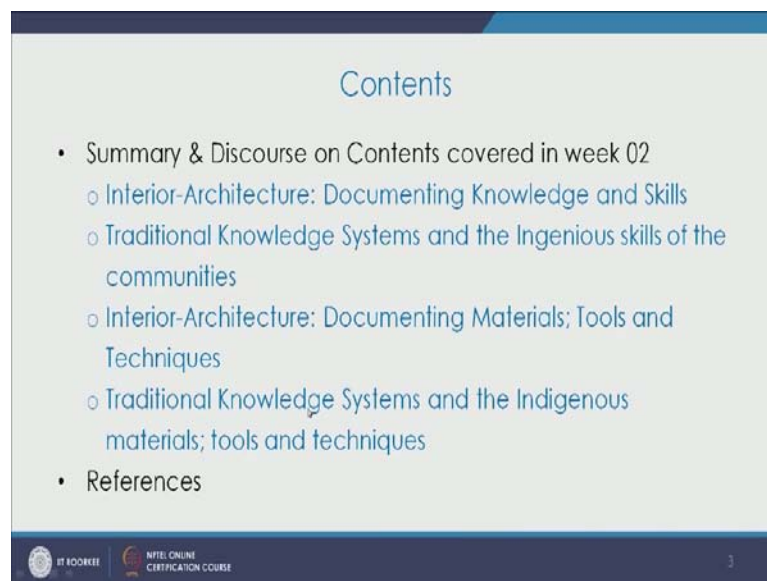


Role of Craft & Technology in Interior-Architecture
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Lecture - 10
Summary & Discourse

Namastey! Hello everyone, welcome again to the NPTEL course - Role of Craft and Technology in Interior Architecture. Today we will discuss the module 10. So, module 10 is the summary of the previous 4 modules, that have been conducted during week 2 of this course and we will be discussing, having a discourse on all the 4 modules summarizing them. So, to give an overview what were the contents that were covered so far?

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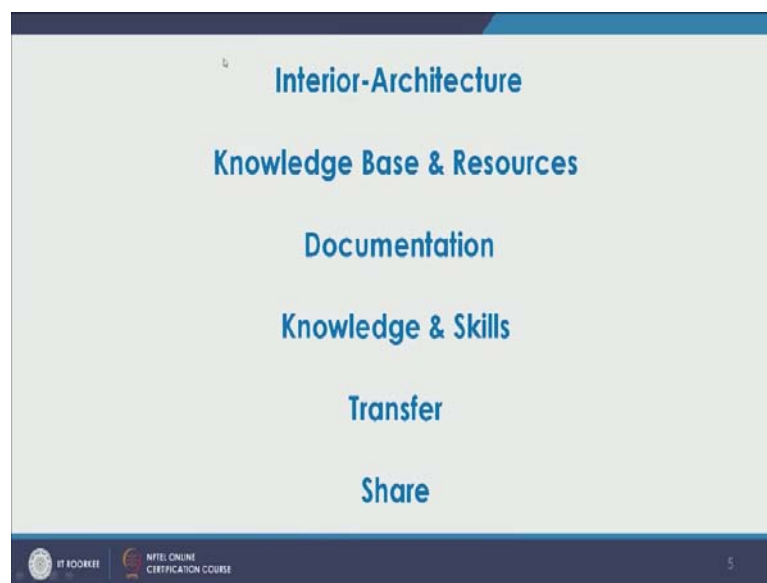


We discussed interior architecture and the importance of documenting knowledge and skills. We talked about traditional knowledge systems and the ingenious skills of the communities. Then, interior architecture - documenting materials, tools and techniques and we also discussed traditional knowledge systems and the indigenous materials, tools and techniques. So, majorly all the 4 modules were discussing the interior architecture and traditional knowledge systems and in all the 4 modules, we were talking about the different materials, tools, processes, techniques and how the indigenous people and the indigenous communities nurture these traditional knowledge systems and interior

architecture skills through generations of knowledge and wisdom. And, towards the end, as usual we will see some references that will help us to carry forward the research further as per our interest.

So in the module, where we were talking about interior architecture and how crucial is it to document the knowledge and skills within the realm of interior architecture, we were talking about different interior architecture styles and how it has a huge knowledge base and repository, resources.

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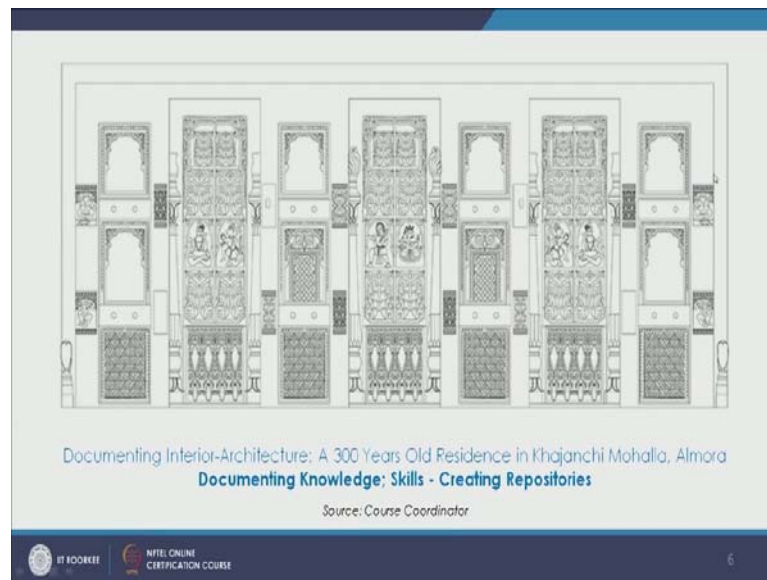


And, this knowledge base, sometimes it is formally documented. Most of the time, it is very informal and it is carried forward through oral narratives and it is not documented.

So, we were trying to establish the importance of documentation in this discipline of interior-architecture and while we document these interior-architecture styles, the preliminary focus was to study and learn and understand the knowledge and the skills which are embedded within this interior-architecture domain.

And then how important it is to transfer them, to share them, to disseminate them. So, that the current contemporary generations and the generations to come can learn from them and have a resource hub where all these knowledge systems and skills, they are documented and they are kept safe. While we were discussing this module, we saw some examples from Uttarakhand.

