PLASTIC BLOCKS IN INFRASTUCTURE

Project Report

for

Design Thinking and Innovation (20UC1203)
2021-22 & EVEN SEMESTER

by

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Overview of Design Thinking Process :

Design Thinking is a problem-solving methodology that focuses on understanding users' needs and creating innovative solutions to meet those needs. It involves a human-centered approach to problem-solving that is highly collaborative and iterative. The Design Thinking process typically consists of the following stages:

1. Empathize: This stage involves understanding the users' needs, wants, and pain points through observation, interviews, and other research methods. It's essential to build empathy with the users to understand their perspective and how they approach the problem.
2. Define: In this stage, the problem is defined, and the design challenge is formulated based on the insights gained from the empathy stage. The problem statement should be framed in a way that is user-focused and specific.
3. Ideate: This stage is about generating as many ideas as possible to solve the problem. There are several techniques for idea generation, such as brainstorming, mind mapping, and SCAMPER (Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, Rearrange).
4. Prototype: In this stage, the ideas are turned into tangible prototypes that can be tested and evaluated. The prototypes should be simple and low-fidelity at this stage to enable quick iteration and testing.
5. Test: In this stage, the prototypes are tested with users to gather feedback and validate assumptions. The feedback is used to refine the solution and make improvements.

Problem Statement :

Infrastructure and sustainable development .
We are aiming to solve problem of heaps of plastic waste generating in landfills & reducing the cost of making infrastructure where natural calamities are very often.
One of the main advantages to using plastic as a construction material is the cost to produce and use
plastics – it is less expensive than most other materials. It is generally cheaper and can easily be
produced in much larger quantities than metal. This is the main reason that plastic is commonly used
in construction. The amount of energy it takes to manufacture plastics is far fewer than the amount it
takes to produce metal
As there is excess plastic is used these days, where it take to decompose, its an
initiative to recycle plastic.

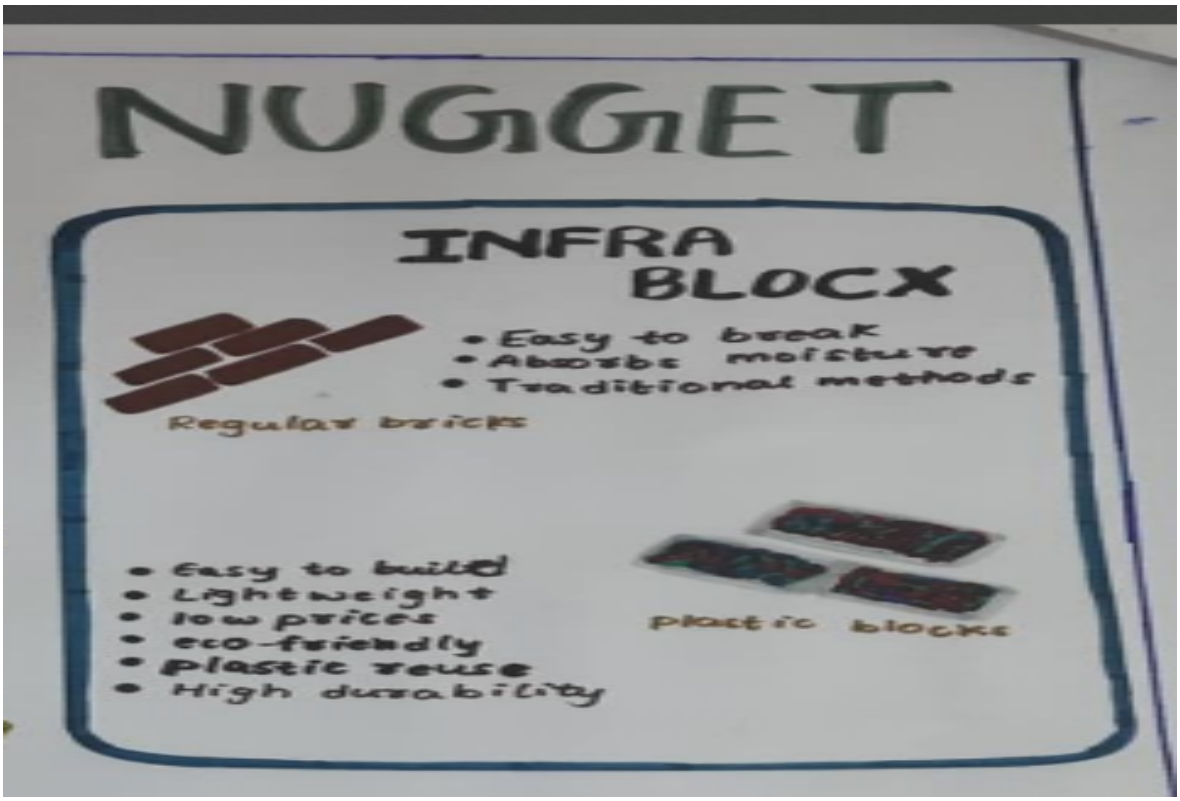
Empathy :

Field survey conducted through empathetic research **:**
As we have conducted field we got out with the insights and The main targeted customers are people who are living in the areas where there are plethora of natural disasters like Windstorms, Lightening, Snowstorms.

