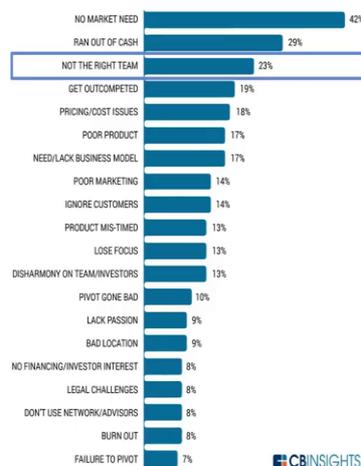**Understanding Incubation and Entrepreneurship**
Dr. B.K. Chakravarthy
Department of Engineering Design
Indian Institute of Technology, Bombay

Module - 03
Innovation, Team Building and Problem Statement
Lecture - 04
Team Building

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Welcome to the 2nd session of our module, which is Team Building. Building a team is extremely critical for any startup. As we know, 23 percent of all entrepreneurial ventures fade away because the team parted ways.

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The journey from the start till this point you make it is not easy and as a entrepreneur you need to ensure that you have the right people with the right competencies to work in your team.

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I cannot forget this incident nearly 6 years back. We had invited Mike Lyons, a professor from Stanford in the area of venture creation to come to IIT to give a lecture. He was being invited by the Desai Sethi School of Enterpreneurship.

And of course, getting a professor from Stanford was expensive. Thanks to Bharat Desai, who was the founder of a Desai School of Enterpreneurship. He said let us learn let us not look at the money. And the first lesson which Mike Lyons told us was about team building.

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"Extremely critical to have varied skill set in the team"

And he also mentioned that is extremely critical to have varied skill sets in the team rather than have your co-founders with the same skills. That stayed on with me and we also know how critical it is for any startup to really do good if they can have all the key people with the key skills in the same team.

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Prof. B. Ravi

Institute Chair Professor of
Mechanical Engineering, IIT Bombay

Head of Desai Sethi School of
Entrepreneurship (DSSE), IIT Bombay

Head of Biomedical Engineering
Technology and Incubation Centre
(BETIC)

We are going to have Professor B. Ravi, the head of the department of Desai Sethi School of Enterpreneurship talking to us in module 5. He has come up with a wonderful formula for team building. What he does is, he actually builds teams with varied skill sets for a particular problem and then invites all of them to do a Hackathon and takes them through multiple Hackathons one after the other.

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Hackathon organised by Prof. B. Ravi

This way the team bonds also and we have seen some of the best companies coming out of the BETIC Center at IIT Bombay. For our session, today we have doctor Rupesh, who

is our CEO of the BETIC Center, he was also a PhD student and he has seen this whole ecosystem of enterpreneurship from day one and he has been great at team building and conducting these Hackathons.
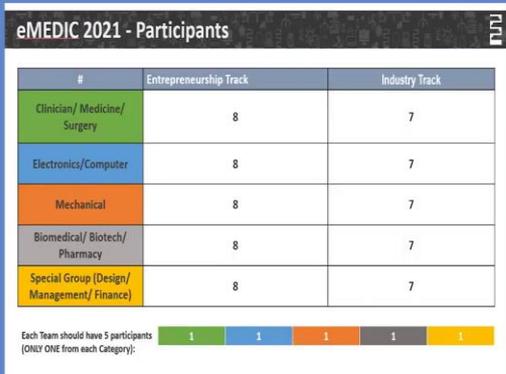
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In this session, you will also see how our M.tech students of IIT, Hyderabad are going to build their teams for their startup project. Thank you so much Rupesh for joining us in the evening to tell us how the team formation and how we should look at our problem statement and then you know choose the type of you know the partners we can choose for our enterpreneurship venture. So, thank you so much for joining us and let us see your template to take this forward.

