Innovation by Design
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Module – 02
Start of section 2
Lecture – 08
Crossing the first pitfall

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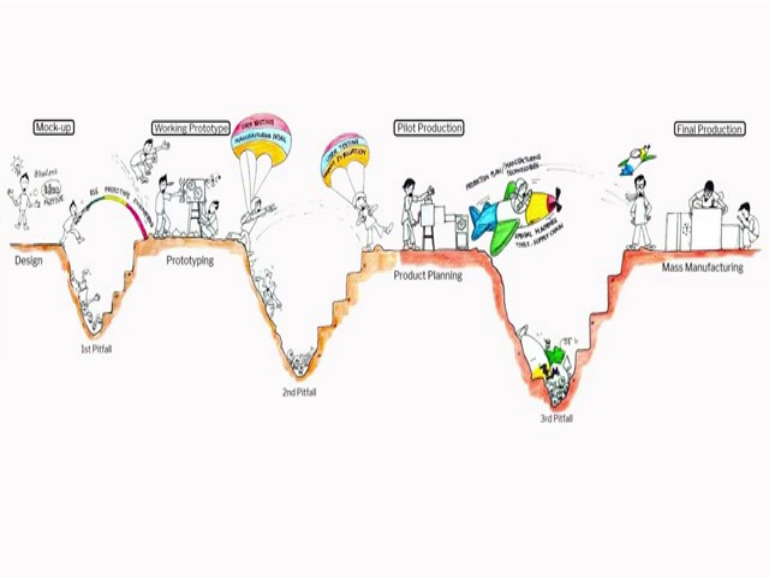

Now, we will see in this particular vein tracer, where my student Trivikram started this work, how did we go about I will quickly explain to you. And now you all know the first valley of death, what happens when students makes a mock up and you know does a user testing. You take it forward, make a working prototype and then go on test with users. It crosses the first valley and it is at the prototype stage.

After the prototype stage, you take it forward and produce a pilot production. Produce more number because you need to test with more number of users, then you reach the mass production where you can you know implement large scale and you cross the third valley of death of the idea. **Just that see(0.45)** why are you using such a strong word like death because it is you know we started with so much passion and finally it does not reach the market and if it does not reach the market if does not reach the user the 7th C does not work and it is no longer innovative.

You can all say oh it was an innovative idea, oh it was an innovative product, oh it is an innovative mock-up model, but even using the word innovative is wrong over there according to me. Innovative research, innovative technology all these you are hearing as of no use still it does not reach the people at large.

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Okay so here I want to tell you this story of Trivikram who did took a course under me called collaborative innovation. In the elective the whole class was sent to blood banks

all over Bombay to find out what are the problems blood banks are facing. So, they came up with a number of problem. Trivikram said you know it is interesting the people have come to donate blood and they are going through pain which was not acceptable to him.

So, he took that as his cause, he said I am going to solve this problem. So, from there he went ahead and he studied what all is happening at the blood donation camps, Trivikram said I am going to look at the vein tracer. So, then they have studied in detail what is happening to the vein you know they are not able to find, then what they do. It is very interesting the student is digressing right?

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He went to a blood bank and now he was checking everybody who is going for a blood test and who is going for a hospital see all this is a hospital work. Why am I going to a hospital to check what is happening there with blood testing mechanisms? What will I learn from there? Very good new ideas, new ways, new methods, new problems and then what is the mistake? You get carried away in your design process.

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So you found out where all you know it is critical he did all data collection and found out that if you use infrared LEDs, the deoxygenated blood veins are visible like dark lines.

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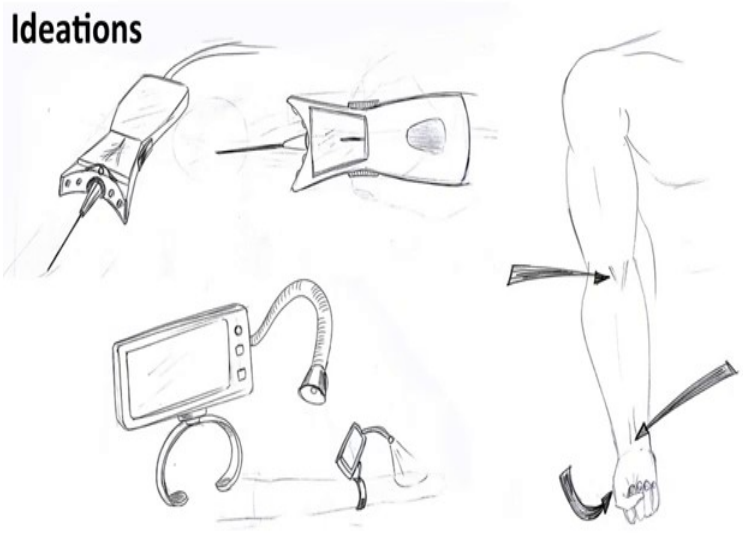

And then he developed a number of ideas. First he said I would like to have these infrared light on the syringe itself. **Think there**(2.46) is no that is not going to work because this has to come in close contact with the skin so that the light can enter inside.