Insights Observed :

> As per the environment, it's a good initiative to reuse plastic blocks in constructions.
> According to the theme, this helps the society to build a to be plastic free environment in future.
> Approximately affordable to the people of all categories, as you people are reusing plastic, with low investment
> As plastic is a free material which catches fire easily there could be a chance or short circuits/shocks. but as you are saying thousands of plastic is used and compressed and then used as block , as plastic is a bad conductor of electricity its not that easy for electric shocks .
> Even if destroyed, it takes just a couple of days to build in less time construction and eco friendly

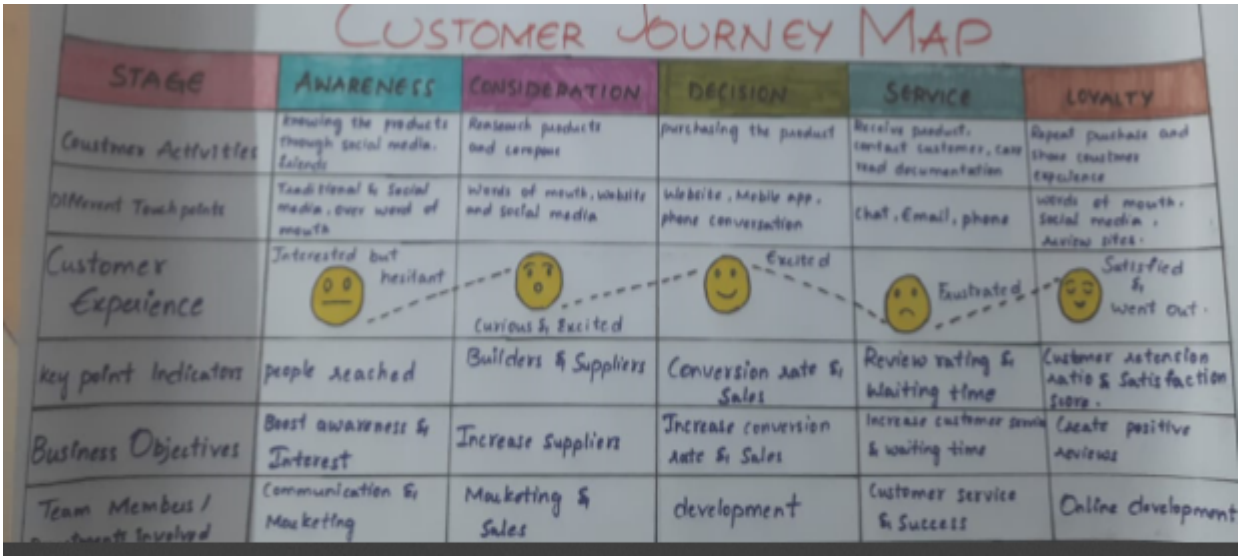
Nugget:



Analyze:

Persona:
Name: Supply Sarvesh
Age: 28
Place: Tadepalli
Martial Status: Single
Profession: Builder, raw material supplier
Philosophy/motto: To maintain sustainability in construction.
Experience: Had an experience over 8 years in this field, and supplied over 2 Lakh tons of plastic blocks through this career

Customer Journey Map :



POV Statements and Questions :

I am builder, I want my workers and assistants to work properly and effectively. So that I have to make my workers to work more hardly to improve their wages

As the builder is having a low budget, how could he manages the wages of the daily workers ?

I am a plastic recycler.
I want the earth do not get contaminate or decomposed with plastic .So, that I have to carry out the plastic in my surroundings and develop it on to the world.

How will you promote your ideas and visions?

Defining the needs of a user refers to identifying the specific requirements, preferences, and expectations of an individual or group of individuals who will use a product or service. It involves understanding the user's goals, desires, and challenges, and designing a solution that meets their needs and delivers a satisfying user experience.

In order to define the needs of a user, it is important to conduct research through methods such as user interviews, surveys, user testing, and data analysis. This can help to identify common patterns, pain points, and areas where improvements can be made. The information gathered from this research can then be used to inform the design and development process, ensuring that the product or service meets the needs of the target audience.

Ideate :

Rapid Estimation form & Solution concept form :
We will collect marine waste, compress and give a desired block shape and distribute it to people in Tier 3 areas

Benefits:

1> Reusage of marine plastic waste
2> Purification of water bodies
3> Highly reduces restoration cost of houses destroyed by natural calamities
4> Promising replacement of concrete and wooden houses

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Conclusion and frame work :

The use of plastic blocks in infrastructure has become an increasingly popular solution due to its durability, affordability, and sustainability. These blocks are made from recycled plastic and can be used for a variety of purposes such as building walls, roads, and even bridges.

One of the key advantages of plastic blocks is their resistance to weathering and erosion. They are able to withstand heavy loads and can be designed to be interlocking, which makes them easy to install and maintain. Additionally, plastic blocks are lightweight and can be easily transported to different locations, making them a great solution for temporary infrastructure needs.

In terms of sustainability, plastic blocks are an excellent option as they are made from recycled materials and can be recycled again at the end of their useful life. They are also resistant to chemical degradation and can last for several decades, reducing the need for frequent replacements.

However, there are also some potential drawbacks to consider when using plastic blocks in infrastructure. For example, they may not be suitable for areas with high temperatures as they can become deformed or lose their strength. Additionally, the production of plastic blocks requires energy and resources, which can contribute to greenhouse gas emissions if not properly managed.

To successfully implement the use of plastic blocks in infrastructure, a framework must be established that addresses these potential drawbacks and ensures their sustainable use. This framework should include considerations for the selection of appropriate plastic types, manufacturing processes, installation methods, and end-of-life options. Additionally, it should involve collaboration between stakeholders such as designers, engineers, contractors, and policymakers to ensure that the use of plastic blocks aligns with broader sustainability goals and objectives.