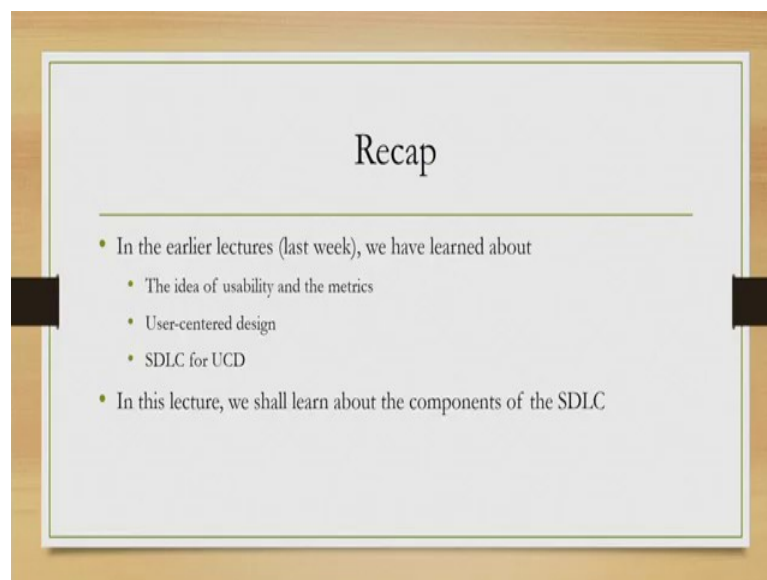


User-Centric Computing for Human-Computer Interaction
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Lecture – 05
Components of SDLC – Contextual Inquiry

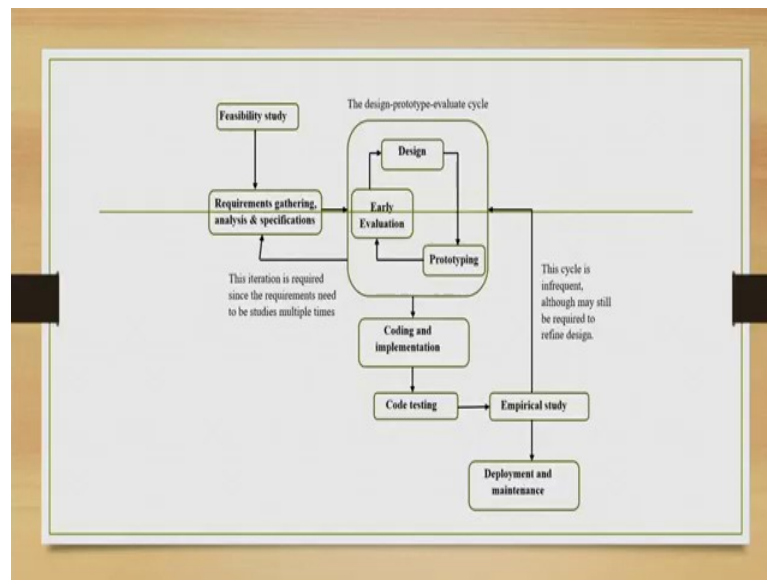
Hello and welcome to the 5th lecture on the course User Centric Computing for Human Computer Interaction. In this week, we learn about different components of the interactive system lifecycle that we have introduced in the last week.

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So, before we go into the actual content; let me just recap what we have learnt in the previous week. So, essentially what we have learned is that how interactive systems can be developed using a software development lifecycle and the iterative nature of the lifecycle and its components in a schematic form. Now, in this week we will go through the details of some of the components that are unique in the context of the design of user centric systems.

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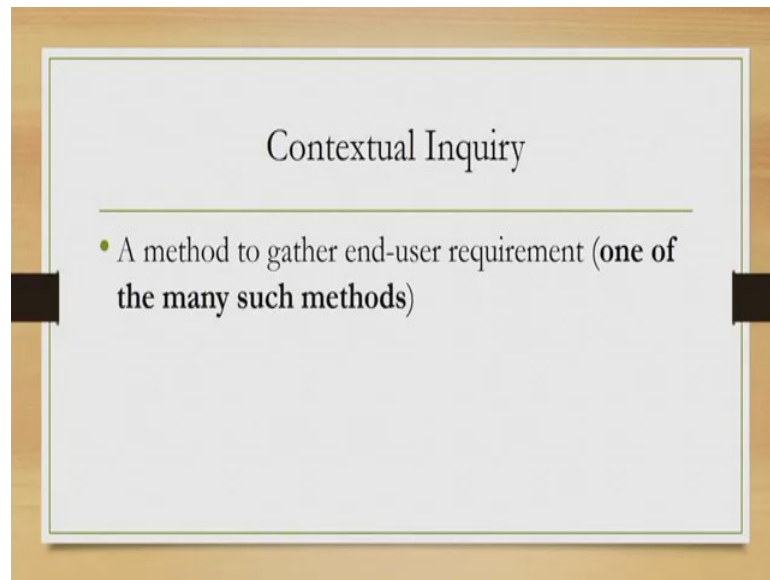
Let us just have a relook to recall what we have discussed on the development lifecycle. So, this is the life cycle that we have seen in the previous week. So, here as you can see that there are several stages; the central cycle is the one of the most important stage and feasibility study, requirement gathering, design, prototype, early evolution, coding, code testing, empirical study and deployment and maintenance; these are the main stages..

Among them traditional software engineering life cycles also include stages which are similar like feasibility study, coding and implementation, code testing, deployment maintenance. What is unique and more emphasis are given to those stages are the requirement gathering stage, design stage, prototyping stage, early evaluation stage, empirical study stage where we need to involve the users in the or where there is a scope to involve the users in the design process.

