

KWR Chart

Idea one: floating solar panel turtle

What do we know about the problem?

Our earth is burning too much fuel which instead of using fuels we should use more energy that doesn't harm our environments as well as animals.

What do we need to figure out?

- How to make something float
- How much pound can the water take before sinking
- How can something move smoothly on water in case of waves
- What would be the price
- How can we make something waterproof

What resources do we need?

3D printer
Solar panels
Wires
Batteries
Plastic
Maybe digital items

Idea Two:Drones with robot hands

What do we know about the problem?

There are some dangerous projects that must be done in high air and by using humans, it is very pricey as well as there is a certain amount of risk to the person completing this.

What do we need to figure out?

How much would the overall project cost?
How can we install both a robot arm and a camera at the same time?
Would the drone be able to carry that much weight (how much weight can drones carry)?

What resources do we need?

We would need a drone and create a robot arms which would consist of motors in order to move. We would also need a camera in order to see what is happening (what stage the robot hand is doing). In addition, we would need remote controls that control, one the drone itself and another for the robot arm.

Idea Three: Amphibious Robots

What do we know about the problem?

Robots that are amphibious are hard to come by and robots dealing with water is rare, so creating a robot that has transformable flipper-leg composite propulsion mechanisms can adapt various terrestrial and water environments.

What do we need to figure out?

- How can we get the robot to work under water
- What materials are needed to build this robot
- How will we have good lens underwater
- How can we control robot underwater

What resources do we need?

- Cameras
- Robot (motors)
- Some controllers
- Legs
- Metals

Planning

Project Title/Topic	Solar panel turtle
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Goal	
Goal: Formulate an inquiry question or statement that clearly shows your goal, based on your personal interests. Be concise but specific and clear.	The goal is to be able to create a small solar panel on water (that floats) in the shape of a turtle
What is the purpose of the goal? What do you hope to achieve?	The purpose of the goals is so that we can store energy in batteries but on water because solar panels can heat up and by using water we can cool it down while being able to have batteries that contain energy. Lessen the burning of fuels.
What prior learning and subject specific knowledge is relevant to the project? How does the project relate to an academic class you are currently enrolled in or have taken?	This would have to do a lot with engineering class as it would require us to CAD for the floating object as well as connect to CP since we need to think globally which involves the ideas of environment.

Global Impact	
Identify how this will impact the community/world:	This would help the community save more money and lessen the burning of fuels while being able to have energy.

Product/Outcome	
What product/outcome will you create in response to the goal, global context and criteria?	The product that will be created will be a 3d turtle and inside the turtle will be 3D solar panel parts.
Form: Function: User/Audience: Costs:	Prototype, physical prototype Absorb heat energy and convert it to usable energy as well as float on water For anyone that wants to save the environment Less than \$50 dollars

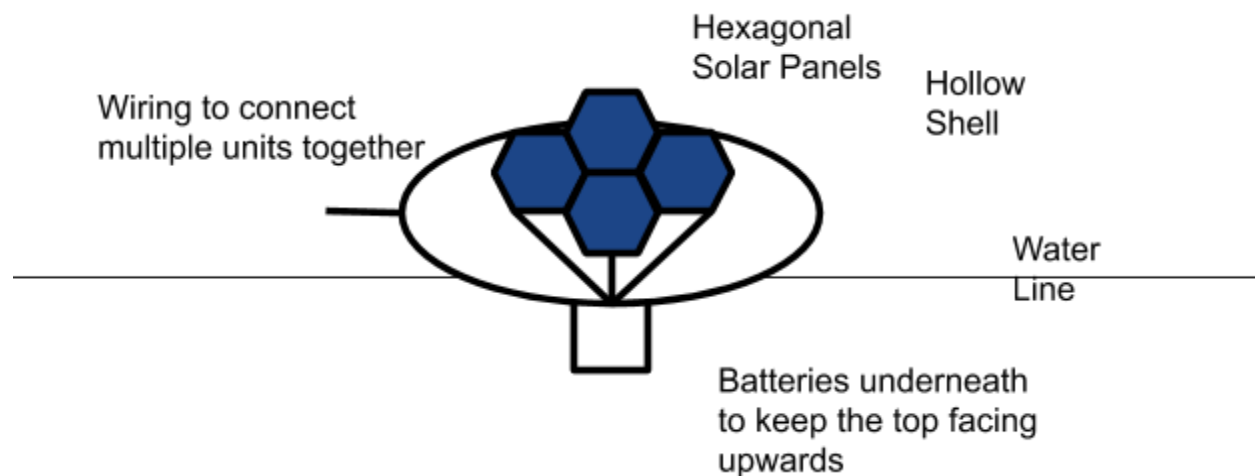
Research	
What will be the focus of your research?	The focus will be online since there is a lot of information regarding things like solar panels on water, how to connect solar panels to batteries etc.
Media: (Includes books and articles, etc.)	NONE
Surveys: Would surveying your potential audience be useful?	Not really in this case since we are focusing on how can we build this and we already identify this as a problem as the solar panel cannot physically touch the water and must be protected from things like waves
Interviews:What human resources can you tap into for your project?	I could ask my teacher Mr. C because he tends to have wonderful ideas regarding improvements and nows coding
Other sources for research?	Online research