Sure. Now, thank you Professor Chakravarthi for inviting this is a pleasure. So, as I said as mentioned parallely there is a event going on eMEDIC which is medic, eMEDIC is standing for medical device innovation camp usually we do it physically at IIT, Bombay, where multiple discipline people come together they form teams and solve live problems here this time for the first time we are doing it online.

So, we had about 75 participants and this is we had two tracks enterpreneurship track and industry track and we had five different groups or categories of people. Green if you can see is more notified by the medical side doctors again even in medicine if you see there are n number of branches, but we have to club them together. So, the 8 entrepreneurs track doctors who are with the bend that they want to become entrepreneurs were put in that category.

There were 8 electronics, computer, IT people, there was mechanical production physics into that other category, biomedical biotech pharmacy in one and special group design management finance.
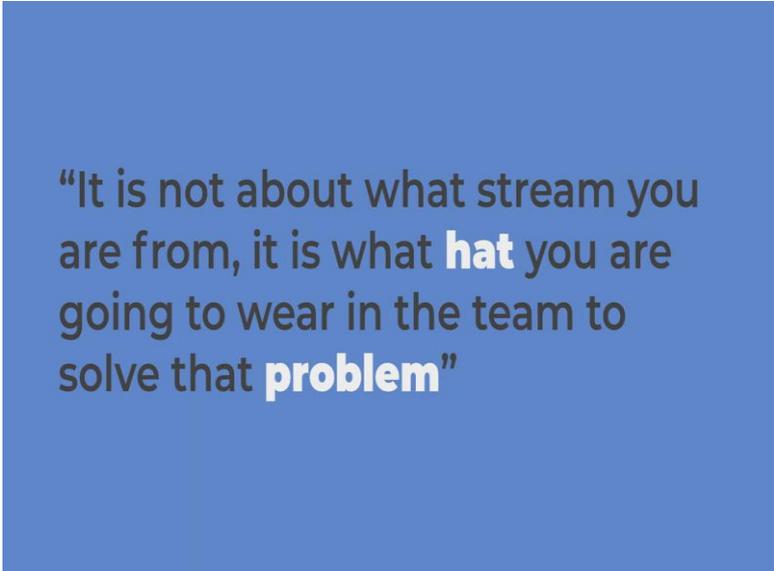
Team building - **Challenges**

Now, we had a challenge is that each of them said no, but I am also a mechanical engineer who did my masters in bio-engineering. So, can I not go into biomedical category.

"It is not about what stream you are from, it is what **hat** you are going to wear in the team to solve that **problem**"

Now, that does not matter here somebody says that I was a production engineer, but I am a MBA now. So, that also does not matter it is about what hat you are going to wear in the team to solve that problem. So, you have two streams that is good you can always leverage whatever your basic engineering or basic degree does not matter, what hat you wear to solve that problem is more important here is what we mentioned.

So, in fact, we have one cardiologist who is actually being part as a biomedical person because of the skills and experience they have.

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Expert

1. **Lower** down your **egos.**
2. Be **flexible.**
3. See what role do I take in the team to **solve** that **one problem.**

So, that is how you have to lower down your egos, be flexible move around and try to see what hat do I wear what is the role that I take in this team to solve that one problem they are bound by that mission of solving that one line. Yeah so, let me also share something parallelly which may again help you what we are doing and that may help you to from your own teams also.

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"Once you have your team formed and your problem statement identified, you will have to **prior art**"

So, once you have your team formed and once you have your problem area identified that is where about Professor Chakravarthi also said bottom part prior art we will have to see from various angle, what are the current devices or existing devices, which are available, what are their limitations and that this expands each of this team as we speak currently in our program is filling that, what are the relevant companies, which have similar products, what are the current paintings.