So, in the subsequent lectures we will discuss about some of these stages that are unique to the design of interactive systems. Let us start with the first stage that is requirement gathering, analysis and specification. So, this stage covers the way it is done in the context of interactive system software development. It is somewhat different from the way can be done for non interactive software's and we will see how it is different in this lecture. There are many methods in which or using which we can actually gather user requirements for interactive system.

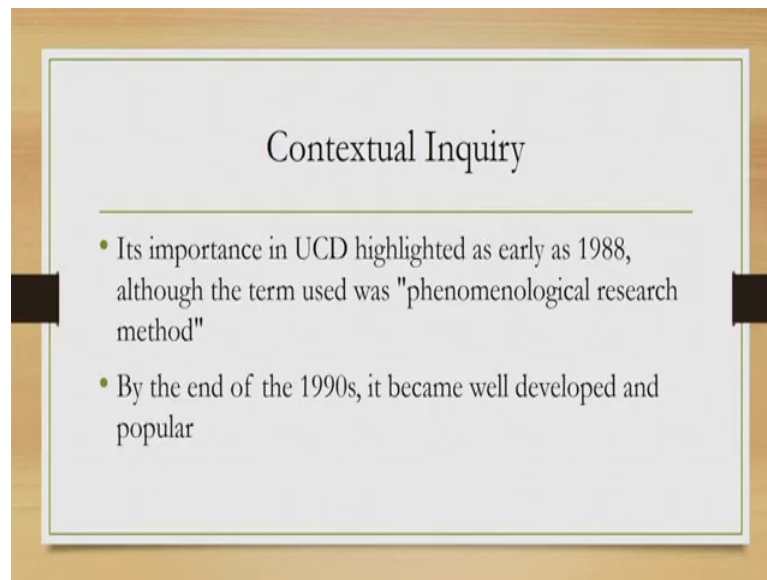
So, recollect that our primary objective in the design of user centric system is to know the user, to learn about the user behavior to gather their characteristics so that we can incorporate those in the design; now there are different ways to do that. So, in this lecture we will talk about one of those different ways that is known as contextual inquiry.

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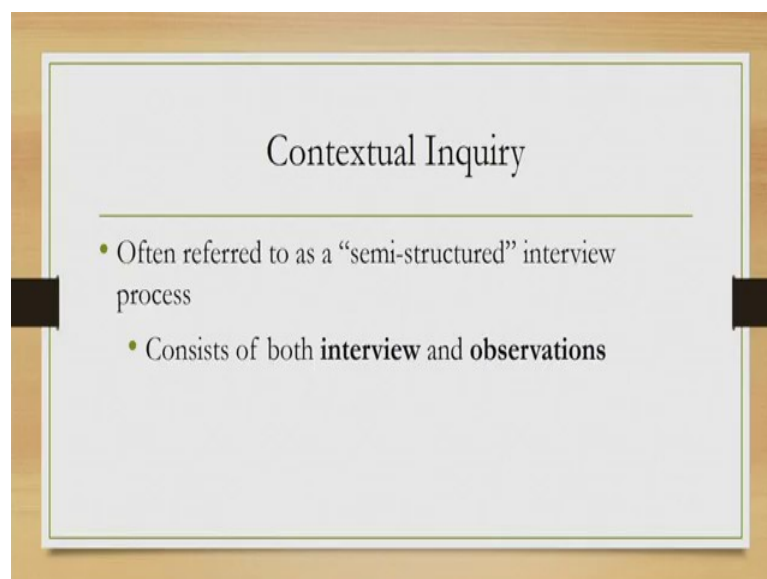
You should keep in mind that this is only one of many such approaches; many such methods available to gather end user requirements. And also you should keep in mind that here by end user we are repeatedly emphasizing on the fact that the user is a layman user; the user does not know or need not know about the background technology before using an interactive system.

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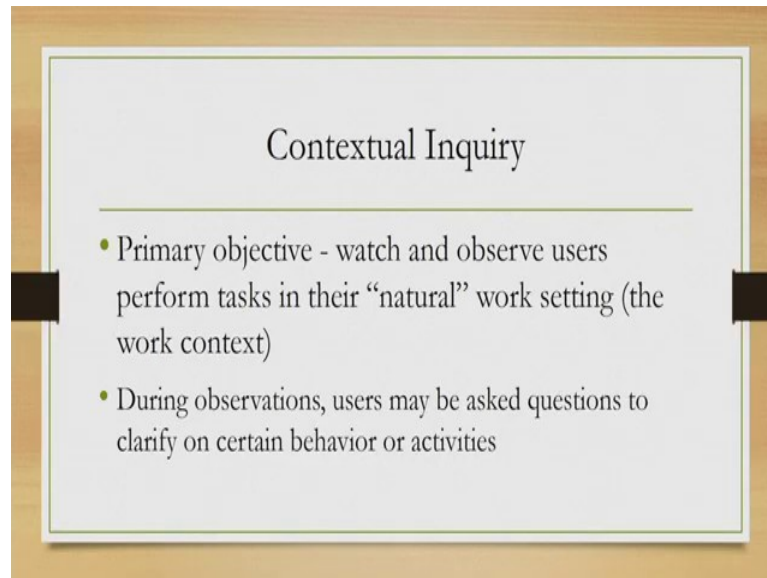
So, a brief historical background before we go into that details of contextual inquiry. The term is not new and actually about 30 years ago it started. In 1988; the term was used or its importance was highlighted; although the term used was slightly different, it was known as phenomenological research method. But by the end of 1990s the term become very popular and used heavily in the design of interactive systems in the context of gathering user requirements.

