

THE MEKATILILI PROGRAM

School:



Facilitator:

INTRODUCTION



Picture this...

Just like Archimedes and his infamous *Eureka!* moment, you too have a similar situation, whereby you have a awesome idea that could solve one of your communities most pressing issues.

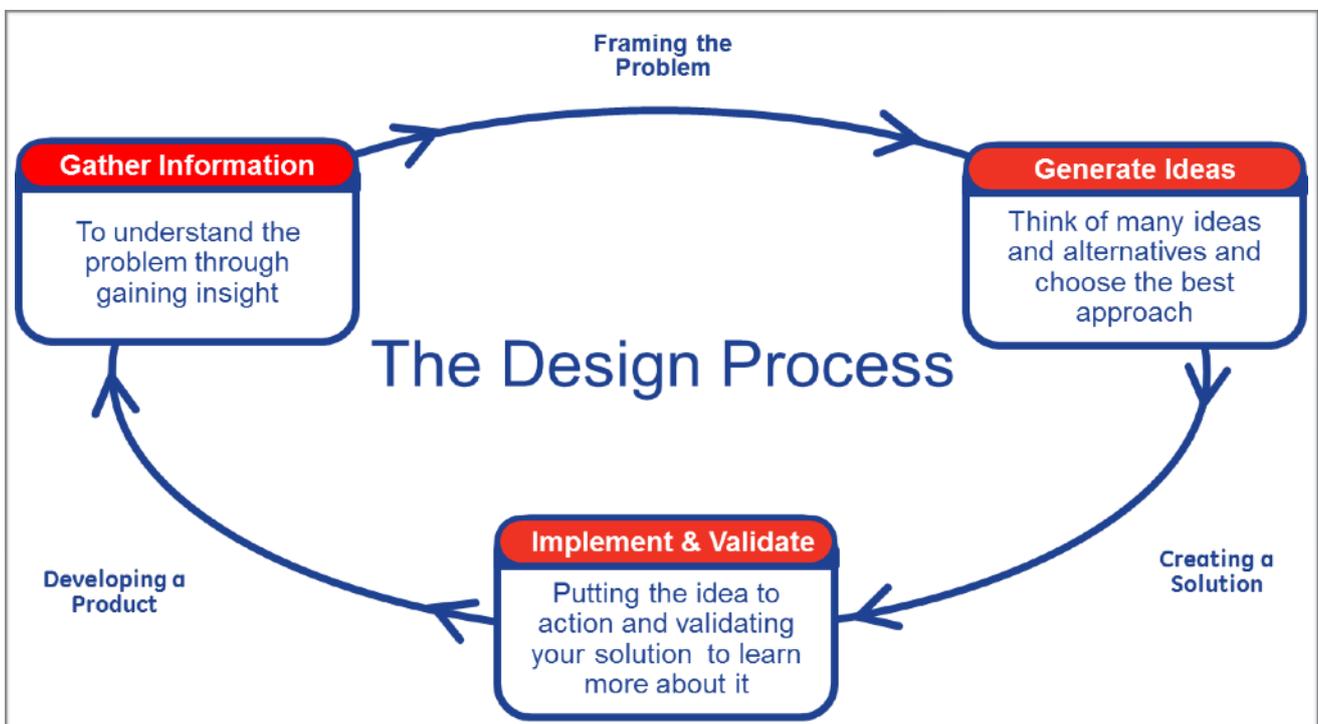
Now you think to yourself, 'I have this great idea, but how do I turn it into a reality?'

The answer is simple: **The Design Process**

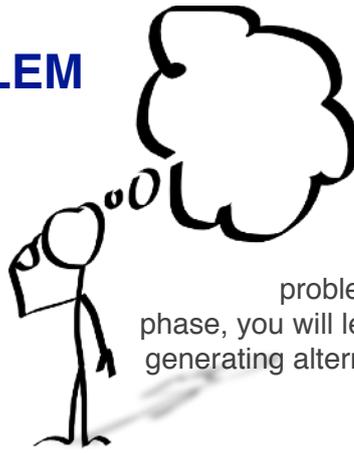
What is the Design Process?