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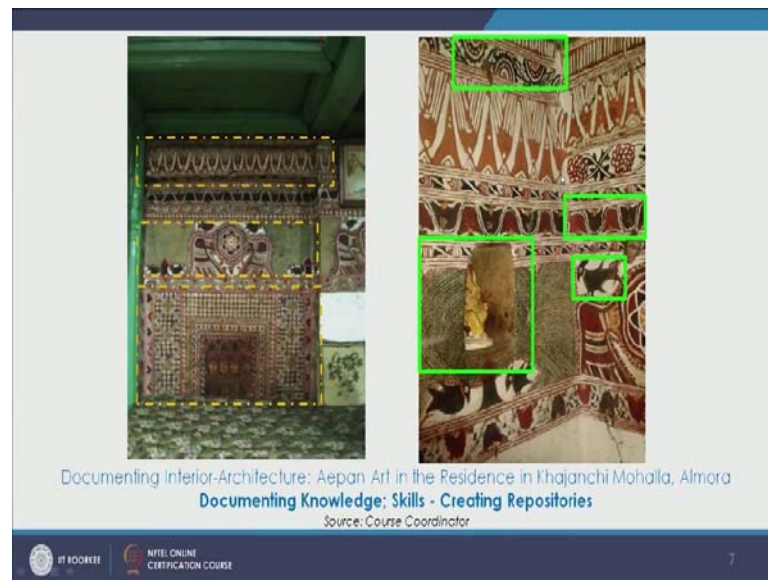


So, this is a 300-year-old residence which we saw. And during this module, we discussed the timber construction and these exquisite wood carvings that we see here on the slide, and we tried to understand the knowledge base and the skills of the community, which practice this kind of interior-architecture style in timber and which was very skilled in these wood carvings and we could learn that, there are lot of indigenous woods in Uttarakhand, which are best suited for wood carvings and this kind of traditional construction.

So, we could learn about this indigenous wood called *tun*. Then the another one was *thunair*. Then, we came to know about another wood called the pinewood, which locally is called *chir* and then there is *deodar* which is found in the hills of Uttarakhand.

So, just by documenting this interior architecture of Khajanchi Mohalla, we could understand the materials that were used, what are the kinds of skills that go into the making of these facades and here that we see in the openings. So, this is how documentation enriches us and makes us understand certain skill sets and we gather the knowledge about certain materials and their peculiarities. So, this was one example.

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The same house, we also saw that it has lot of *aepan* paintings which are done on the wall. And, these are ritualistic paintings, we have been discussing them, once in a while, in lot of modules and we could again understand, what are the materials that go into the making of these wall paintings, and what are their values, and what are their meanings, why these people in Uttarakhand make them, and what is their importance.

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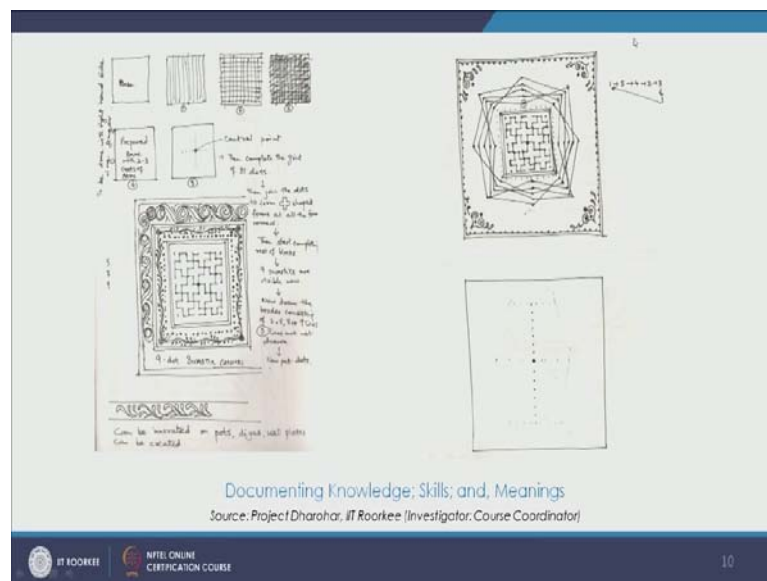


So, this we tried to understand. This was a very interesting slide that we had, where we tried to understand the very original motifs of this *aepan* art and studying these original

motifs, you know, different kinds of motifs – geometrical; floral; and then religious like *Vishnu Chauki*, *Swastik Chauki*; and different kinds of flowers; and *bels* that we see in the nature. After reading all this, we could understand that these motifs in *aepan*, they have also influenced the wood carvings. So, when we see the wood carvings on the facade of these traditional houses, we see that there is an influence. What we see in the original *aepan* motifs, we also see that replicated or interpreted in the wood carvings and again they have a huge association as far as the lifestyle of the people go and they have lot of meanings hidden behind them.

So, these kinds of discoveries - during which dynasty these original motifs were used and how they influenced the wood carvings, like one form of art influenced the other; these kinds of you know, connections and discoveries, we get to learn about them, once we start documenting and studying these existing knowledge systems and tools and skill sets.

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We also saw this interesting slide, where it was explained, how a *Swastik Chauki*, which is another form of *aepan* is actually made. So, you know that it has this central *Chauki*, which is flanked by the borders on all the sides, and it starts from the center. It is a system of dots which creates a grid. So, here we see the 81 dots which make a grid and we see this form over here of swastika, here which is repeated in permutations and combinations and then this gives us this *Swastik Chauki*, which is very important for the

inhabitants of these residences in Uttarakhand. And they practice this as a ritualistic ceremonial art and it has lot of value for them.

So, even you know, the kinds of skills that we are talking about, we are documenting. How this *aeapan* is actually made, starting from the base to this complete grid over here and what is the mathematics or science behind it, what are the values? So, in the previous modules, we actually discussed this entire process and skills and materials.