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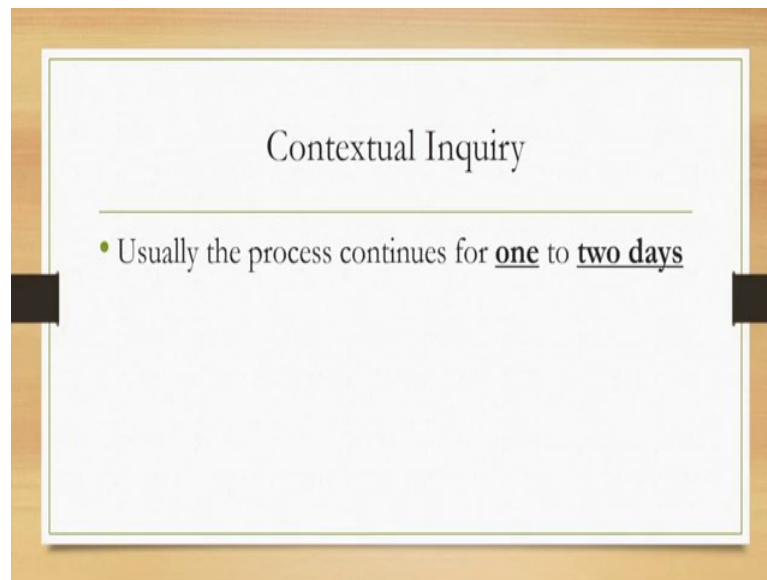
So, what is the nature of this method; contextual inquiry? It is sometimes referred to as a semi structured interview method, but it is not only an interview; along with that a major component of it of this method is observations. So, it is a combination of observation and interview; the interview is not very structured, it can be informal interview related to the observations.

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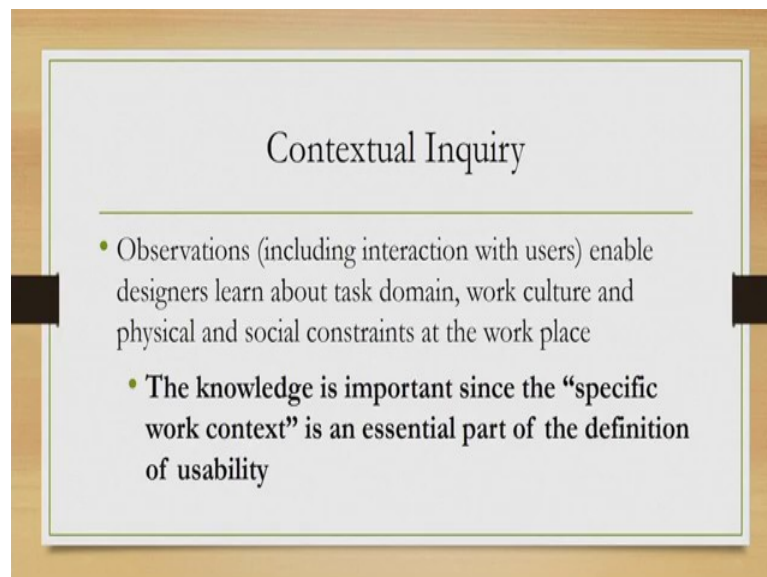
And what is the primary objective? Essentially in this method our objective is to watch and observe the users in their natural work setting or the word context. Now, during observations the user may be asked questions to clarify on certain observations. So, suppose you are asked to observe the users and during observation you find that there are certain aspects which is not very clear to you that time you can ask questions to the users; which will be considered as a semi structured interview to essentially gather more information about that particular behavioral aspect.

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The duration of the process varies; so typically between one to two days; it takes to perform a contextual inquiry. Of course, you may take less or more, but on an average it has been observed that between one to two days are required to perform a fruitful and effective contextual inquiry.

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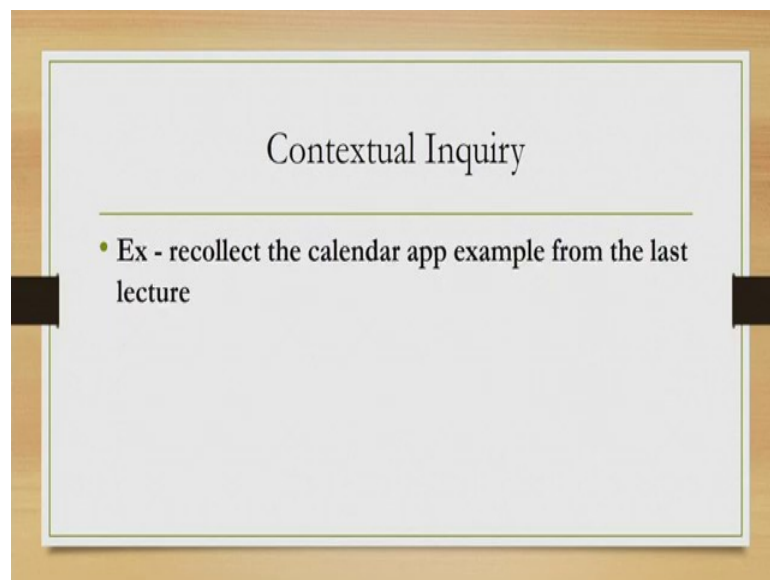


So, why we observe that is the major question; why we need to observe the users in the work setting? Now, if you recollect the definition of usability as we discussed in the last week; the ISO definition that includes that it is about specific work context and user

centric only in the context of a specific work setting. So, when we are trying to develop such a system definitely we need to know about the work setting and the best way to know is basically to observe the users working in that work setting.