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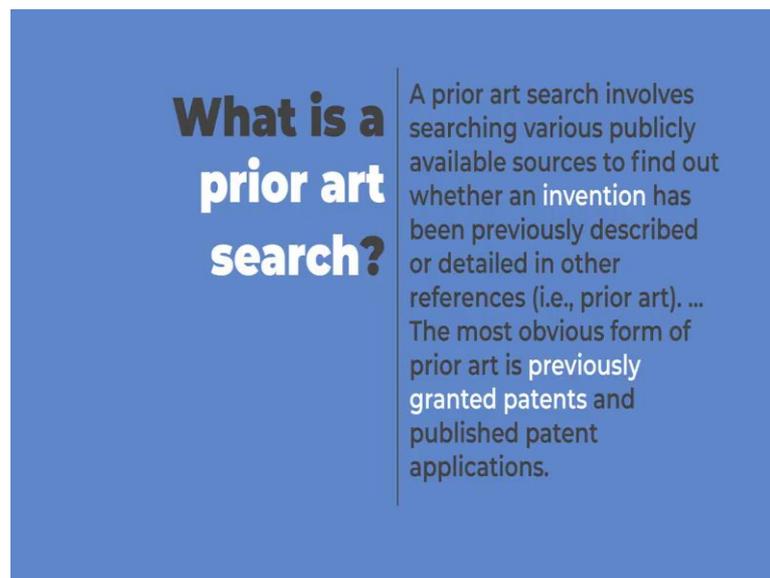
So, prior art does not mean only products you also have to go and search go ahead what are existing patents which may not be commercialized, which may stop you from your idea coming into markets, you have to look at patents also and third is there are people who have published research they did not find for a patent nor made a product, but just made a public information.
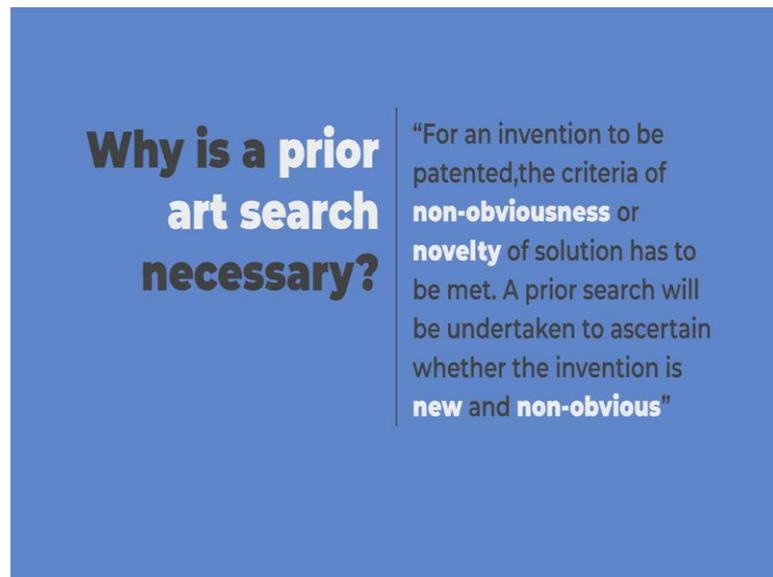
Now, you have also know that; that information is available to everybody and your product or category design should not fall in there. Because that is public knowledge which means everybody can make the product that you are making. So, you have to be very careful when you do prior art.

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Additional to this there are some things like what are the regulatory barriers in that product in your country you have to understand, what are the standards you have to follow. So, if it is a consumer product what are the standard, electronic product then safety design features have to be there.

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So, you have to also design not just the shape, form, feel material, but also what is the regulatory part of it, then business barriers also will come in picture that also will come in.

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You will need to come up with one overall **"Problem Need Statement"**

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A need statement essentially is a **clear concise design brief that consists of :**

1. Functional requirement
2. User requirement

That allows you to validate(qualify)

All this is coming down you have to come down that one problem needs statement which I think you guys called design brief, that design brief comes out for that problem and then you write your functional requirement, user requirement gets translated which can be converted into something which when you test you qualify when you say it should be lightweight.