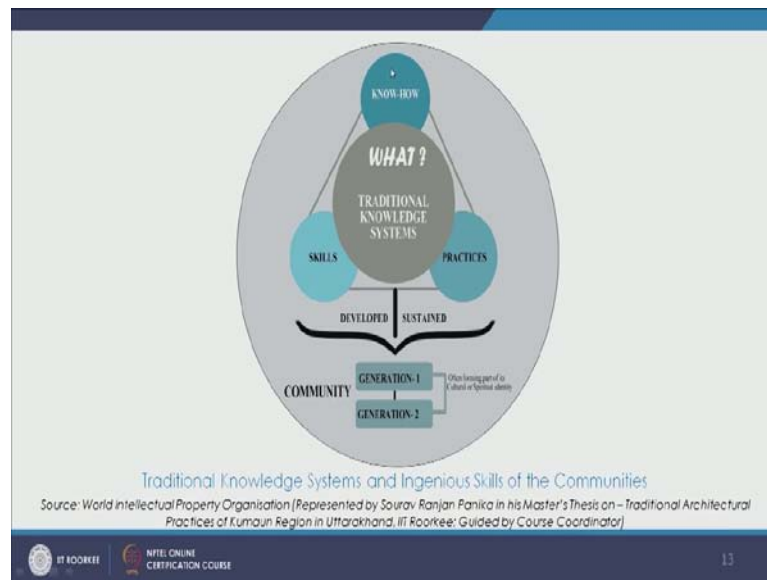
So, this gives us knowledge. It increases our knowledge and through this documentation, we are able to create this resource hub, which will be beneficial for the generations to come. In another module, we discussed about the traditional knowledge systems and the ingenious skills of the community. So, we tried to understand what actually is the meaning or definition of traditional knowledge systems and how are the ingenious skills and the communities placed within this gamut of traditional knowledge systems. What are their roles to play?

So, we just tried to understand that traditional knowledge systems could be situated within varied contexts and when we talk about the traditional knowledge systems, it is very crucial to talk about indigenous people, indigenous communities their skill sets and it is very important to document them, to understand them, to disseminate them, share them, transfer them.

So, that we have a very rich knowledge base and we can understand lot of these informal knowledge systems and styles of interior-architecture, which are practiced by these communities and which are so much in harmony with the nature and lot of times are not even given in the books.

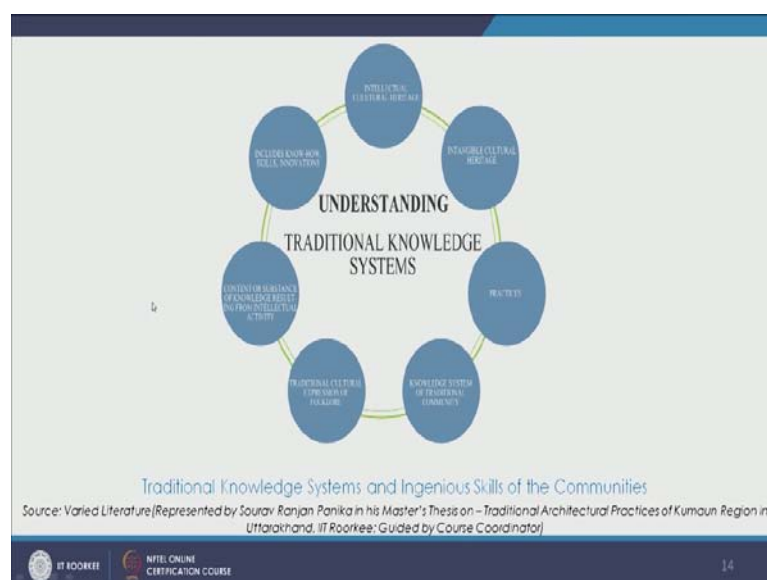
So, it is very important to understand and have a firsthand experience to go on field document, talk to people, listen to the stories behind them and then share that knowledge. So, while we were discussing this module we could understand that traditional knowledge systems, they could be looked at as having 3 important nodes.

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One is know-how. Then, we have skills and then practices and they are developed and sustained by a community. And, then these systems are passed on from one generation to another. And what is important here is that, these traditional knowledge systems often form a part of this community's cultural or spiritual identity. So, we were trying to understand traditional knowledge systems here.

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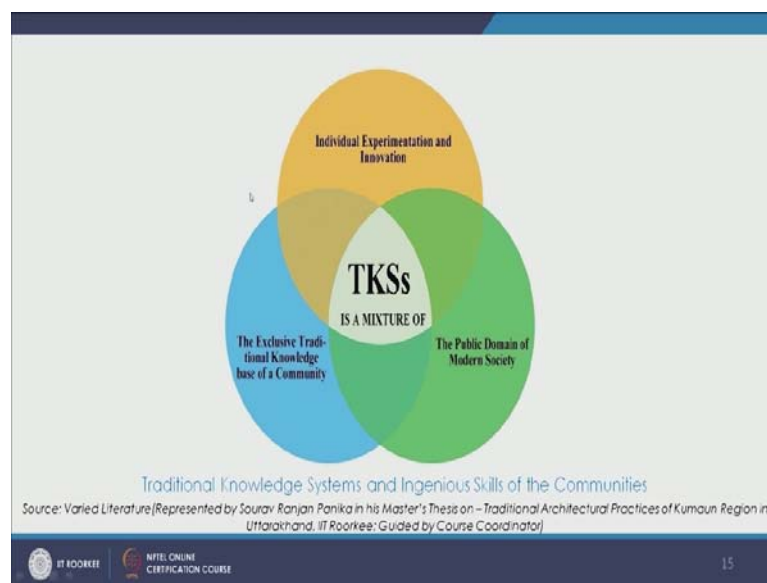


We also discussed during this module, how traditional knowledge systems could be situated within different realms. So, it could be talked about, while we are discussing

intangible cultural heritage, whether it is intellectual cultural heritage, different kinds of practices, knowledge system of traditional community, traditional cultural expression of folklore, content or substance of knowledge resulting from intellectual activity.