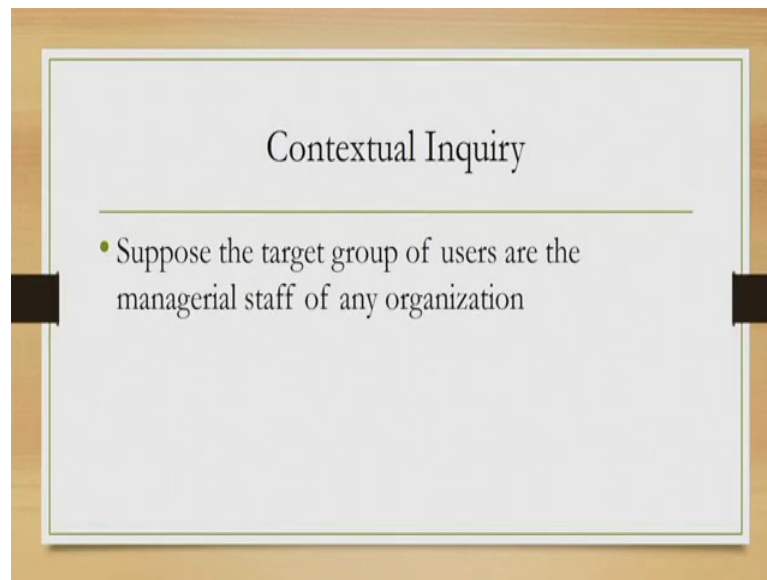
So, it is in a way required to conform to the definition of usability and by consequence; if we know the work setting and accordingly we design then it is expected that the usability of the proper system would be or the system being developed would be very high. Now, in the work setting what we typically observed is basically the work culture, how they interact with each other and typical social constraints at the workplace and so on; if there are any physical constraint as well and so on.

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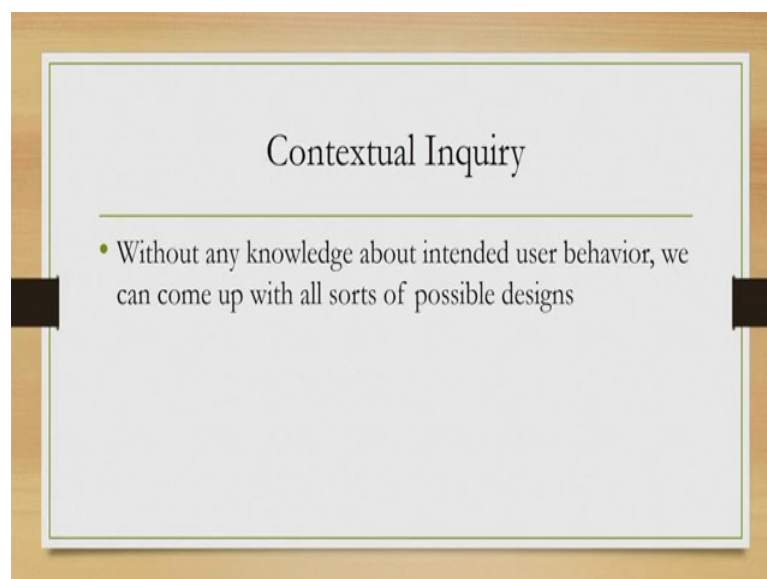
To make the things clearer; let us recollect the calendar application which we have seen in the last weeks. So, they are; you are asked to or to we tried to develop a calendar app for a mobile device and we have seen that there are many ways we can do that. So, we discussed about two possible alternatives.

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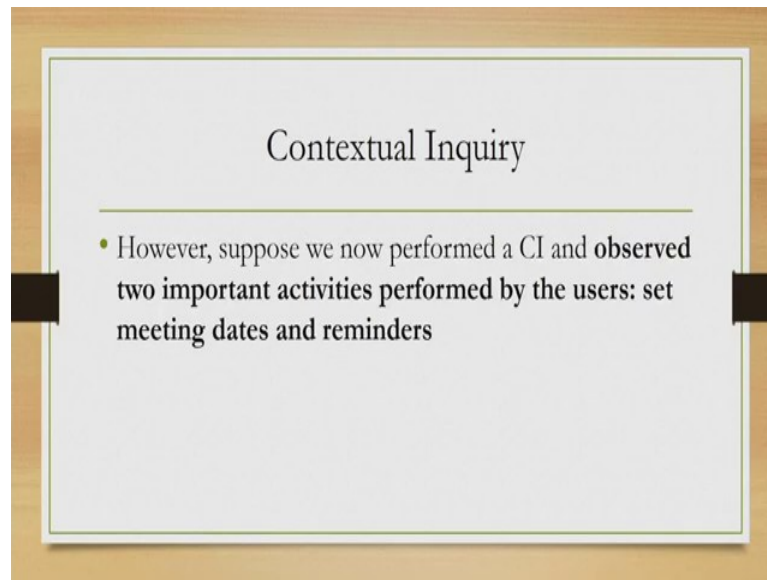
But can there be other alternatives and what else we can do? So, earlier our design statement was develop a calendar app for a mobile phone. Let us revise the statement a bit; now let us say that we want to design a calendar app for a mobile phone to be used by the staff or managerial staff in an organization. So, this to be used by the managerial staff in a organization is an important addition to the statement which we have made earlier. So, if that is the case; then how should we choose a suitable design.

