

A scenic view of a beach with large rocks and a blue sky with clouds. The beach is wide and sandy, with several large, dark rocks scattered across it. The ocean is visible in the background, with waves breaking on the shore. The sky is a clear blue with some light, wispy clouds. The overall scene is bright and sunny.

HUMAN IMPACT ON ENVIRONMENT

Engineering Solution: Protect & Monitor

THE PROBLEM:

EQ: How can we monitor and protect our environment?

Each organism within an ecosystem interacts with and affects the ecosystem. The changes caused by the interactions can be monitored to evaluate if certain behaviors are harmful or beneficial to the ecosystem.



THE CHALLENGE:

You are an environmental scientist working for Oregon Department of Fish and Wildlife. You want to find out how humans are impacting the environment in/around our coastal town. It's your job to design a system that will monitor (watch) the effects of human activities on a local marine ecosystem (choose sandy seafloor, rocky reef, or tidepool).

In your monitoring plan, please (1) write a thorough description of the ecosystem including the biodiversity; (2) identify how humans interact with the identified ecosystem (give both positive & negative impacts); and (3) provide a method of measuring and monitoring the impact of human interactions with the ecosystem.

Choose a local ecosystem you'd like to monitor for human impact:

SANDY SEAFLOOR



The seafloor can be a place commercial and recreational fishers take fish, and it can also be visited by tourists scuba diving. Oil refineries might also drill into the seafloor for fossil fuels. How would you monitor and protect this ecosystem?

TIDEPOLS



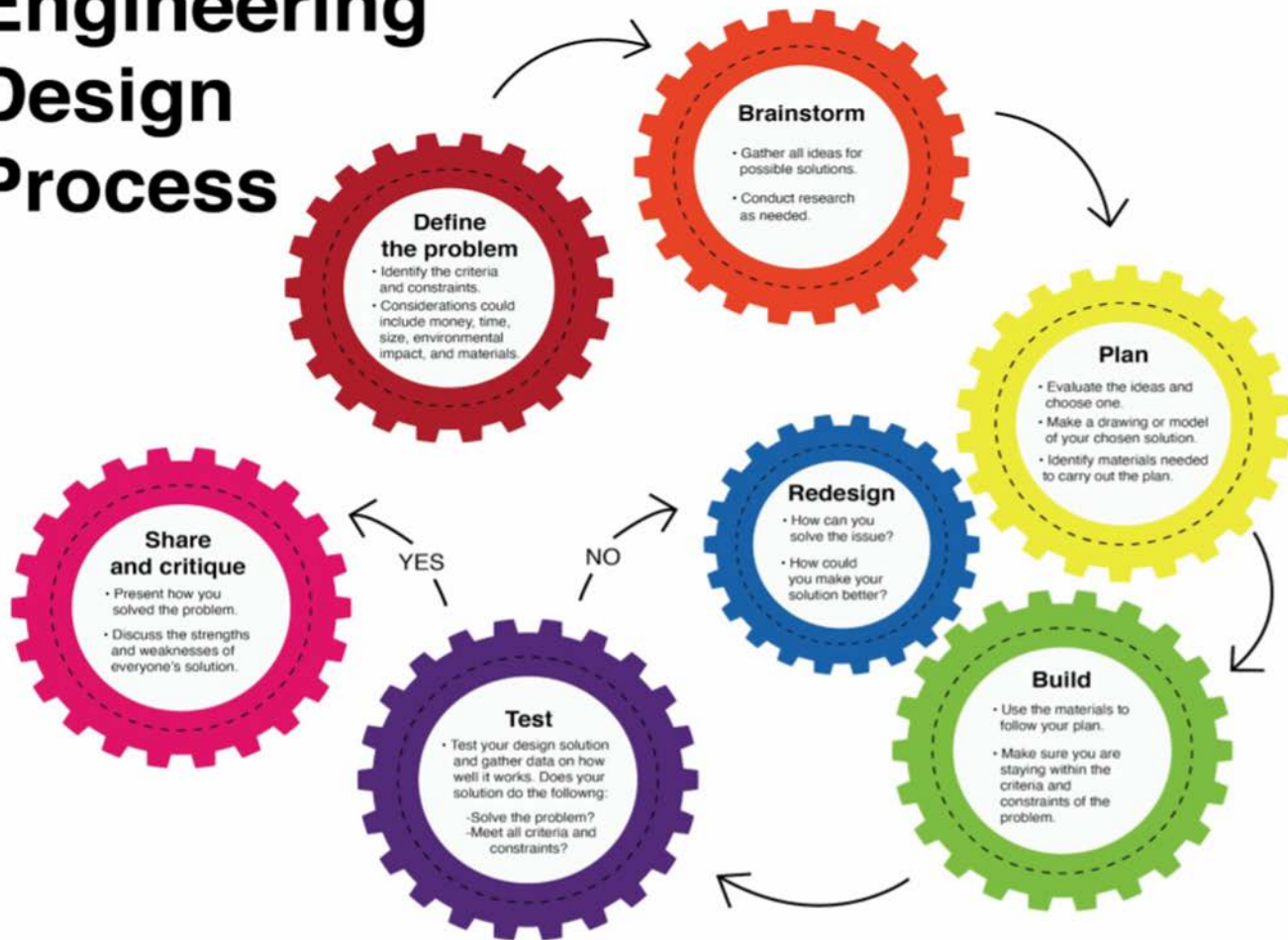
Tourists visiting tidepools can negatively impact the ecosystem due to damage or pollution. However, visiting tidepools is important for learning about the ecosystem. How would you monitor & keep our tidepools safe?

ROCKY REEF



The rocky reef is a place humans enjoy fishing for rockfish or diving to photograph them. Overfishing or too much tourism could impact the health of this fishery. How would you monitor and protect this ecosystem?

Engineering Design Process



DESIGN REQUIREMENTS:

1. Create a diagram of your monitoring system
 - a. Use paper/pencil & add a photo or,
 - b. Use an online drawing tool like Google Drawings
2. Your system must be able to collect **visuals** & **data** (information & numbers)
3. Incorporate the use of technology to monitor a habitat (cameras, drones, satellites, census data collected by a researcher)

The visuals & data must be able to measure the impact of human activities.

DESCRIBE THE ECOSYSTEM INCLUDING THE BIODIVERSITY:

What ecosystem did you choose?

What species (plant & animals) live here?
Are there any threatened or endangered species?

Photos/visuals can go here

HOW DO HUMANS INTERACT WITH THIS ECOSYSTEM?

What are some positive and negative impacts from humans in this area?

Photos/visuals can go here

CREATE A METHOD OF MEASURING & MONITORING THE IMPACT OF HUMAN INTERACTIONS WITH THE ECOSYSTEM.

Describe your monitoring system:

Add a photo or diagram here

Are there any negative effects of using this monitoring system on the habitat?

Are there any constraints to your design (cost, size, etc?)

POSSIBLE RESOURCES

[How ODFW scientists monitor & protect](#)

[Tidepools & Oregon beaches](#)

[Tidepool species](#)

[Oregon's Commercial Fisheries](#)