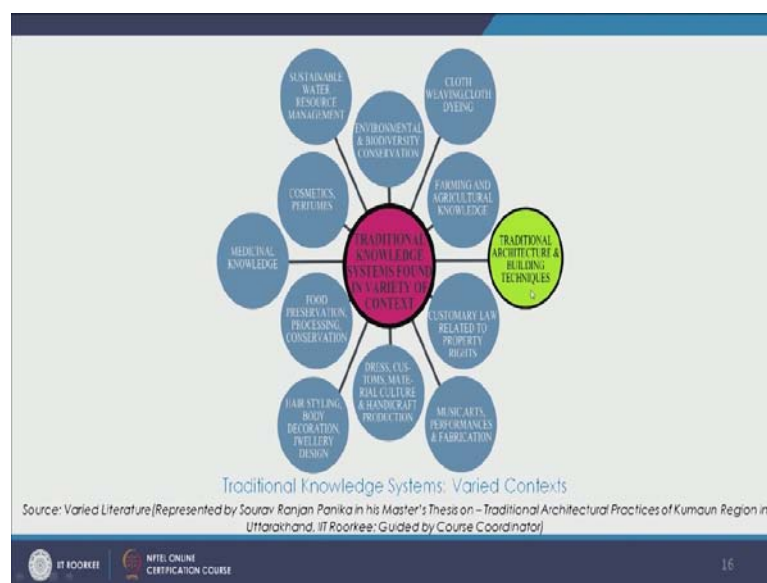
Then, it is something that includes know-how, skills and innovations. So, these are different scenarios or realms within which, we can situate traditional knowledge systems and there could be more - this list is not exhaustive. We are just trying to understand an overview.

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Then we also tried to understand how traditional knowledge systems could be looked at as a mixture of individual experimentation and innovation, the exclusive traditional knowledge base of a community, and the public domain of modern society. So, how each of these have a contribution in creating this mixture, which becomes traditional knowledge system? So, we discussed this.

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And, this is again a very interesting diagram where we tried to understand how traditional knowledge systems have varied contexts. And then, you know, we can talk about traditional knowledge systems, when we are talking about cosmetics, perfumes; medicinal knowledge; we can talk about traditional knowledge systems - Ayurveda, we have in India which is a traditional knowledge system of medicines; sustainable water resource management; environmental and biodiversity conservation; even the weaving, we saw lot of slides on the traditional knowledge systems embedded within the craft of weaving we will see few slides for revision and summary in this module also.

Then for farming and agricultural knowledge base also, we have lot of traditional knowledge systems embedded within this discipline; customary law related to property rights; then of course, we have performing arts, we have music, fabrication; we have dresses, customs, material culture, handicrafts, handlooms; hair styling, body decoration, jewellery design; and then here, what is highlighted is traditional architecture and building techniques which is what we are focusing throughout this course, when we say interior-architecture and traditional knowledge systems. So, this is again a very important context within which we are situating the traditional knowledge systems.

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Then, this again, very interestingly we tried to understand that, you know, what are the kinds of data that fall within this large umbrella of traditional knowledge systems and we could understand these 3 broad categories - empirical data that comes through experience; historical data, which comes through historical records in oral traditions; and, then conceptual data, which is somehow formulated and understood and analyzed with the help of these two. And we also tried to understand that based on different sources the traditional knowledge systems could be derived from 3 different sources - individual experience; contemporary modern concepts; and, derived from traditional knowledge systems passed on for generations within the traditional knowledge holders community.

So, these were some interesting facts and some interesting diagrams which made us understand varied concepts and definitions and meanings of these terms - traditional knowledge systems, indigenous people, and community. We also saw some definitions which exhaustively discussed what kind of knowledge does traditional knowledge systems include.

So, different approaches, we saw all that during this module. To sum up and to summarize, I have just put the visual info-graphics, so that it becomes easier to understand. Then, another module was on interior-architecture - documenting materials, tools and techniques.

So, whenever we talk about the interior-architecture styles, it is very important to understand different materials, tools and techniques that actually help in developing or creating that interior-architecture style. So, we try to focus on this, while we were discussing this module and we tried to understand the importance of documenting the materials, tools and techniques through this example of Radhasoami Samadh, which is in Agra.

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Radhasoami Samadh,
Soamibagh, Agra

More than 110 years into
Construction, this building is an
exemplary illustration of
celebrating materials, tools and
Techniques (exquisite
construction details; stone
carvings; inlays; filigree work;)

Fourth Floor and Above
(Narratives of Universe)
- Metaphysics
- Cosmos

Third Floor (Narratives
of Established Faith)

First and Second Floor
(Narratives of Spread)
- 'Yanni'/'Sarbachans'
- Society of Environment

Ground Floor
(Narratives of Founding
Belief System)
- 'Samadh'
- 'Jatlang'

Interior-Architecture: Documenting Materials; Tools and Techniques in Radhasoami Samadh, Agra

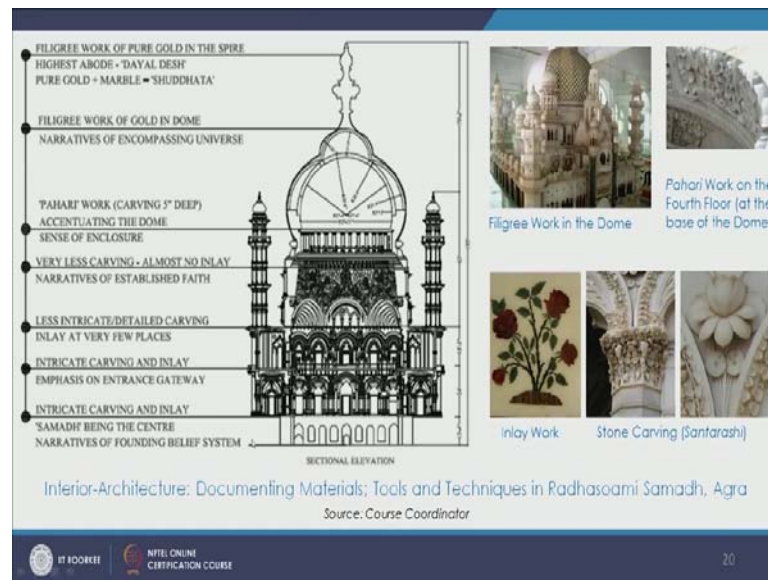
Source: Course Coordinator

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And, we discussed some very interesting facts about this building that it has been getting constructed since more than 110 years and the construction is still going on and it is a very exemplary illustration, which celebrates materials, tools and techniques. Because, in this building we see exquisite construction details - we see stone carvings, we see inlay, we see filigree work.