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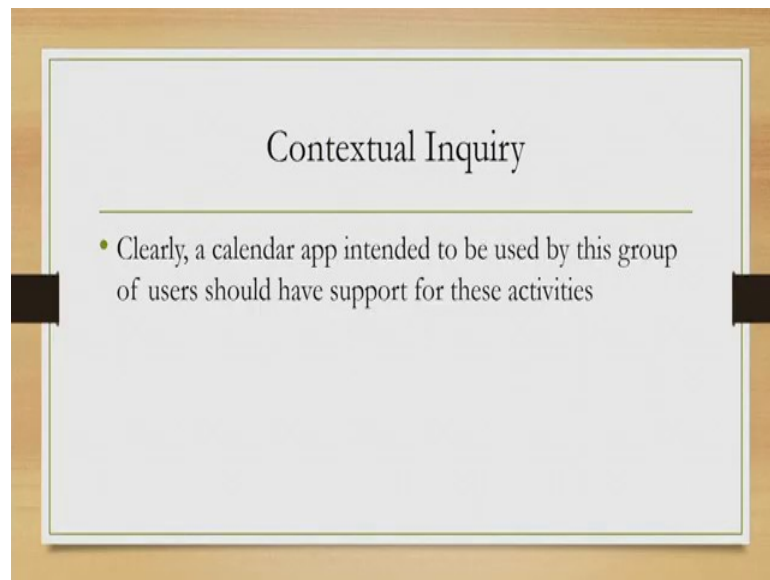
Now, unless we know how this managerial staff in an organization behaves definitely; we cannot do anything we can simply come up with all possible alternatives and then may be forced to choose one based on our intuition and past experience probably, but that may lead to a wrong design.

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Why? Let us see; suppose in order to understand the behavior of the managerial staff in an organization; we have conducted a contextual inquiry. Now, in the inquiry we may come across with many interesting facts; one such fact maybe that a significant fraction of the usage of the apps are devoted to setting of meeting times and getting reminders. Now, setting up meeting dates times and getting reminders then definitely it is an important activity that takes place in the work setting of the managerial staff and in our design; we should take care of that activities.

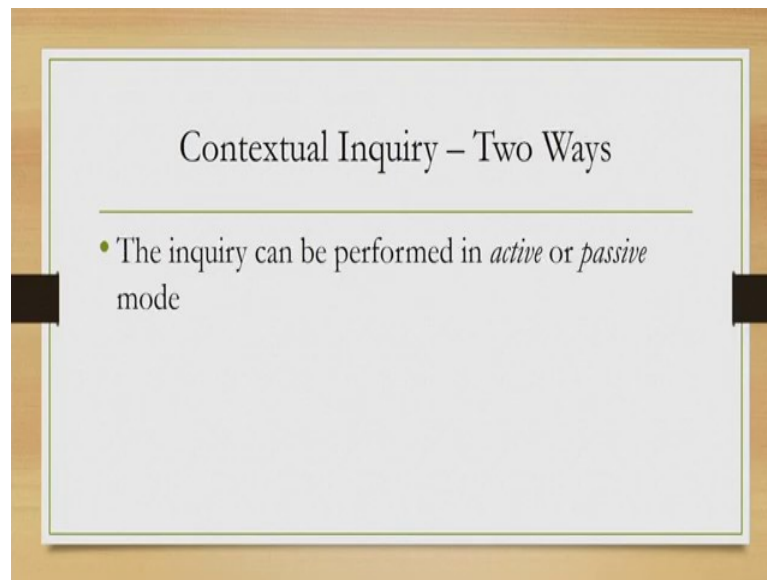
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So, now if we want to design the calendar app definitely what we can do is along with the possible designs, we should keep a facility for the user to set the date and time for a meeting as well as to set reminders.

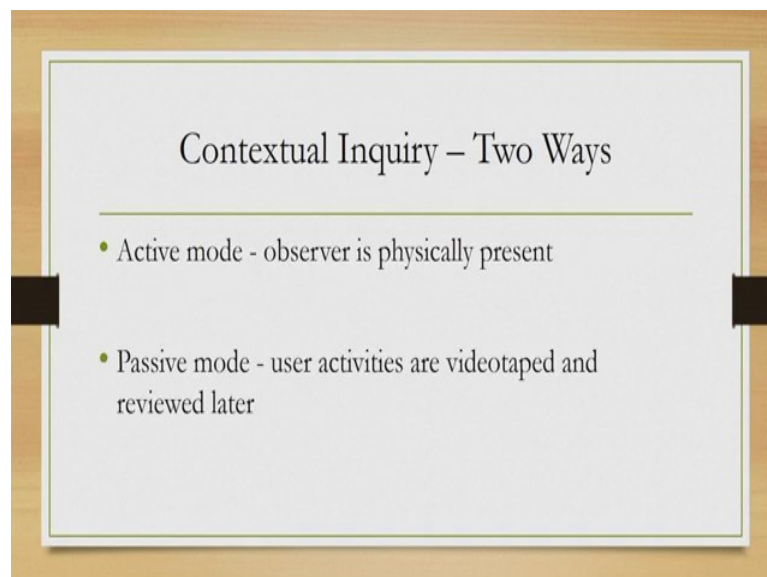
So, this definitely these enhancements; definitely are going to help the user perform their common activities which as a consequence will lead to more acceptability of the app to the intended user groups; that is just one example. So, in many other situations after performing contextual inquiry, you will get to see that you are coming across with surprisingly new insights of the behavior and based on that if you design; then you can actually come up with a design that is more acceptable to the users vis a vis if you do not perform that and come up with a design.

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So, the next question is how we can perform contextual inquiry? There are broadly two ways; one is active inquiry and the other one is passive inquiry.

