# CESA STEM Weather Station Challenge

Team Journal

Design Thinking is a process that can be used when trying to solve real world problems. Often used by Designers, Engineers and other Creative fields, anyone can follow this process when problem solving. Use this Team Journal to use the Design Thinking process when creating your school's Weather Station.

Design Thinking

https://dschool-old.stanford.edu/
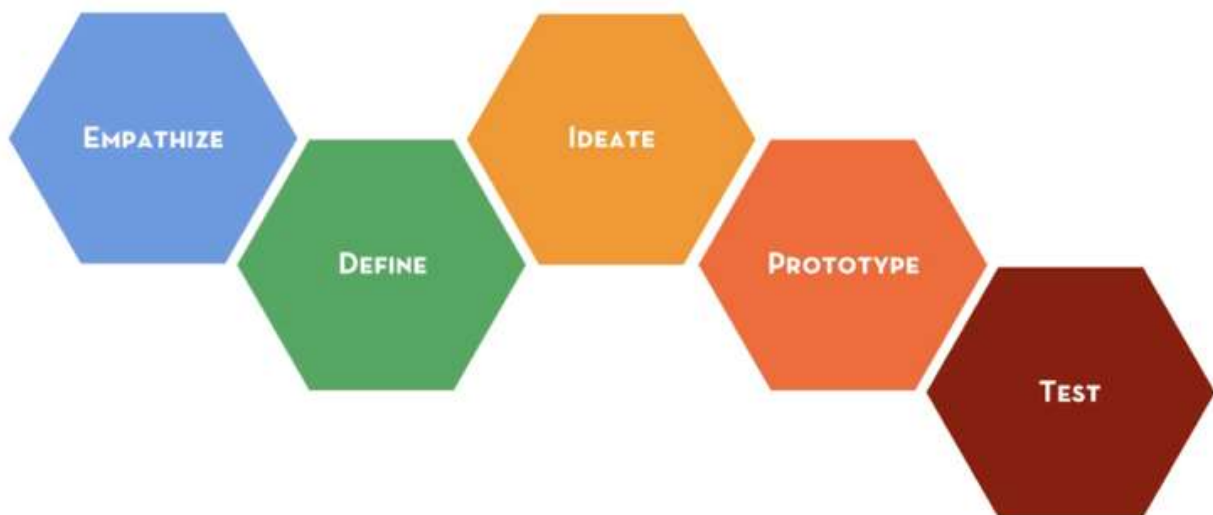
Empathize

As a designer, it is important that you understand what and who you are designing your product for. Imagine you are an architect; how could you design a house for your client a house without first asking what is important to them? The house for a large family living in the country will be different than for grandparents living in the city.

In this project, you are designing a Weather Station for your school to better understand the climate of you community.

We can gather information in the Empathize stage by observing, listening and engaging (interviewing) with client. Use the questions below as a template or to guide your Team through the Empathize stage of the Design Process.

Watch and Listen: *Watch the videos from the Bureau of Meteorology and Core Electronics about Climate Science and Coding a Microcontroller. What questions do you have about how to make a Weather Station?*

Observations: *Write down observations from your school. Think of your environment, is it cold, hot, dusty or wet? Is security of the weather station important?*

Engage: *Who will use your Weather Station? Student or Teachers? Are they good with technology? Interview someone who may use the Weather Station, find out wat would be important for them.*

Define

Now that you have taken time to understand how to design and make a Weather Station and who it is for, it is time create a set of requirements or criteria that your design must meet. For example, you may have established that your Weather Station must be big enough to fit the Arduino micro-controller.

Use the table below to list a set of Criteria to define if your design has been successful.

Criteria 1	The Weather Station housing must be big enough to comfortably fit the Arduino micro-controller.
Criteria 2	
Criteria 3	
Criteria 4	
Criteria 5	
Criteria 6	

Ideate

*The Ideate stage of the Design process is your opportunity to work creatively. Designers rarely create their first idea but brainstorm **several ideas** building on the knowledge gained on the Empathize and Define stage.*

*Use this stage to **ideate** different solutions for the final **housing** of your Weather Station. Use the space below to paste photos of your Ideate stage, considering using a process of **Brainstorming**, **Sketching** and **Scaled Drawing**.*

IDEATE

Brainstorming

Sketching

Scaled Drawing
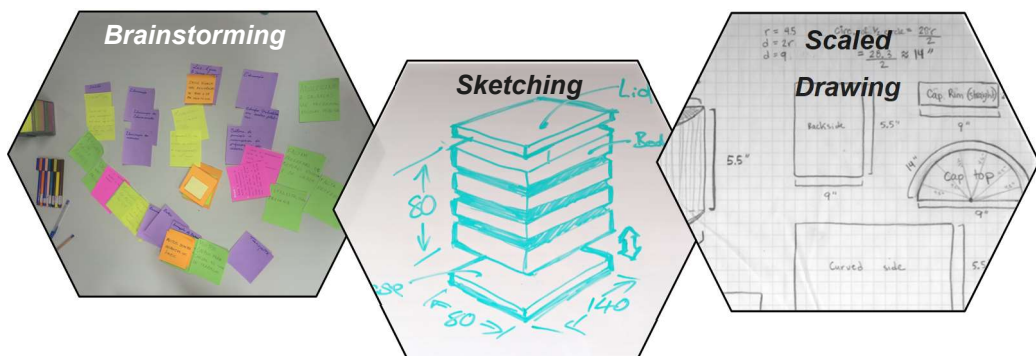
Prototype

This stage allows the designer to build a design chosen from the Ideate stage. Which design best meets the criteria set in the Define stage?

Prototyping allows the designer to test their ideas. The type of prototype you build will depend on what you are designing. The architect mentioned earlier would build a scale model, a web designer may just build the home page of their website.
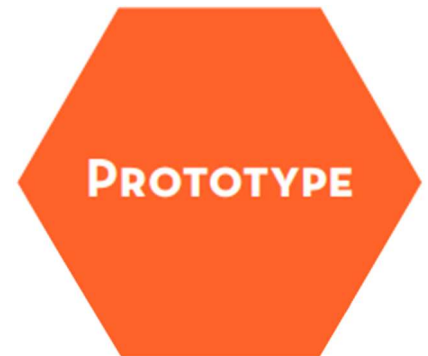
In this project, you will need to build a functional Weather Station with an Arduino Micro-Controller. The housing can be built however you wish, consider the tools you have available and the environment that it will be tested in.

Add an Image below of your Prototyping process, including an image of the final model.

In this project, use the table from the Define stage to evaluate your design.

	Criteria Description	*Feedback*
Criteria 1	*The Weather Station housing must be big enough to comfortable fit the Arduino micro-controller.*	*The micro-controller fits within the housing, but the hole needs to be bigger for the USB cable.*

Example of Testing against the Defined Criteria

Test

All designs need to go through a Test mode. A designer will seek feedback from others about how well their design Tests again the criteria from the Define stage.

The Test stage is not a measure of well you have done, like a score in an exam, but an opportunity to refine your design. Designers often revisit previous steps of the Design process after the Test phase.