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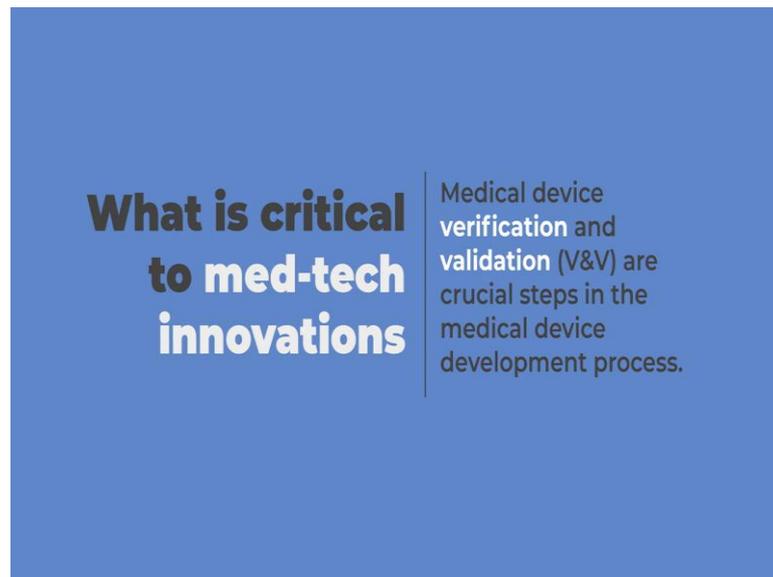
Lightweight is a very weak thing, you as well say weight less than whatever 200 grams to be carried by pregnant women, that is the good definition then when you test it you can actually qualify it that is how verification works in medical devices it is a separate segment altogether.

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But these are some of the points which could help you start with team, what are the categories you look, what are the problem definitions you should look, what are the

functional requirements, how do you arrive at is the ground work which you have to do. So, these are some of the parts of it yeah I hope this helps.

Yeah. Yeah.

All of you do understand that there can be a way of coming together getting aligned with the mission or a problem trying to solve that.

Yeah. In fact, the students today afternoon we have to you know complete all this. We have to at least have a problem statement and we have to have the team you know ready.

Again, I would ask students also is that do you have the categories. Let us say you are 45 people, do you have like 4 or 5 broad categories that you can put yourself into.

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Sr. No	Name	Category	Area of Interest
Team 1	Vijay	Visual Design	Products for blind
	Mayuri	Visual Arts	
	Nikita	Bio-Science & Research	
	Gautam		
	Shubhi	Accessory Design + Design Research	

So, this is so beautiful to see that team 1 we have Vijay, we have Vijay who is from industrial visual design, then we have somebody from visual arts Mayuri, Nikita from bio sciences and research. So, look at the diversity in the group.

So, I am glad that you are able to come down to these decisions because this also is the very real life work where people with different skills are going to come together you have Shubhi who is form accessory design it is a beautiful team.

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Sr. No	Name	Category	Area of Interest
Team 2	Anshul	Architect, Set Designer	Mental Relaxation through VR Experiential Design
	Vibhuti	Engineer (Computer Science)	
	Pooja	Backend Engineer (CSE - Industry Experience)	
	Tito	Visual, UI/UX	

Then team 2 has somebody who is an architect, there is somebody who is the computer science engineer, there is somebody who is a backend engineer and there is somebody who is from visual UI UX.

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The more **different** and **diverse** you are, the better is the team going to be.

Again, very good team. The more different diverse you are the more better the team is going to be. Ideally when we form teams when we do it in let us say BETIC or something.