We discussed all this - what all these techniques are, what is filigree work? What is an inlay? What is a carving? And then we saw certain videos, where the *Karigars* or the craftspersons were demonstrating these techniques and their knowledge of materials, in which they were doing these. So, if you want to understand the details and if you have skipped those modules, please go back to them and see the details, how these techniques are carried. And, how they actually enhance the interior architecture of this building, and help in space-making and enriching the experience of the user, when they are in this building.

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So very interestingly, this sectional elevation explained the placement of varied craft forms and techniques according to the eye level and we discussed if somebody here stands, here at the ground floor, and they have to look all the way up to this spire and this dome and how much detail here is done, you know, in what scale and proportion, what is the level of detailing that somebody standing over here can actually see here, all you know, till this point and what is the cone of vision that they have?

So, we discussed certain techniques - over here we see the filigree work which is here in this dome; then we see this very, very intricate and deep detailed stone carving which is done in marble, which is here at the base of this dome; we saw the stone inlay work; and we saw the stone carving, which is called as *santarashi*.

So here, in this building there is an exclusive use of marble different kinds of marble different colors and what all different techniques have been used and how these techniques actually create points of interest and experiences within this building. And once the user navigates from here, vertically up, also within the building horizontally at different floors, there are different kinds of details one comes across and stone as a material has been able to allow these details to be embraced and to be appreciated by the user.

So, here through this building, we were trying to understand the importance of material, tools and techniques and how this knowledge of indigenous community, these *Karigars*

and their skills actually helps in creation of different spaces in this built form and it is not just the knowledge of structure or architecture, but very importantly to understand different tools and techniques and the materials that go into the making of these. Continuing this example,

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•Stones used for inlay include *margaj* (pink, green), *aqeeq* and *Neelam*
•One *jali* (trellis) in a railing measuring 4' X 3' takes 6 months to get fully carved, polished and fitted.
•Construction of one frame to fit the stone jali takes around 2-2.5 hours.
•Capital of a double-column with floral carvings takes around 6-7 months in getting constructed.

Sizes available in Stone 2' X 3' X 4' (minimum size) 8' X 6' X 5' (maximum size)	The maximum size of stone in which inlay can be possible is 9" X 4" X 6"
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Interior-Architecture: Documenting Materials; Tools and Techniques in Radhasoami Samadh, Agra
Source: Course Coordinator

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We also tried to learn from the documentation on the site - which kinds of stones have been used for carving and inlay and you know, for a certain dimension of stone, say here in this case of a *jali*, how much time does it take, you know, for the carvings to be done, for the polish to happen and the final assembly to happen.

And again some other elements like a frame, how much time does it go into the making of this one frame in which this *Jali* fits in. Also the details like, you know, capital of a double column, which has very exquisite floral carvings, you saw the pictures in the last slide how many months does it take to just make this capital of single double column. Also, the details like, what kind of stones, you know, in terms of sizes are available which are brought on the site and which is the maximum size of stone in which the inlay is possible and these are the details that you get from the site. So, this *Samadh*-the Radhasoami Samadh, it is built by a trust, and they have 3 workshops in which all this stone construction and detailing goes on.

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Elements/Process	Size	Work Distribution
Stone Carving	No matter how big is the size of the stone, not more than two carvers work at a time. For small works, one carver is enough.	2
Arch	Small (Radius upto 2.5')	1
	Large (Radius = 2.5' - 5')	2
Column		1
Base & Shaft		
Capital		
Jali		1
Jali Frame		1
Stone Inlay	As many as 4 crafts persons can do inlay work at a time.	
	Small (2' X 1' X 6")	2-4
	Large (7' X 3' X 6")	5-6

Interior-Architecture: Documenting Materials, Tools and Techniques in Radhasoami Samadh, Agra

Source: Course Coordinator

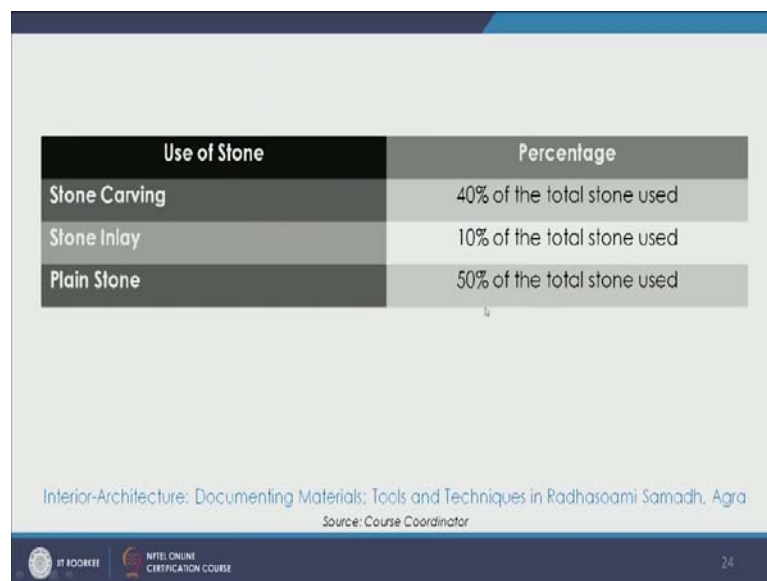
We also tried to comprehensively understand the distribution of work, you know, how many people work on certain elements for different sizes. So, this was a very, very interesting inventory and we discussed this in the module, which focused on documenting materials, tools and techniques. So, we were trying to understand for a certain material, for a certain technique or a process to happen, for a certain size, how many *Karigars* or how many people are required and how much do they work.

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Elements/Process	Size	Work Distribution
Pahari Work (fourth floor above which the magnificent dome sits)	Each piece of stone Measuring (2.75' X 2.5' X 1.5')	1 per piece
Plain Work		
Cutting the stone according to the required size		
Preparing a Framework - Mortis and Tenon		
Joints - Marking Space for Carving		1 per piece
Carving		1 per piece
Pre-Erection		1 per piece
Assembly		1 per piece
Erection		1 per piece
Polishing		
Dome		
4 Burjs (corners of platform)	24 Pieces (1 piece measuring 8' X 2'9" X 1'; Diameter of Dome = 9')	2
Plain Work		1
Carving		
4 Minarets	16 Pieces (1 piece measuring 6' X 2' X 9"; Diameter of Dome = 6')	2
Plain Work		1
Carving		
On Top	600 Pieces (1 piece measuring 3' X 2.5' X 2'; 12 Rings-1 Ring has 50 Pieces; Diameter of Dome = 53')	2
Plain Work		1
Carving		

So, we were trying to understand the system of work on the site. Also, you know, like for example, here in the case of dome, there are different pieces of stones which are assembled which are, you know, gathered to create these domes and within that minarets and *burjs*. So, all those details, we were able to understand through documentation, through inventory making. And, this was a revelation when we did all the documentation, and we discussed in the previous module that you know this 50 percent of the building has the use of plane stone.