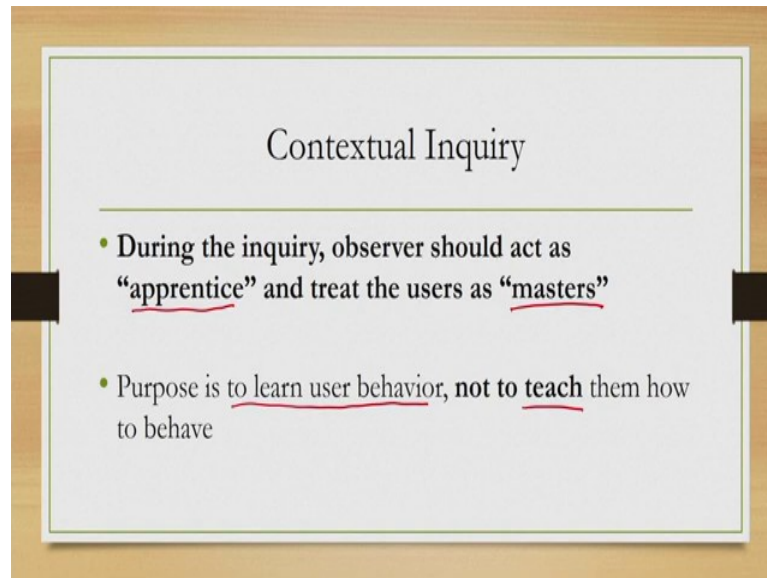
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Now, in the active mode the observer needs to be physically present in the work environment. So, there the observer needs to sit there or be there in the environment and keep on observing the potential users, keep on recording their behaviors and if required they can interact with the users to clarify their doubts.

However, in the passive mode the observers are not directly present in the work environment. Instead, there are certain recording instruments placed in the work environment such as a video camera and the work environments are getting recorded and later on these records are being played by the observers to understand the behavior in the work setting.

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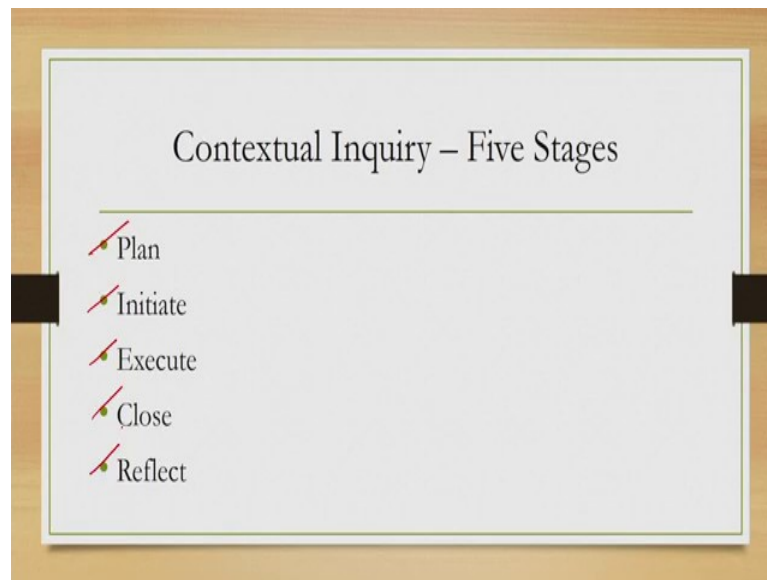


And during inquiry one very important thing the observers or those who are performing the contextual inquiry should keep in mind that is they are the apprentice and treat the users or potential group of users as the masters.

So, essentially the observers are there to learn the behavior; sometimes we have a tendency to tell others how to behave, sometimes we have a tendency to tell others that do not do this thing, do not do that thing, you should do this in this way, we should do that in this particular way that tendency we should avoid if we want to perform a suitable contextual inquiry to elicit the user behavior.

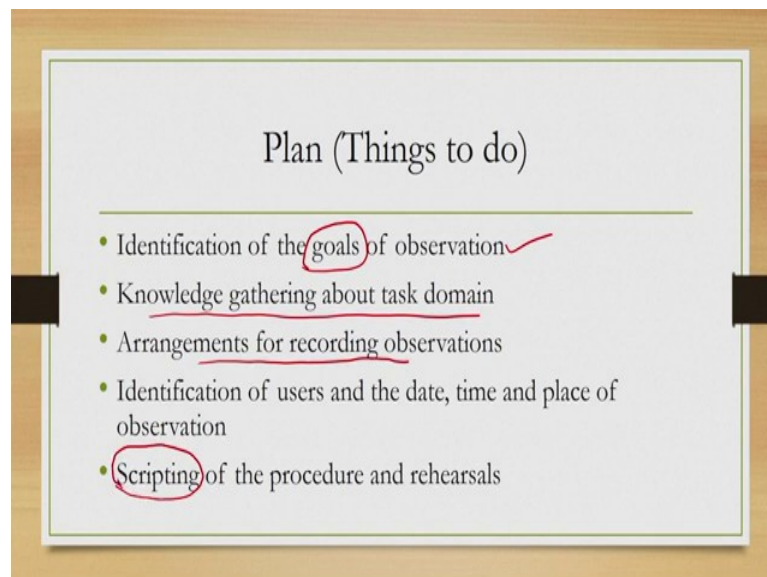
So, the key word is you should keep in mind that when you want to perform a contextual inquiry; you should behave like an apprentice and the users should be treated as the masters. So, you are actually the apprentice of those masters and your purpose is to learn the behavior; not to teach them how to behave that is a very crucial consideration which we often miss in our inquiry.

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Now, the process of inquiry is not very simple; we can divide it into five distinct stages for better management of the inquiry process; these are plan, initiate, execute, close and reflect. So, these five stages help us basically organize the inquiry process in a more systematic and efficient manner.

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So, let us briefly get to these stages one by one briefly try to understand the stages one by one. So, the first stage is plan stage and that is one of the most important stages in the inquiry process. So, unless you plan the inquiry properly; you will not be able to perform

it as per your expectations. But of course, you should keep in mind that nothing ever works according to plan; so there is a possibility that sometimes it may get deviated from what or how you have planned, but in most of the cases it helps and so accordingly before you start conducting an inquiry process; you should always come up with a plan.