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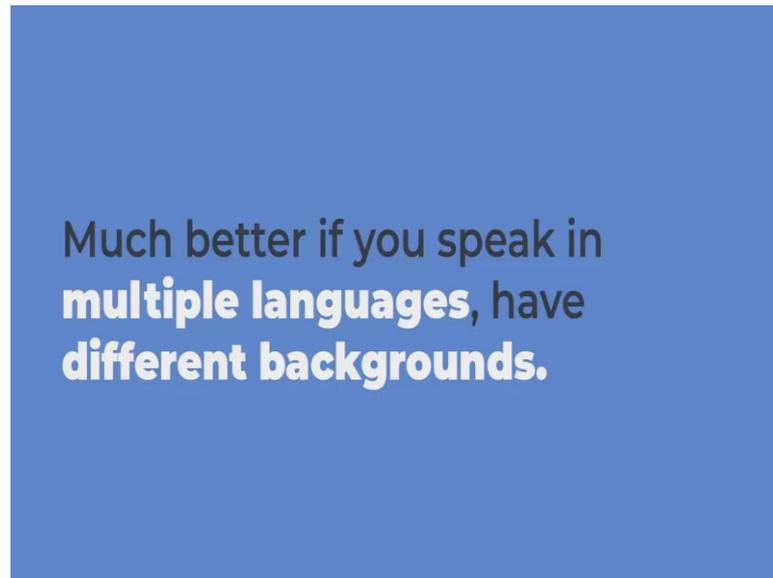
We also say try and see if you are having partners from different state, different city, different mother tongue be as interdisciplinary as possible, be as diverse as possible; maybe that is something which you can add later on columns that where do you all of you come from what cities do you come, what language mother tongue is there and that is even much better when you have different kinds of people coming together.

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Sr. No	Name	Category	Area of Interest
Team 3	Aishwarya	Architect	Learning Aid for Dyslexic children
	Twinkle	Textile Design	Manifesting mindfulness through tangible products
	Siddhika	BA Psychology	Aids for women travelling with infants/children in local transports
	Maithlee	Lifestyle Accessory Design	Designing easy learning tools for learning disabilities
	Chaitrali	Fine Arts	VR to understand different cultures

Team 3 also looks great architect, textile design, BA psychology, lifestyle accessory and fine art. Wow, how beautiful. I wish at least I have few of these people in our event

Professor Chakravarthi, I know you are smiling that is what would be required we have more or less like engineers biomedical very technical if we had these kind of aesthetics I think in all the quotations that would really help the teams to be more alive really this is these are vibrant these are good teams.

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Sr. No	Name	Category	Area of Interest
Team 4	Ved	Applied Arts	Game Design for kids (motor skills)
	Lakhi	Interior Design, Furniture Design	Painting walls with augmented reality for kids
	Nirja	Applied Arts	
	Mahima	Engineer (Electronics and Media)	

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Sr. No	Name	Category	Area of Interest
Team 5	Apurva	UI/UX Designer	Redesigning traditional game Pallanguzhi
	Vaishali	Communication Design	Board game design
	Archana	Computer Science Engineer	
	Archa	Architect	
	Arya	Animator	

Applied arts, interior design in team 4 engineer electronics and media. Team 5, Wow. UI UX, communication, computer, architect and animator. This is brilliant. I think imagine the kind of say if you have to have a start up and if you do hire these 6 people imagine the

kind of work and effort would have gone into doing the interviews, shortlisting their CVs, then finding the right kind of people.

Yeah. Yeah.

This would have been more difficult if you have to hire people. Now, these are your co-founders these are people that you are having some kind of vibration either towards the problem or the people itself.

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Sr. No	Name	Category	Area of Interest
Team 6	Anish	Architect, Visual UI/UX	Internet Of Things
	Siddharth	Product Design	
	Abhishek	Visual Design, Gamification, Engineer (CS), Motion Graphics	
	Tanya	Research + Gamification	

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Sr. No	Name	Category	Area of Interest
Team 7	Amir	Architect	Making backpack organization easy
	Gaurav	Lifestyle Accessories Designer	
	Karan	Product Design, UI/UX Designer	

So, team 6 again great going yeah all sorts all tick marks architect, product design, visual design, gamification great and that is really nice again that is a good balanced team. Yeah architect, lifestyle and product design I think you are still balanced, but three legged team is always slightly unstable.