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Use of Stone	Percentage
Stone Carving	40% of the total stone used
Stone Inlay	10% of the total stone used
Plain Stone	50% of the total stone used

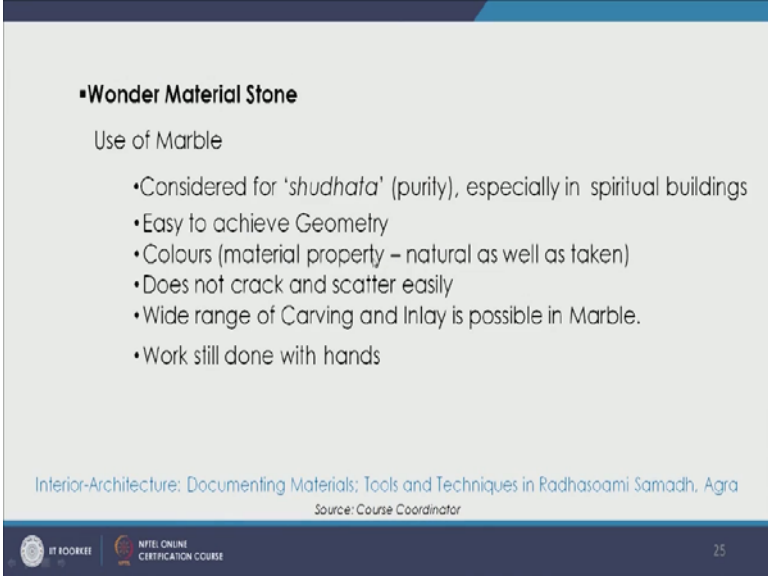
Interior-Architecture: Documenting Materials; Tools and Techniques in Radhasoami Samadh, Agra
Source: Course Coordinator

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And the other 50 is extensive use of carving and inlay. So, how much is the percentage, which is taken up by these techniques and the skills that go into the making of these elements and the achievement of these techniques. So, these are the kind of details that one gathers when they go to the sites, they document, they understand the material, the kinds of techniques that the material embraces and the skill sets of the *Karigars*, which are employed to make those. So, these are very interesting facts that one gets to learn.

Also, in this module we understood something very interesting, because we are talking about documentation of materials and learning how the materials play a role in space making through different techniques. So, we could understand, we could learn that marble was extensively used in this building because of course, it is a spiritual building and it is considered pure.

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▪Wonder Material Stone

Use of Marble

- Considered for 'shudhata' (purity), especially in spiritual buildings
- Easy to achieve Geometry
- Colours (material property – natural as well as taken)
- Does not crack and scatter easily
- Wide range of Carving and Inlay is possible in Marble.
- Work still done with hands

Interior-Architecture: Documenting Materials; Tools and Techniques in Radhasoami Samadh, Agra
Source: Course Coordinator

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But very important to understand that, it is easy to achieve geometry in marble; it allows for varied kinds of carvings; it does not crack or scatter easily; it has many colors and natural pigments available over there; wide range of carving and inlay is possible in that, we can see in the entire building from ground floor to the top floor. There is a huge range of carvings and inlays - different kinds, different motifs, different scales which is possible and the work can still be done with hands which is the most important point that I focused during this module that certain power tools and machines are used, but most of the work is still done by hands and those *Karigars* are working here since generations, and the employment is still there for them. So, that is something, which I really salute the makers and the organizers of this trust. You also try to understand the hierarchy.

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Designation	Work	Work Experience		Total Number
		Old (Around 35yrs)	Young (15-20yrs)	
Head Masons	Supervising the other workers	02	00	02
Stone Masons	Stone Carving	20	20	40
Inlay Workers	Stone Inlay	00	15	15
Stone Fitting	Fitting Stone Pieces	15	00	15
Machine Men	Cutting of Stone	10	05	15
Shutterers & Scaffolders	Shuttering & Scaffolding	00	30	30
Labourers	Carrying Bricks, Cladding	00	18	18
Total				135

Interior-Architecture: Documenting Materials; Tools; Techniques; Craftpersons in Radhasoami Samadh, Agra

Source: Course Coordinator

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How the work happens on site? What are the different designations? Who all are the different masons and the *Karigars*? And you know in terms of their learning experience, how much experience do they have and how much is the total number of the *Karigars*.

So, all these details really help us understand also how the work happens on the site - what is the system; what is the hierarchy; how things, you know, they are done in a system in a way that they are organized properly. We saw different tools because we are talking about documenting tools. So, we saw different tools, power tools and machines, which were used on the site for *santarashi* and inlay work.

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We also try to understand, how a *Karigar*, you know, makes these drawings out of own experiences and memories and then create something as beautiful as this. We saw all this in the previous modules.

Finally, we discussed the traditional knowledge systems and the indigenous materials, tools and techniques, and we began with this very powerful slide, where we were just trying to,

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where we felt very proud that India's knowledge systems have so much to offer and if we see that these knowledge systems date back to, you know, ages ago, to Mohenjodaro, to Harappa, and the knowledge systems existed. We had a profound knowledge of metal blending, casting. We had knowledge of performing arts.

So, we started from there, and then you know, we saw how there are different traditional knowledge systems that India has embraced, which are celebrated all over the world.

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We saw this very interesting slide, which is the work of Priyanka Mangaonkar. She is an Assistant Professor in Brick School of Architecture. And, we could see the stages of transformation of terracotta, how it was used as a material for daily needs and then all the stages till here today, how it is used as a construction material. Again to take cues from history, see we find the references of terracotta again in Harappa, how the dish containers and other objects were made out of terracotta. So, it is a profound knowledge of this material that it could be used in all these different forms for different purposes.