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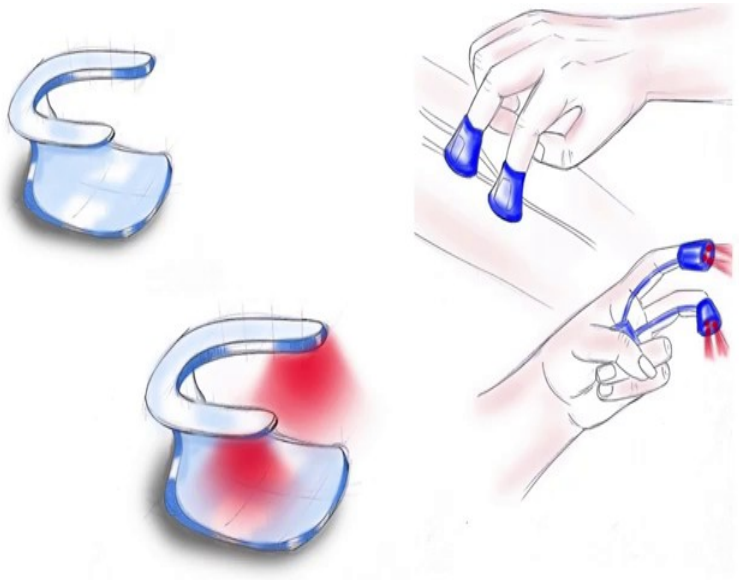

So, he said that is not possible put this infrared LEDs you know on the skin so, that your veins can be seen through the skin.

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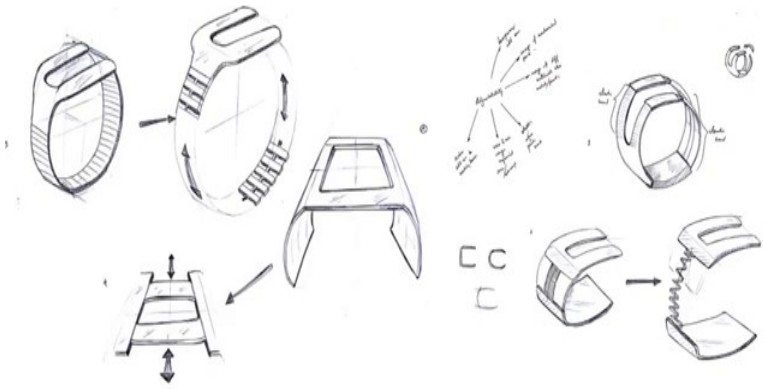

And then you take all the ideas together and develop concepts. How many concepts should be develop? Minimum 3 which are different from each other. What happens when you develop multiple concepts of the same problem? You reduce the chance of failure. You just develop one and it fails, you will not be able to analyze it whether it is correct or wrong.

In this idea oh said like I need the rest on the arm.

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So, can I have a rest? You just ask your friends to be your user, put that on them and try. T his is a very important creative journey. A number of times we do not do this, this is very very critical and very important in your concept creative development.

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So, then you come up again with some more options you say what all we can do, then you build something called the mock up.