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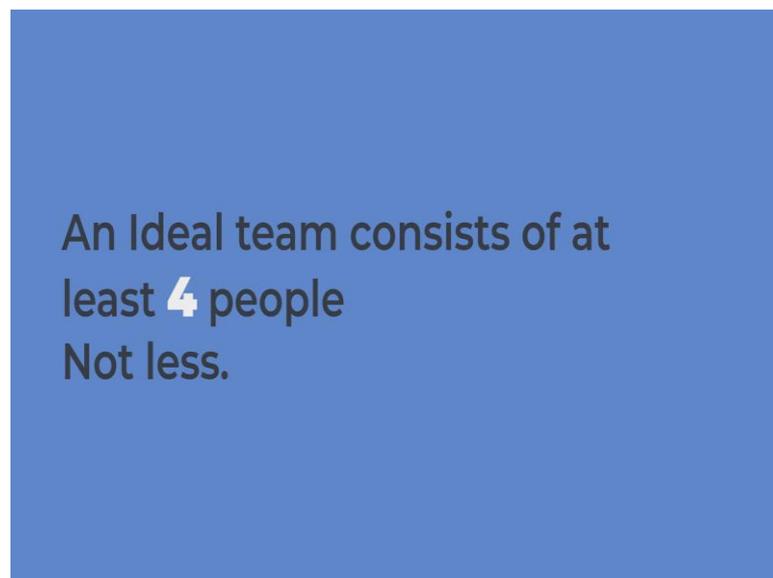
So, the reason being the moment one of you leaves for some reason is not available it is no more a team right two people is slightly difficult to be called as a team itself. So, that is why you need at least 4 kind of people to (Refer Time: 10:40).

What do you?

So, try and see if we can.

And then and then, what we mean by making backpack organization easy what do you mean that? Amir, Gaurav or Karan.

Sir. Basically, we have all (Refer Time: 10:52) backpack you know. So, and we are making backpack for different types of category.

Wow, lovely.

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Very good.

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Very good.

(Refer Time: 10:59) operating we may, but there is one problem that is not solved that is you know how you should organize your things in a backpack you know.

Oh.

That is always a problematic finding things inside the bag, you know.

So, backpack organization.

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Backpack organization is actually the task in hand not the.

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So, it is basically you know backpack manufacturing organization like you know. So, you are making a backpack company which is going to solve the backpack organization problem.

Yes. Yes, sir. Yes, sir

Nice.

Wow, that is very good.

Very good. Very well.

So, I think when you get your problem statement more adhering I am sure a lot of people will join Gaurav. So, ok.

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Sr. No	Name	Category	Area of Interest
Team 8	Shashwat	Animation, Toy and Game Design	
	Raghul	Film Making, VR	
	Vinisha	Communication Design	
	Sneha	Engineer (CS)	

Great. So, then team 8, animation toy, film making, communication if in even if you analyze all 45, I can say 45 different groups itself it is not like everybody is just repeating.

Yeah, it is fabulous.

The combination is also different.

Yeah. Yeah, it is a fabulous.

So.

Infact, our.

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IIT, Hyderbad Mdes is like very very open and we got diverse people coming in with the experience from industry and I did not tell you Rupesh they also pay lot of them do not have scholarship they just pay their own fees and they are coming to study.

Is that, wow.

So, it makes us more responsible.

Right, right.

To give them the best education and make them entrepreneurs and make them get their money back.

Hey, imagine even what you have this is one batch and you have 45 people even if you start these 10 companies you will be not job seekers or consultants only you are going to create products which will have industries by themselves plus you will have more people who are like you joining you from other sectors who are not as privileged.

Let us say, you are at least exposed to this environment there are other people who wanted to do design, but never were aware of a design course they ended up doing some mechanical engineering somewhere or some other course.