So, documentation, understanding, studying help us create these links from history to the contemporary times and to understand the profound material properties and how they could be utilized for times to come and in the contemporary times as well.

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We saw this plethora of traditional knowledge systems from Uttarakhand ranging from these Aipan paintings to furniture styles, all the way to here - we see the architecture, hill architecture. So, in all these different forms and techniques, there is embedded, a profound knowledge of materials, different tools, techniques, how do these objects and spaces get created. So, we saw this plethora and we tried to discuss few of them.

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We saw this very interesting tradition in Uttarakhand where the clay idols are made by the women during this very famous festival. And this is again the knowledge of this material how the women is handling this material, and she is able to achieve perfect proportions and expressions and also the natural dyes that go into the decoration which are very eco-friendly. So, all these skills, all the knowledge of these materials, they exist, they are with the indigenous communities and they need to be documented and transferred.

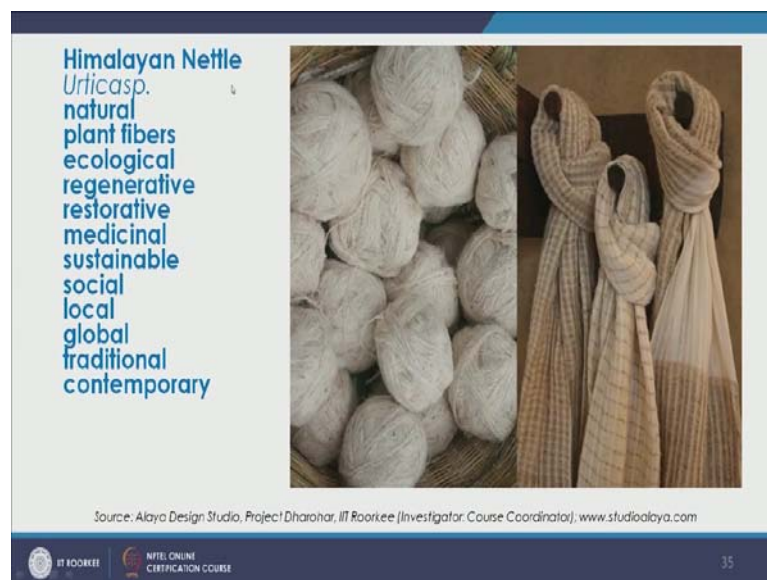
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We also saw how some art forms or techniques have transcended their making and now they have contemporary expressions. So, we see the seasonal grass and these are tribal traditions, these are made by the tribals and they are all natural, they come from nature. And, the tribals have learnt them through living in nature, through observing from their surroundings and they are the materials for future.

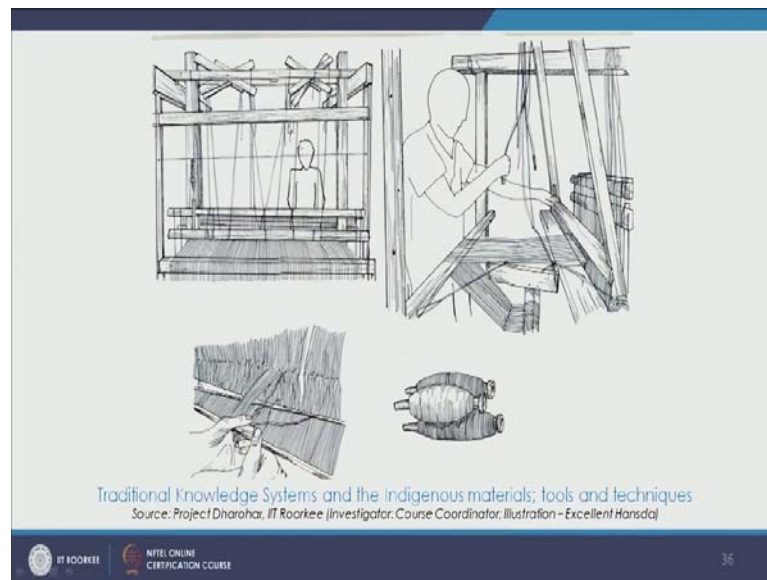
If we understand how these materials grow, how they are procured from nature, and for what all purposes they could be utilized, they are all materials for future, and they sometimes just remain untapped. So, it is a very nice initiative by Alaya design studio that they are documenting and exploring products out of such materials. Another one on the same lines, is Himalayan nettle.

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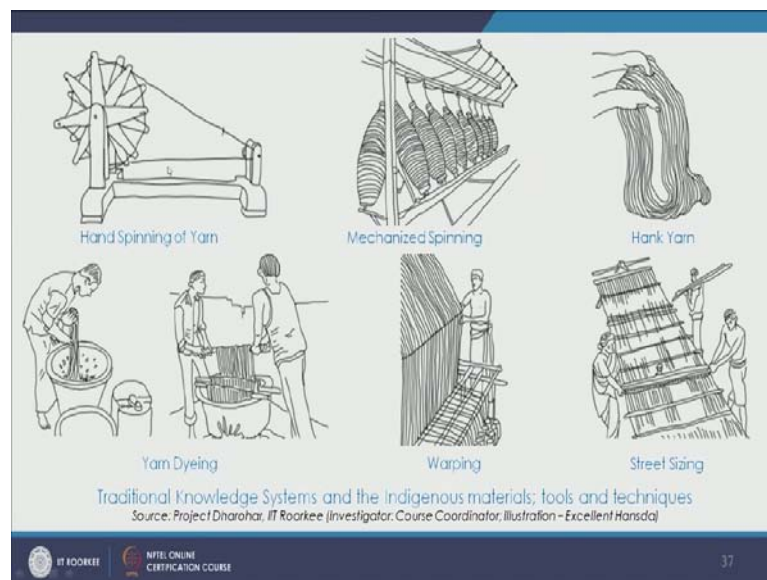
So, through these documentation projects, through these documentation studio exercises, individual initiatives, we get to know about lots of materials, traditional knowledge systems in interior-architecture styles.

