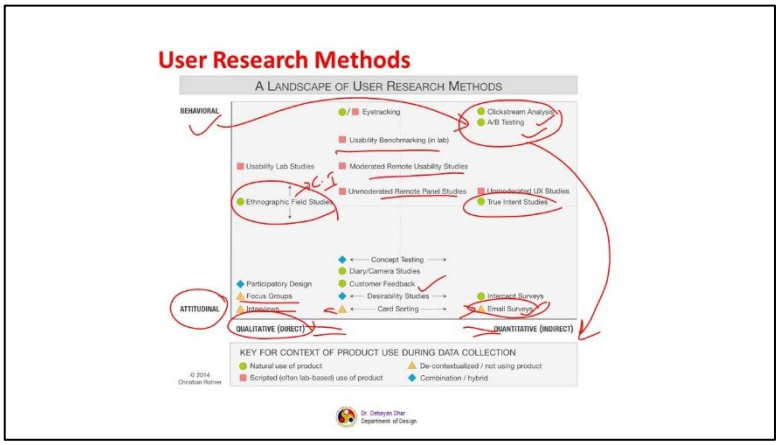

This is a very nice display of all the methods that are being used across in the user research domain and it was done by Christian Rohrer in 2014 you could see that you have both the access attitudinal behavioral qualitative and quantitative and all these methods.

For example, you know focus interviews, focus groups interviews and interviews all these lies towards attitudinal and qualitative these are direct observational techniques while

customer feedback email service card sorting the line between qualitative and the quantitative aspects while surveys are mostly into quantitative aspects then you have when you focus primarily on behavioral part you have the ethnographic field studies which is contextual enquiry is one of them.

We have other usability benchmarking moderated remote usability studies which we will discuss later and unmoderated remote panel studies and true intent studies click stream analysis AB testing very highly quantitative in nature, but they actually tell you a lot of insight about the behavioral aspects of the user.

So, this is how various studies have been plotting across two axes of attitudinal behavioral and qualitative and quantitative.

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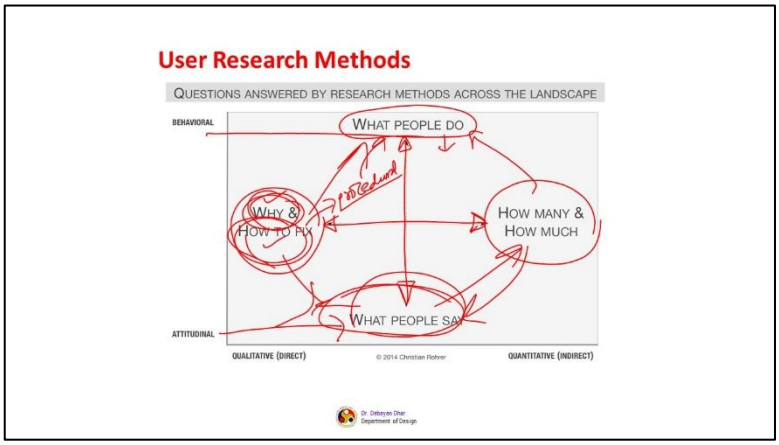

Now we will again come back to what we had discussed earlier. You understand this plotting of these various techniques across the x y axis between behavioral and attitudinal qualitative and quantitative in terms of what do they generally focus on while a study that is more qualitative and towards behavioral focuses on why and how to fix.

While it fits purely on behavioral towards and lies in between of qualitative and quantitative the focus is what people do and if it is purely quantitative the focus is on how many and how much. While if it is purely attitudinal the focus is on highly you know what people say.

Now, these are the categories based on which you decide. So, based on your requirements. Is your interest to see what people do, their behavior is your interest to see what people

say their attitudes are you more interested to know the numbers because numbers in a different way also tell you about what they say and what they do; is it not? Similarly this also tells you about the behavioral aspect of it and what people face people say about it.

So, if you understand and realize these questions and before you start your user study if you decide your objective. Am I interested to see people what they do am I interested to see people what they say how do they do certain things and how do they fix it or how many people are facing these issues.

So, you actually then focus on specific techniques that are being plotted against in this graph. So, always remember that these are the two extreme points and these are the quality that are plotted again this ok. What people say the focus is on how many and how much we go for quantitative, what people say if the if it is towards quality, we focus on why and how to fix the issues; that means, the more into procedural aspects and the focus is on the behavior aspect of how they do it.

So, based on these specific structures we decide or understanding about the situation about the issue at hand the design team decides which type of user research techniques or user study methods they need to employ during this requirement analysis or requirement gathering phase.

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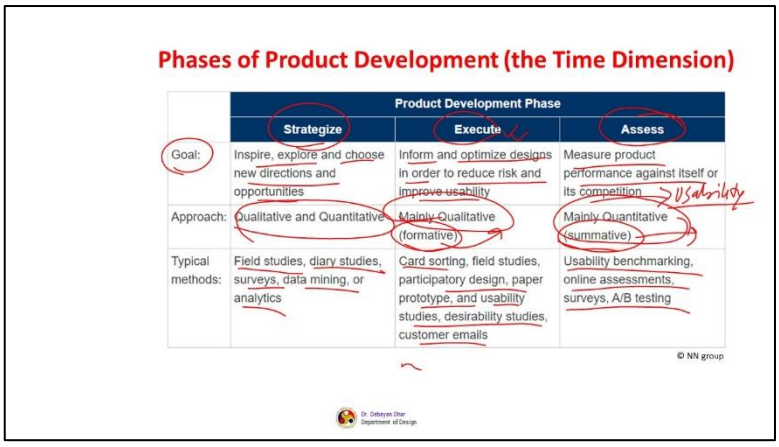

Now, there are many phases of product development and there is a temporal dimension to it also. So, when the goal is to focus on to explore and choose new directions and opportunities that is what we call as a strategize; the group the approach is primarily qualitative and quantitative. This can be a rule book for you to follow your decide your

user studies and the typical methods that are used are field studies diary studies surveys data mining and analytics.

When the goal is to execute; that means, inform and optimize design decisions in order to reduce these can improve usability the focus is mainly qualitative ok and over the period of time you go on improving the situations tasks identifying the situations and gathering data is done right. So, the typical methods are card sorting field studies participatory design paper prototype usability studies, desirability studies and customer emails.

Now, when the final one which we will discuss later in this modules, in the subsequent models is to assess the focus is to measure product performance against itself or its competition the usability parameters comes into play here right the one that we discussed earlier. This is mainly quantitative in nature.

And now usability benchmarking online assessment service and AB testing. You should realize when we focus on execute the idea is on formative tests; formative test means, they inform with the data you change your designs it becomes iterative in nature right it helps you to address the concerns as you gather the data the qualitative insights while the one that is summative in nature it primarily talks that ok. Now, you have the product it is there how people assess it.

So, this also gives you insight in terms of how they evaluate your product completely in terms of its performance, in terms of its adoption, in terms of the experiential labels and those are considered as summative in nature.