So, you could become a as in proper window or a door opening for them to express their ideas and product design aspects also. So, please imagine as in even if you start a company just 10 companies you could be job creators and these are high value job creators you are creating higher value job it is not like just run of the mill jobs that you are creating these are creative people they are all powerhouses that you can empower again.

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Sr. No	Name	Category	Area of Interest
Team 9	Sandra	Engineer (CSE), RPA Developer	Helping children understand toxic behaviour
	Mili	Interior Architect	CPTSD, Children's mental health awareness
	Srutinwita	Visual Art	Uplifting local/folk cultures and heritages of India
	Ananya	Production Design, Accessory, Research	
	Anirban	Engineer, UI/UX	

Again team 9, great combination from computer engineering to architect to visual art to product design to UI UX.

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Sr. No	Name	Category	Area of Interest
Team 10	Shubham	Aerospace Engineer	Fidgeting toys
	Akanksha	Experiential Design	Services/games/toys for interaction between college students
	Ria	Apparel Design	Skincare on the go/ UV protect apparel
	Senjuti	Communication Design, UXD and Research	Card games, Cycle borrowing and sharing app for IITH students
	Saurabh	Mechanical Engineer	Dashboard for leaves/permissions for going out

And beautiful team number 10, where I can see an aerospace engineer. Would really love to see aerospace engineer working with experimental design person with apparel and then communication design with an mechanical engineer this is not a traditional, let me tell you what is happening is not traditional this is not conventional. If you guys are able to come down to one particular problem if you decide nobody in the world can have such kind of combinations. So, please, please be aware of the power you already have ok.

Yeah. So, all you need to do is come to different kind of a problem statement do not worry this course if you really see again it is all about cooking, right. You learn how to cook does not matter what dish is what you are going to cook eventually after the course you can cook your own dish what you are getting (Refer Time: 14:09) journey right now.

So, you are just going to learn how do you prepare for ingredients, how do you prepare a recipe, how do you systematically put it together, what do you do first, how do you measure the temperature of oil, that is what is going to be part of this course. How do you do it balance. Once you do this you all are free go ahead cook the best dish that you want to do later on that is not a problem ok.
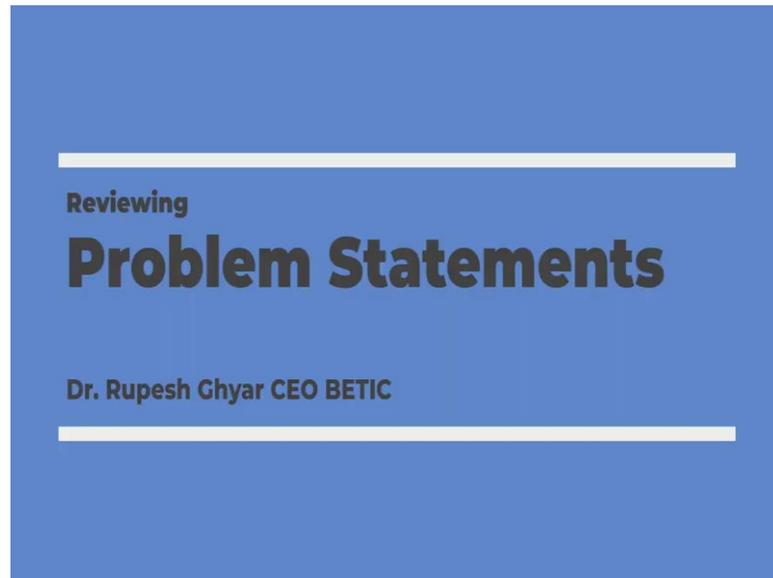
Even the problem statements area of interest what I would recommend is now do fill the other gaps like strengths do not leave it blank as in do that.

Yeah.

Effort extra effort of filling it because that is going to help you understand more job roles the hat you will wear. So, you will know that that person comes with that strength he is saying I am I have a strength in that thing. Areas of interest all are good even what you started product for blind or relaxation through VR, learning aids for dyslexic children, game design for kids with motor skills all good problems even the wall painting with augmented reality is good. Only one which I thought was slightly more generate and may be you already have it. Team 6's internet of things which is slightly.