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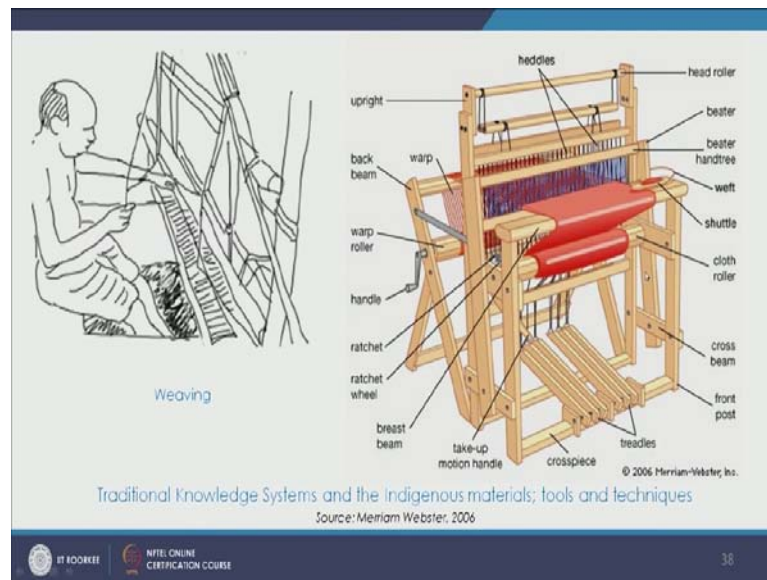
We also saw the traditional knowledge systems, which are embedded within this weaving craft and we focus on Uttarakhand.

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And through illustrations we tried to understand the different stages you know - what is yarn, and what all are the different stages that go into the weaving, and how the yarn finally reaches the loom.

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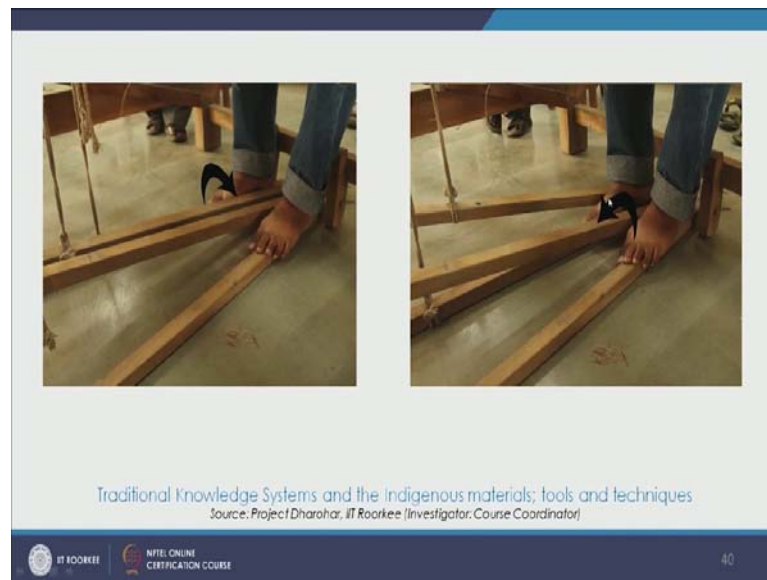
We tried to understand what is handloom, what are the different components of a handloom and what is the warp and what is a weft. So, we tried to understand all these important terminologies, which are related to the weaving craft.

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We saw some pictures that explained the posture how these *Karigars* sit.

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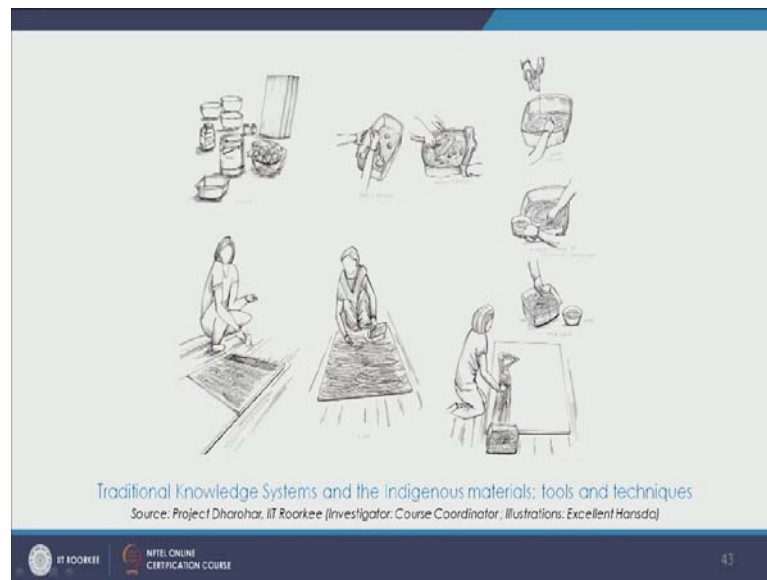
What are the foot movements, when the weaving is done? So, all that we documented and we tried to learn and understand.

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We also tried to understand the documentation of traditional knowledge systems embedded within the *aepan* craft.

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And we saw, you know, starting from which materials are used and what is the stage one all the way till what is the final outcome.

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So, we saw, from here, all the different stages how this again *Swastik Chauki* is made.

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We saw all these techniques, processes and skill sets and these modules which focus on documentation, really enriched us with knowledge about different materials, tools, techniques and traditional knowledge systems which are nurtured by these indigenous communities and which yet need to be documented and disseminated. So, I would like to end with this interesting quote. Of course, we have references to follow. "Craft has traditions in every culture of the world with processes, materials, tools and even designs being recognizable across barriers of language, culture or religion. Craft can provide an excellent and levelling platform for cross-cultural, citizenship and humanities based work."

So, this module talks about role of craft and technology in interior architecture and here, this is what this quote is trying to establish that craft is found in every culture. It can transcend the barriers of language and it can really result in excellent work, which is cross-cultural, humanities based, need based, community based, and we can see the reflection of these craft skills and the understanding of knowledge and making also in the interior-architecture styles and the principles of space-making. So, this is what we are trying to learn through this course.

Next module is going to be very interesting. It focuses on something called as creative and cultural industries. And we will try to understand, what do we mean by them? What is their significance? What is their scope? And what all can be done in this gamut of

cultural industries, creative industries. Some references again - now this is a summary. So, I have just summed up the references from all the previous 4 modules.

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Thank you.