

Environmental engineers are tasked with protecting and improving the environment for the betterment of humanity and future generations. They develop new technologies, equipment and processes that control and clean up pollution and contamination.

Throughout this Expedition, you will LEAD YOUR LEARNING by fully engaging with the resources and activities. You will be asked to -



- **REFLECT** about your skills, learning goals, and purpose
- **STRETCH** your knowledge and skills through active learning
- **INNOVATE** and iterate solutions for real-world challenges
- **SHOWCASE** your innovations and learning in a dynamic way

We encourage you to utilize our [Expeditions Idea Book](#) as you navigate this Expedition as a resource and space to get your creativity flowing, organize your ideas and research, and share your innovations and reflections.



Every so often you may see this briefcase icon. That indicates an opportune time to have a conversation with a mentor or local business leader to discuss industry trends, ideate solutions, solicit feedback, and/or present your project. (Speak to your educator if you need support making contact.)

## REFLECT

As you watch [the video](#), think deeply about these questions:



- What part of their story is similar to yours?
- What interests you about their journey, career, or role?
- What else would you like to learn about environmental engineering?

First, meet Jasmine Walker, an Environmental Engineer at GHD, working on various sustainability and water quality projects. She'll share what she does on a daily basis and why she thinks it is important to get involved in Engineering.

## WHY A CAREER IN ENVIRONMENTAL ENGINEER?



Environmental Engineers protect and improve the environment for the betterment of humanity and future generations. They develop new technologies, equipment and processes that control and clean up pollution and contamination. Environmental engineering efforts include reducing air, water and soil pollution, reversing existing damage, recycling and much more.

The salary potential in this industry is quite significant! Check out the these statistics for careers in Environmental Engineering:

**\$94K+**

median annual wage

**3,400**

project yearly job openings through 2031

**4%**

projected job growth through 2031

*Whose expertise can you tap into to learn more about this career? Could they participate in an informational interview with you and your peers or serve as a mentor?*



## OPPORTUNITY ALERT!

**nfte!** WORLD SERIES of INNOVATION

Want to share your ideas for a chance to win some \$? Want to combine your passion for the environment and entrepreneurship? Then, check this out!

NFTE is launching a new set of innovation challenges for their [World Series of Innovation competition](#) in the Fall. Check the ["How to Compete" page](#) to learn about the launch and submission dates; then, set reminders on your phone!



## STRETCH

Expand your knowledge and skills by trying some of these activities:

- Explore the [The Story of Stuff](#) YouTube page to learn about electronics, cosmetics, water microfibers, and other “stuff” that impacts our environment.
- Calculate your [Water Footprint](#). How you can innovate a product to lower it?
- Check out [9 Mind-Blowing STEM Projects by Teen Environmentalists](#)
- Would you like to help NASA scientists advance their understanding of Earth’s atmosphere and climate from the comfort of your own home? Check out this article, [“Become an Armchair Cloud Expert and Help NASA Scientists Along the Way.”](#)
- Watch [this video](#) that demonstrates how environmental engineers use biology, chemistry, and physical sciences to balance the needs of people and the environment.

What are some other resources you can find that relate to your interests in Eco-Tech Engineering?

Meet Alejandro Moreno, the Deputy Assistant Secretary for Renewable Power from the US Department of Energy. If you would like to learn more about him [read this article in Hispanic Engineer](#) or [follow him on LinkedIn](#)



Mentors could speak to how eco-tech has changed their job/company/industry, where they see this going in the future, or the overall impacts.



## STRETCH

Expand your knowledge and skills by exploring some of these resources:

### THE ENGINEERING DESIGN PROCESS

As you think about problems to solve and what to innovate, be sure to implement the engineering design process. Even if you are not planning to be an engineer, this process and its different phases help with problem-solving, generating creative ideas, and communicating your project.

Check out the graphic below or watch [this video from Discover Engineering](#).



## THE ENGINEERING DESIGN PROCESS





## INNOVATE

Identify a problem in your community (school, local, state, or global) or this industry, then innovate ways solve it.

<p><b>DEVELOP A PRODUCT</b></p>	<p>Create a new product (digital or non-digital) that would solve the problem you have identified. (Consider designing, wireframing, or prototyping using platforms like <a href="#">Lucid</a>, <a href="#">ProtoPie</a>, or <a href="#">Figma</a>, or code an app in <a href="#">MIT App Inventor</a>.)</p>
<p><b>FIX A FLAW</b></p>	<p>Perform some user testing on an existing product and think of ways to remix and improve it for diverse users. Is there a practice or product that has a flaw you'd like to fix? Consider diverse users, then use that feedback to improve and recreate a product.</p>
<p><b>BE A CHANGE-MAKER</b></p>	<p>Create a movement at your school or community to amplify this industry or the skills sets needed to succeed in this field. You can start a chapter for a Career &amp; Technical Student Organization (CTSO) or professional organization related to this field, host a college/career fair or local competition to highlight this industry. How about doing community outreach where you can share how eco-tech can benefit the environment? The possibilities are endless!</p>



### PRO TIPS:

- If the choices above don't appeal to you, you can create-your-own or generate ideas by exploring hackathon sites like [hackclub](#) or [devpost](#).
- As you ideate, consider using [customer journey mapping](#).



*Is there a mentor or industry partner who can discuss the Engineering Design Process or UX Design Process to support your innovation? How can you gather mentor feedback as you iterate and innovate?*





## SHOWCASE

Once you complete your innovation, share your learning with the world with an audience in one or more of these ways:

*Why not plan a showcase where you and your peers can share presentations with the whole school, at a parent night, or for a panel of industry professionals?*



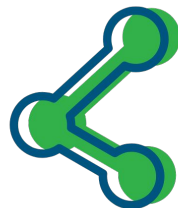
DIGITAL PORTFOLIO OR SITE	Create, code, or build a simple webpage to highlight your innovation, project, and learning journey. Consider bulb digital portfolios, Replit, GitHub, Google Sites, or Wix. Once it's developed, present it to an audience, and solicit feedback.
ONLINE MEDIA	Create a blog, vlog, or social media campaign (LinkedIn, YouTube, etc.) to highlight your innovation, project, and learning journey. Feel free to tag @nafcareeracads.
PITCH IT!	Pretend your audience is a group of investors. Pitch your innovation to them, sharing what you learned in the process. Allow for a Q&A, then solicit feedback on the quality of your project and/or pitch.

### PRO TIPS:



- Level up your project by entering a school or district competition or challenge. (Think the science fair, CTSOs, hackathons, etc.)
- Not interested in options from our Showcase menu? You can present your creations in a format of your choosing.

### STUDENTS, SHARE YOUR INNOVATION!



NAF would love to see your creation! After you get your educator's permission, submit yours [HERE](#). We may highlight you on social media!

(We WILL NOT share your work without your educator's and your approval.)