Specifications

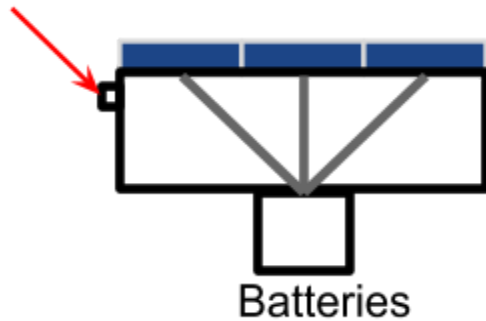
Prompts	Student Designed Criteria	Test or method of evaluation
Form: What will your project look like? What materials will you use? What size will your project be? What tools will you use? How will you assemble your project?	My team project will be built as a turtle shaped prototype which the top will be a solar panel. We will use 3d plastic to 3d print, batteries, wires and solar panels. Our goal is to create prototype that can stand all sorts of problems such as waves or it running on shore. Use 3d printer to assemble	I could toss it at lake huron which is nearby my highschool
Function: What is the purpose of your project?	It is supposed to be able to absorb water and float on water as well as power batteries	Use the school's nearby lake to test but also tie a string around it
User/Audience: Who is your project for?	Our project is for people who want to save our planet earth.	Create a survey that ask what type of people would prefer to

<p>What needs do you expect your project to satisfy? Where/why will your project be used?</p>	<p>We need to make it float with all the heavy things such as solar panels as well as batteries. The project will be used on large bodies of water such as oceans or lakes to help absorb energy as well as advertise to save the planet earth.</p>	<p>use this prototype</p>
<p>Costs: How much will your project cost to make? *How much will you sell it for? *How much profit could be made on your item/project?</p>	<p>For this project, we want to have a budget of less than \$ 50. I want to sell it for 15 dollars since solar panels are around 10 dollars each. I could make about 5 dollars in terms of profit.</p>	<p>Try selling it for less than 50 dollars. In a survey, ask consumers what price sounds reasonable. If the price is too low, we will discard it.</p>

Concept Sketches:



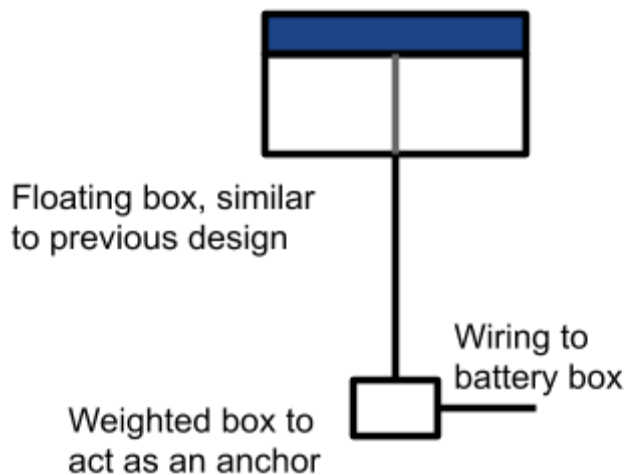
Connector
for multiple
units



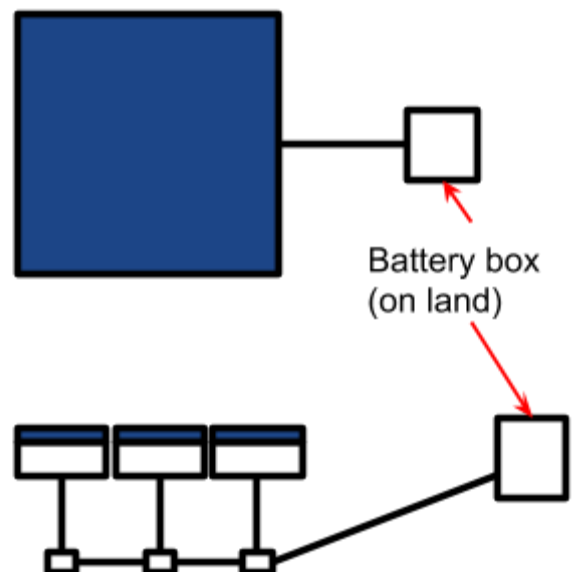
Top View

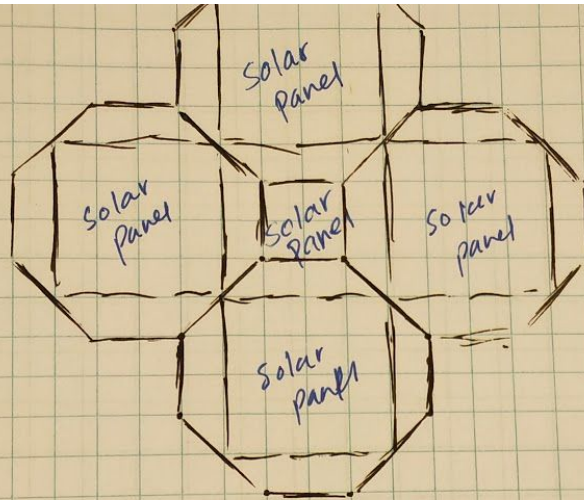


Box shape to allow for
more efficient space use
when connected to other
units

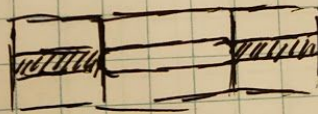
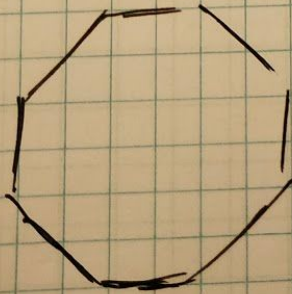
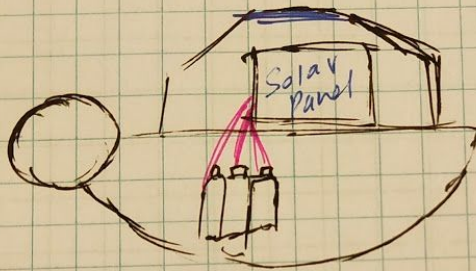


Top View





hexagon is 3D foldable



(slidable pieces)

Decision Matrix:

Score 1-10 for each category	Space Efficiency	Cost	Difficulty	Originality	Total
Design 1 / J	8	8	6	9	31
X	6	8	6	9	29
Design 2 / J	8	8	6	6	28
X	8	8	7	7	30
Design 3 / J	7	8	7	7	29
X	8	7	6	6	27
Design 4/ J	7	8	8	6	29
X	8	7	7	7	29

Design Constraints:

The design must fit in a 3ftx3ftx1ft space

The design must be able to float on water

The design must produce electricity when exposed to sunlight

The electric components must be protected from water

The batteries must be able to store the charge from the solar panels over the whole day

Progress Checks:

Progress Check Form 1

Team Members:

Category 1: Goals

Projected Date:

Final Score:

What do you want to have finished for your next Progress Check?

- Produce sketches of possible designs
- Decide on which one with a decision matrix (Criteria are space efficiency, cost to produce a prototype, difficulty to produce a prototype, and originality)
- Make a basic CAD model
- Produce “working illusion”
- Create design constraints

Category 2: Tasks

What tasks are each group member performing to achieve the above goals?

Member 1: Jessica	Member 2: Xavier
<ul style="list-style-type: none"> • Create decision matrix and criteria • Build the working illusion • Work on CAD models 	<ul style="list-style-type: none"> • Produce three sketches • Create criteria • Create design constraints • Work on CAD model

Progress Check Form 2

Team Members: Xavier, Jessica

Projected Date: 2/14

Final Score:

Category 1: Goals

What do you want to have finished for your next Progress Check?

- Finish creating the prototype
- Test the prototype’s ability to float and generate power
- Complete the Tri-fold
- Preparing to make the video

Category 2: Tasks

What tasks are each group member performing to achieve the above goals?		
Member 1: Xavier	Member 2: Jessica	Member 3:

<ul style="list-style-type: none"> • Bring some of the necessary parts to finish the prototype • Produce some of the slides/cutouts for the tri-fold • Test the prototype • Work on creating the presentation script 	<ul style="list-style-type: none"> • Bring some of the necessary parts to finish the prototype • Produce some of the slides/cutouts for the tri-fold • Build the prototype 	
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Progress Check Form 3

Projected Date: 2/21

Team Members: Xavier, Jessica

Final Score:

Category 1: Goals

What do you want to have finished for your next Progress Check?

- Finish video script
- Produce and upload video
- Create plans for the next prototype
- Improve Tri-fold

Category 2: Tasks

What tasks are each group member performing to achieve the above goals?

Member 1: Xavier	Member 2: Jessica	Member 3:
<ul style="list-style-type: none"> • Film the video • Finish creating the video script • Create plans for the next prototype 	<ul style="list-style-type: none"> • Upload the Video • Work on the script • Create plans for the next prototype • Work on trifold at home 	