So, what we should do in the plan stage? First of all we need to identify what are the goals of the observations; what we are trying to observe? So, this goals identification is a very challenging and important aspect of any inquiry process. Then, when you are going to observe; then it helps if you get certain, if you have some background knowledge of the task domain. So, you need to gather some background knowledge about the task domain; this sometimes help to understand certain behaviors clearly and to clear your own doubts.

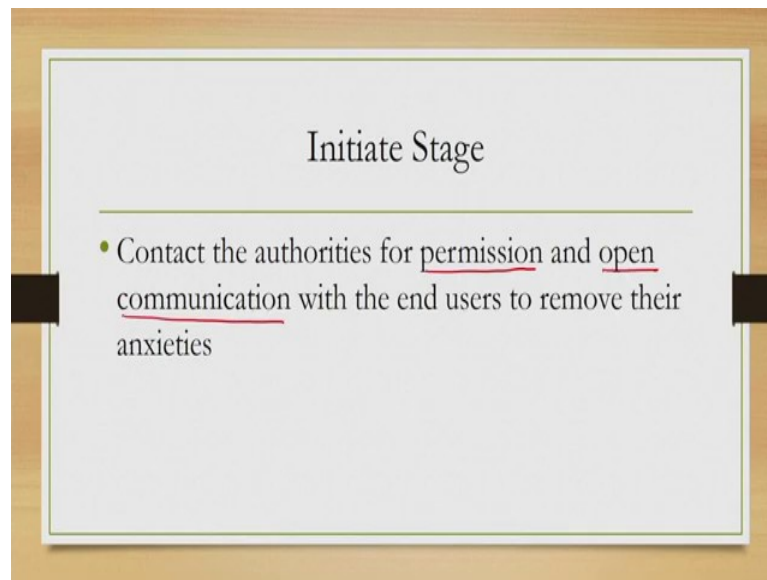
Then as I said you need to observe either as an active observer or in a passive mode and for that you need to arrange some observation instruments recording and those arrangements you should plan beforehand that is important. Another important stage is basically to identify the users and the date; the date time and place of observation.

So, you need to beforehand identify who are the users, whom you are going to employ in your inquiry process and at what time, which date and where. And the one of the most crucial aspect of this plan stage is scripting of the procedure. So, as I said nothing works according to plan, but if you have a plan; then there is a high possibility that you will succeed in getting the data you require and the way you require; without plan that chances are very less.

So, you have planned what to do, but before actually going for data collection you perform some rehearsal as per as script that you will do these fast then these first then these then these. So, some step by step scripts you should formulate and accordingly you should do some rehearsal perform some rehearsal to make things work as per plan.

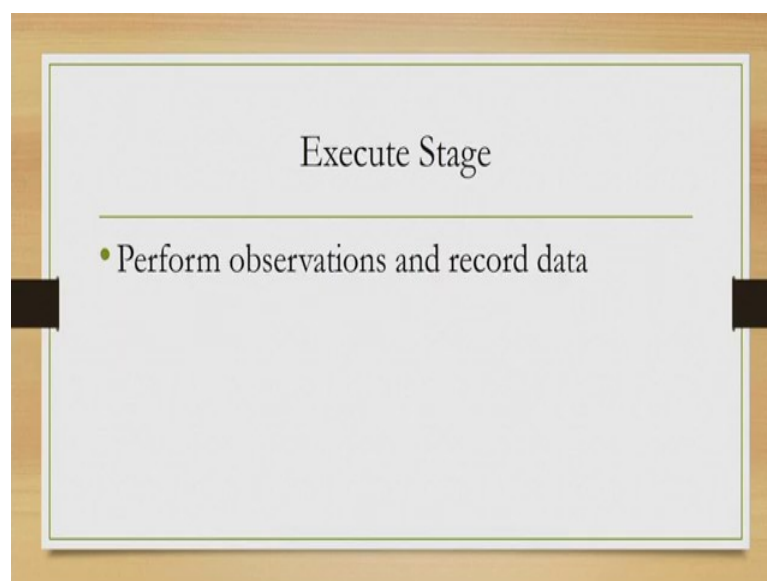
So, these are the five things stages then first you identify the goals, then gather some background knowledge which is usually helpful, then make some arrangements for recordings your observations, then identify the users and the date time and place of recording of observations and scripting of the steps you are going to perform and some rehearsal using the script that is the first stage plan; what things to do.

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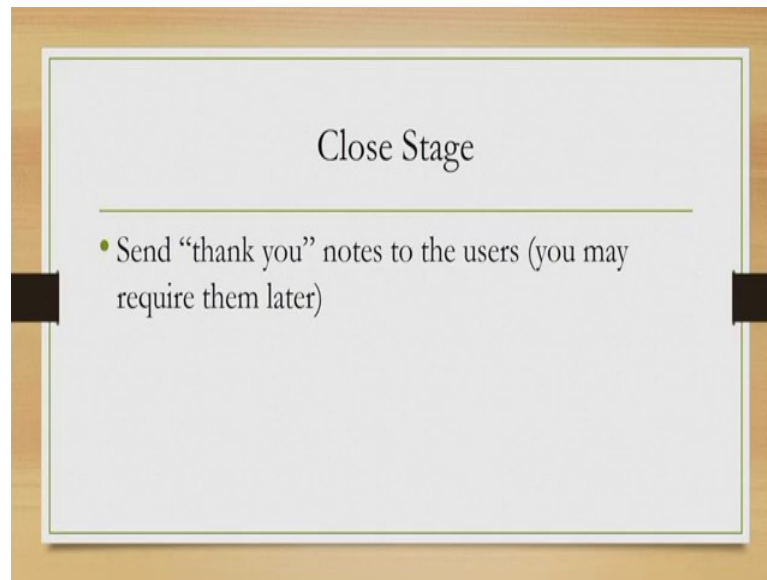
Then the next stage is initiate stage at this stage you are in the plan stage you have identified the organizations the users and in the initial stage you are supposed to contact the authorities for permission. And if possible so you are supposed to contact the authorities for permission and if possible open some communication channel with the end users so that they are not anxieties; they are not worried that what is going to happen to them if you start recording their behavior. This is a very important precondition before you can expect to collect a very natural behavior from the end users.