Generic which Professor Chakravarthi mentioned may be.

You add more detail what is the persona, who is it for slightly try to define the segment or the industry or the area this is more like a platform technology you it is almost like saying Bluetooth, Bluetooth for what? So, that is not a problem unless you want to get into Bluetooth kind of alternate technology that is a different thing, but here internet thing would I would say suggest just add two three areas specific domains and then define the problem otherwise this is good to start with.

Team 8, has to put a problem statement put one problem statement does not matter how bad it is good it is put it out and then you can discuss later on put two three options then you can short list that is fine diverge and then converge back on one problem that is fine. Even card games, fidgeting toys good problems to solve with you will have a good area.

Remember
Put the entrepreneurship hat on

Ask yourselves you want to make a product or do you want to start a company? Do you have a **significant need**, are there **barriers** to **market**, are there **competing advantages** you have. What is your **value proposition**, is there a **series of products** you can build in? This helps **Customer Engagement**.

Also try to wear the hats that this is the entrepreneurship course do you want to make a product or do you want to make a company. Both are different things. So, those are two different aspects investor will say ok fine if you are going to eventually need investment, then say you are a good product designer, but this is not a company there is no business about it. So, that also has to be brought in thought in.

So, when you are choosing these areas please be careful that, is there significant need, are there barriers to market are there competing advantages that you have, what is the value proposition, is there a series of products that you can bring in that line. Because customer engagement is also one more thing which will come in picture.

Say if you design toys something for handicapped children your next design is going to be very difficult if you develop something for consumers because your market channel distribution channel would have been for one particular segment.

Try to be more **business specific.**

Be in one segment one area and build a
range of products in that area.

Not only should the product be good, the
business around it needs to be good as well.

So, try to be in one segment, one area and then develop products in that segment because that is what investors in the business would like that. I do not want to have acquisition cost of customer twice advertising to customers children differently, advertising for cricketers differently, that is going to be two different things ok.

So, when you choose that problem try to choose something which is business specific not product is good, but business is going to be good about it also ok.

Right.

Yeah.

But, yeah.

I think (Refer Time: 17:31).

Yeah, (Refer Time: 17:32) question cannot we do both like we are looking at the product also and we are forming a company too.

You can, but let us say I will give you an example fidgeting toy right.

Yeah.

If you see fidgeting toy only if it is one device it is going to be difficult unless you say fidgeting is an area stress relieving toys that is a good segment.

It is.

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Stress relieving toys for people who are work from home you have a category you have more than one column that can be brought in there is more business you can say if one does not work I have plan B.

Yeah.

Plan B, plan C or fidgeting toys for school kids and especially working professionals who are into sales or stock who are more in stress or doctors fidgeting toy different that is the segment that is the business one fidgeting toy is a product.

Yes sir. So, sir for example, we are thinking of different crafts the local crafts reviving them working on them. So, maybe it can come into business because we will be doing.

(Refer Time: 18:32).

Craft design intervention in that.

Yes.

Helping the artisans.

Yeah, yeah and we will also allot you mentors we will allot you some you know nice focus areas there is this company which some people have started this sector it is fabulous area again which is going to come.

Yeah.

So, typically.

Ok.

When you just to do a product you may have to license it and that is not a, there is a mode of entrepreneurship in it that saying we will do 10 different products in 10 different segment, but our business is about making 10 different product every 6 months or every year we are not into the sales and distribution of that.

So, you are limiting yourself to the risk of product development which is limited you are and you are need to be somebody else is going to do marketing somebody else is going to go distribution then you are looking at a licensing model your business is licensing itself your business is not product.

Ok.

Making and selling. So, you have to identify what segment you are in there.

Ok, sir.

Right, then bye have a good.

(Refer Time: 19:26).

Evening.