The design process is a methodology that helps you develop a solution to a problem. It is thought of as a series of connected phases with certain stages being repeated.

The Design Process



FRAMING THE PROBLEM



Understanding and clearly defining the parts of the design process. In this and synthesising information for **problem framing statement**.

problem is one of the most important phase, you will learn techniques for gathering generating alternatives in order to produce a

To frame the problem, the following steps need to be followed.

Stakeholder Analysis	Gathering Information	Synthesise Information	Problem Framing Statement
<p>Understand all the key players who are affected by the problem.</p> <p>A stakeholder is any person, group or institution that is affected by or has interest in your project.</p>	<p>To gain insight into the problem.</p> <ul style="list-style-type: none"> • <i>Observe</i>- By shadowing a person as they face the problem • <i>Ask</i>- Interviewing the users about the existing process and listen carefully • <i>Try</i>-Try the process yourself! 	<p>Sharing information with team members and expressing thoughts and experiences after gathering information.</p>	<p>It is defined as selecting the area of a problem that is worth solving. They are simple, clear and informative. They include a summary of the problem, the solution and innovation.</p>

CREATING A SOLUTION

Good job! You have now been able to clearly define your design problem. The next step is to concentrate on thinking of ideas for solutions.

But you really need to think of the **design requirements** before you start designing solutions. So think about the following:

- **The current state of art:** what else exists that does the same thing you want to do?
- **The user needs and the requirements for performance of the device:** what size should it be? How much should it cost?
- **The context in which the device will be used:** Will it be used indoors or outdoors? Mostly by women or men? Year-round or only in the rainy season? Will it be owned by a group or by individuals? Will it be portable or stationary?
- **Related technologies:** What technologies perform similar tasks? What machines work in a similar way?

Let the *Brainstorming* begin!



Rules

Defer judgement: Don't dismiss or criticize any ideas

Build on the ideas of other: no 'buts', only 'ands'

Encourage wild ideas: embrace the most out-of-the-box notions because they can be key to innovative solutions

Go for quantity: aim for as many ideas as possible

Be visual: use sketches or models to convey your ideas

Stay focused on the topic

One conversation at a time: no interrupting, no dismissing, no disrespect, no rudeness

Be optimistic!

At the end of your session, group your ideas together into similar approaches and write a brief summary of each approach. As a team, choose between three and five approaches that you think are worth following up on. Sort through the ideas and choose the best approach. It is important to judge as objectively as possible.

DEVELOPING A PRODUCT



It's time to turn your ideas into reality through **fabrication**. Generally one begins by building a **proof-of-concept prototype**; just to be sure it could work. Your first prototypes can be very rough, you just want to see if your ideas will work when assembled together. As you go through more design cycles, you will refine your ideas and your prototypes.

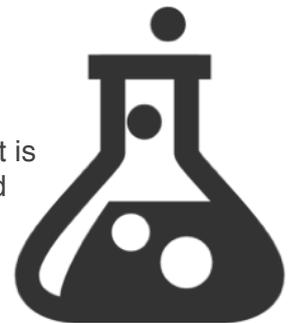
In most prototypes, the parts are typically not made in the same way or using the same material as the final product, but as you get

closer to your final design, you will use materials and methods that are closer to the final manufacturing processes.

Develop a work plan so that you and your teammates can work together effectively and efficiently.

TESTING & EVALUATION

Once you have built a prototype, it is necessary to test and see if it does what it is supposed to do. Now is the time to go back to the design requirements outlined in the early stages of the design process and verify that the device satisfies the requirements. As part of this exercise, think of how your device can be improved. Are there ways you can make it cheaper, faster, better?



Proof of Concept Prototype

At the end of this phase, you should have a prototype that performs the way you want your final product to perform, although it might be a bit rough and look different from what you envision for the final version, but it's okay,

Remember the design process is iterative. Continue to look and utilize past exercises. Your growing understanding of the user, sector and technological needs means that how you interact with the challenges will change.

Getting User Feedback

Now that you have completed your prototype and tested its technical performance, you also need to see how it works when real people use it. This is very valuable information as you move from a prototype to a product. Feedback sessions give you the opportunity to explore the market potential of your device as well as its technical performance.