Oral Defense Innovation Diploma.

Defending your project & your learning.

The innovation defense is your opportunity to show what you know and defend your abilities in specific outcomes. You are required to defend your skill level in the explore, create and learn outcomes, and you must choose two additional outcomes to defend.

These are the outcomes:

Category	Specific Outcomes:
Required	Explore, Create, Learn
Choose 2:	Self Awareness, Taking Initiative, Persistence, Seeking Inspiration, Project & Team Management, Building Community Appropriately, Storytelling, Understanding Impact

Step 1. The plan

To plan your defense you must create a chart plotting which artifacts you will use as evidence of the required elements.

Rubric Element	What artifacts can you present to demonstrate proficiency?
Explore	User Testing
Create	Product Design
Learn	Business Plan Pitch
Storytelling	Pitch Videos
Self Awareness	Creating Website with Tutorial Videos

Step 2. The narrative

Once it is approved, you will submit a 1 paragraph narrative for each of your 5 outcomes that explains how you met the outcome and highlights evidence and artifacts for each rubric element in your defense. These narrative paragraphs are due asap after Design Review #3.

Step 3. Pre-Evaluation

After your narratives and artifacts are submitted, three evaluators will read and score your submissions. We will identify gaps and questions that you will need to address in the defense.

Step 4. Presentation

After the submission is scored, students will present a summary of their work to a panel. Your presentation should be 5-7 minutes and should address the big question - can you be an innovator? To answer that question, you should speak to the following:

- The problem you addressed in your project
- The methods you used
- Your product / the results so far
- Your learning

The panel will have the opportunity to ask questions. After the oral defense, the panel will discuss and give marks. Students are notified soon after their defense if they passed.

5 Narratives for the Outcomes

1. **Explore**
   In order to iterate on my product's design, I decided to conduct user tests with a variety of people of different ages and backgrounds. The user groups included: high school teenagers, a ~60 year old blind woman, ~50 year old parents, a ~40 year old teacher, and ~30 year old engineers. These encounters helped me explore the diverse opinions people had about my prototype that I would otherwise have been unable to imagine. In the user testing analysis slides, I summarized some of these interactions, including what they liked, found difficult, and inspired them. It was a very mind-opening experience to explore the thoughts of these people, and gain the feedback necessary to improve.

2. **Create**
   My product is the result after months of hardware and software engineering. Throughout the process of coming up with the idea and physically manufacturing STEMables, I pushed my creativity, resilience, and technical skills. The concept of modular programming in the tangible space was already almost unheard of, and incorporating the element of electrical education provided an additional layer of difficulty. I spent hundreds of hours designing 3D-printed models, wiring circuits, and writing code to *create* a working prototype that showcased all that STEMables could offer. Despite the many challenges I ran into, I pushed through and grew my experience for future projects.

3. **Learn**
   One of the perspectives that I am more lacking is the business side of a commercial product start-up company. Since my experiences have mostly been focused on the engineering side that invents the product, I require opportunities to learn how to market and manage the product in the public. As I wrote the business plan for STEMables, I gained a lot of knowledge from online research and from advice given by experts I consulted. I learned about the process of receiving investments and the stages of company development, which helped me organize the economic and scaling plans that would be implemented if STEMables was a real company.

4. **Storytelling**
   To best share the features and possibilities that STEMables brings, I have produced quite a few videos, including an initial 2 minute problem-solution pitch, a 30 second product advertisement, a 1.5 minute explanation video for the 30 second advertisement, and a 5.5 minute business pitch. The making of these videos helped me practice my scriptwriting, graphics design, and editing skills for telling the same story to different groups of people, from kids to professionals.

5. **Self Awareness**
   One of the issues that engineers often run into is designing a product that seems straightforward to use for them, but completely not user friendly for the people it is meant

for. I myself ran into this problem since I was so absorbed into the many features of STEMables that I never considered how somebody would learn how to use my product for the first time. But after conducting the user testing, I gained some self awareness about this issue and began working on a tutorial that would be posted online. Next time, I will definitely make sure to empathize with my users to learn what they really need.