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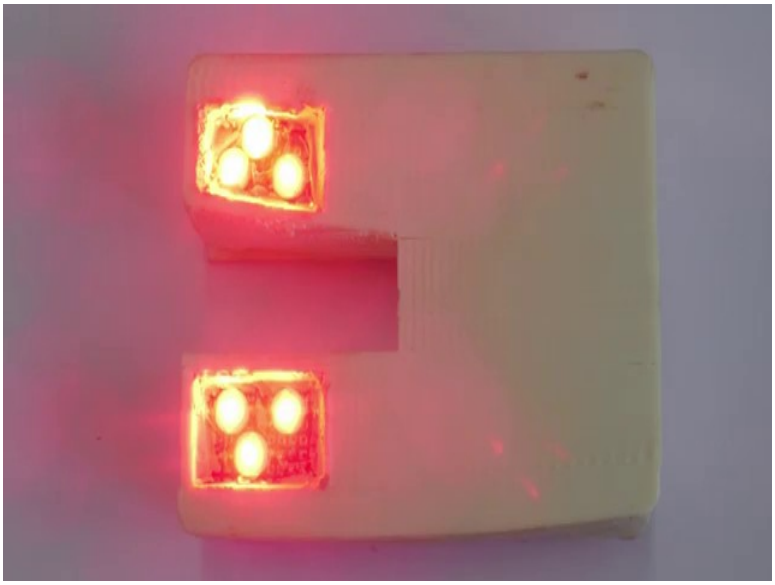

Before you build the mock up the student also build something called a working rig. He went to lamington road in Bombay, he picked up all these LEDs, see he rigged up a circuit and he found out which directions circuit should be used so that you can actually see the veins more clearly. We are now at the first valley of death and then his project got over. So, we built a team around this we hired designers who were experienced in industry.

We hired consultants who are experienced in working in LED industry right? That also part of my research where we found out that you need to hire specific technology consultants into your project, we hired all those people and we started work.

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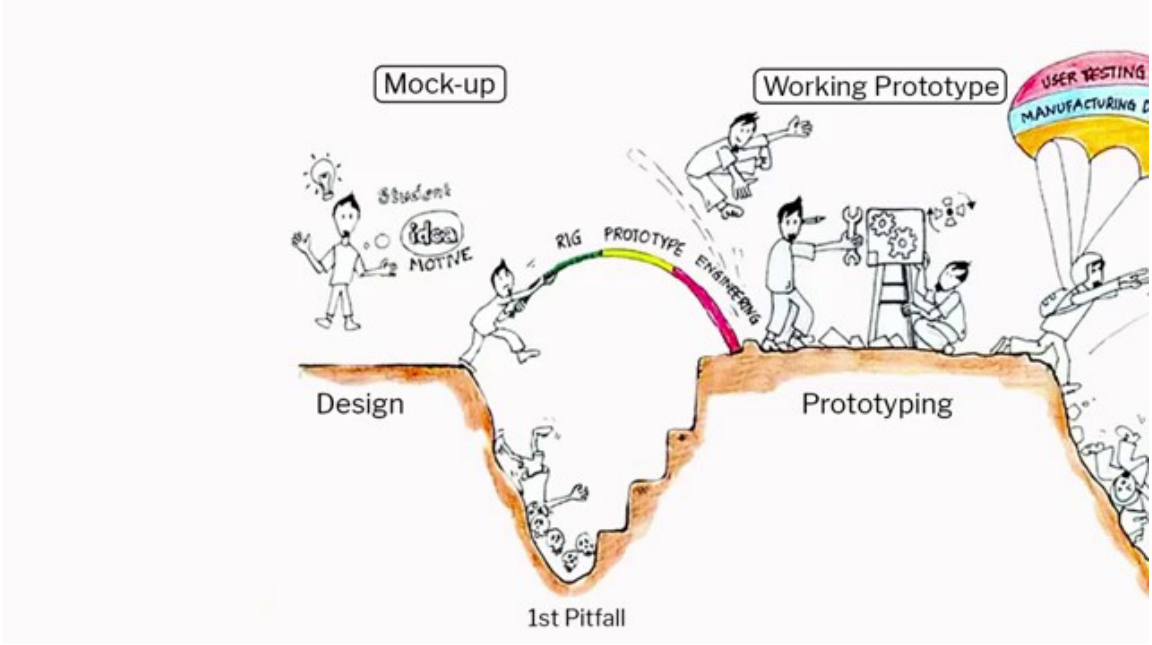

Then what happened? We are just at the first valley of death right? To cross the valley of death what do we need to do?

Working prototype, working prototype means it is exactly the same size we thought of and it also works without all the tooling. Thanks to new technologies of PCB manufacturing, new technologies of 3D printing. Now in this area its very interesting, remember the valley of death where we clearly said that you need to now collaborate with small manufacturers or small R&D organizations to build your prototype because that is very critical now.

Then our consultant told us very important aspects of safety, charging circuits, how you see all those mobile phones you know sort of exploding right? These are products for the medical area and you have to be very safe. So you develop the circuits now, you bring in the experts in the area of circuit manufacturing, PCB manufacturing and now this goes to a very very professional journey and you come up with a prototype.