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Execute state is the actual inquiry stage; in this stage you collect the actual data by observing the end users. Now, here what we mean by data is basically the behavior simply. So, you may record that somebody was performing this task, then he left for tea then came back after 5 minutes; all these observations can be treated as data.

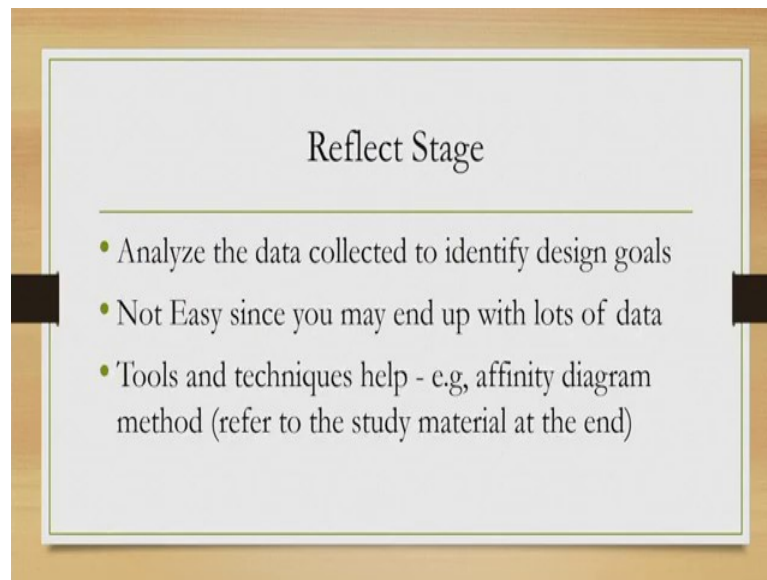
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After your actual observation stage is over; your inquiries over you go to the closed stage. So, you should not simply leave the place that is actually not a very good idea; instead what you can do to have a formal closer, you can actually send some thank you notes to the end users appreciating their help in your effort.

This is important for your future also; in future in some empirical evolution stage you may require the help of the same users again. Now, this time if you do not appreciate their help then in future they may not be willing to help you. So, it is always a good idea that you send a thank you note and formally close the inquiry process. And finally, comes the reflect stage.

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So, at this stage you analyze the data you have collected and identify the design goals what you want to design. Now, data analysis is not an easy thing that is true for any sort of data analysis and more. So, in this case where your data is actually an unstructured set of handwritten notes or maybe a long duration video and you are supposed to identify the design goals from organizing this handwritten notes or watching the video and then perform the analysis.

Some tools help in this process for example, there is a technique known as affinity diagram which actually is a kind of brainstorming technique. You collect all the notes and try to organize them into groups and then group heads may give you some idea about the features that is that are desirable in the proposed system.

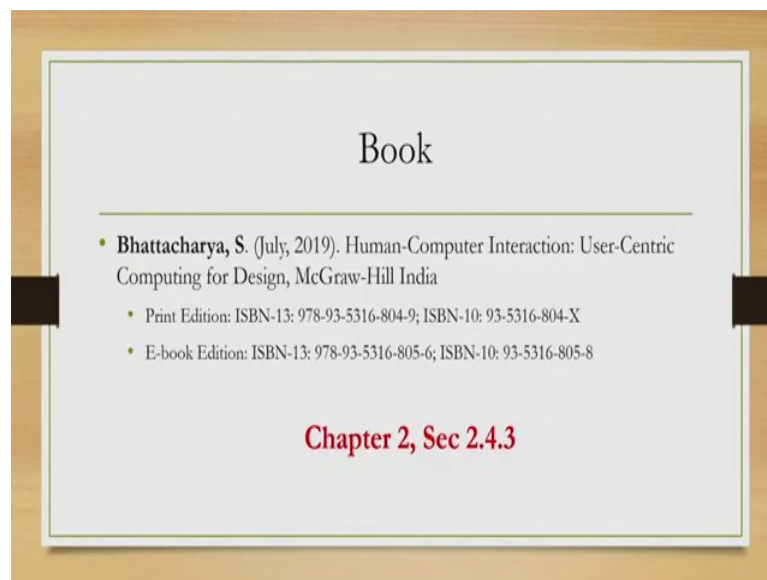
But of course, in this lecture we are not going to discuss in details all those techniques; if you are interested then you can refer to the study material that we are going to show you at the end of this lecture. So, these five are the most systematic way of organizing your activities for contextual inquiry.

So, let us recollect what are those stages first is plan in this stage you plan for what you are going to do which involves identification of users and date, time and place for conducting the inquiry as well as some other relevant and associated activities such as scripting, such as identification of goals knowledge gathering and so on.

Then we have the initiate stage where you actually take the permissions, talk to the end users in some way so that they are not anxieties and they are willing to help. Third stage is the actual data collection stage; in this stage, you actually collect the data by either being present in the environment; in the active mode or by recording the activities in the passive mode.

In the closed stage, you actually send some thank you notes which is a good idea because you may require the help of those users again in future. And finally you analyze the data by taking help up certain methods and techniques one of which; which is one of the popular technique is called affinity diagram.

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Now, the material that I have covered is taken from chapter 2 of this book and to know more about these stages and the relevant references that are required to understand these concepts in more details; you may refer to the suggested reading materials at the end of this chapter and the content that I have covered here is taken from section 2.4.3 of chapter 2.

Thank you and goodbye.