

Unit 1: What are the Global Goals & the Future Trailblazer Challenge?

Module 1: Discover



**What are the
BIGGEST PROBLEMS
faced by people
AROUND THE WORLD
today?**

What is the Future Trailblazer Challenge?

Inspiring young students to care about and act on sustainability challenges their generation will face

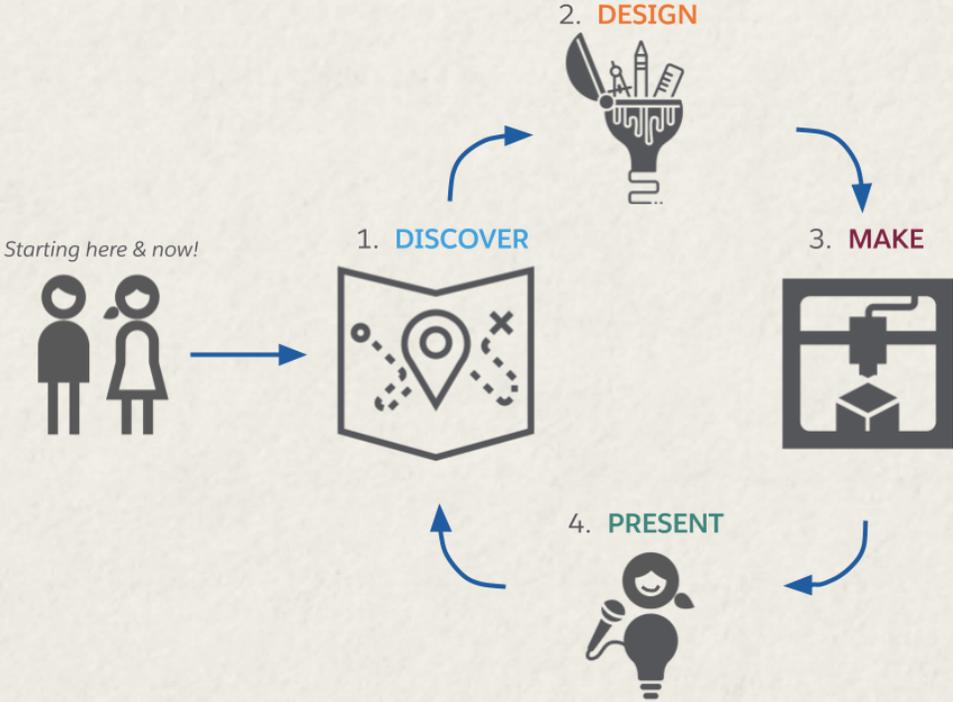
THE CHALLENGE

- Maker Contest that **everyone can run in partnership with a school** or educators
- 6 weeks curriculum **developed with SFUSD**
- Students learn about **UN's SDGs** and cutting edge technologies like **3D printing**
- **Present** at a Maker Faire in front of a **real audience**



Maker Process Overview

What is the next 6 weeks is going to look like?



Maker Process Overview

What is the next 6 weeks is going to look like?

DISCOVER



- Learn About the UN Global Goals
- Learn about New Technologies
 - Micro:bit
 - 3D Printing
 - Coding

Maker Process Overview

What is the next 6 weeks is going to look like?

DESIGN



- Form your groups
- Brainstorm on a solution to a Global Goal
- Imagine how users will use your solution
- Prototype it in cardboard!

Maker Process Overview

What is the next 6 weeks is going to look like?

MAKE



- Transform your cardboards into a real prototype
 - Design and 3D print it
 - Add some electronics to it
 - Interact with an app on your computer
- Learn the Agile methodology to manage the project

Maker Process Overview

What is the next 6 weeks is going to look like?

PRESENT



- Learn how to do the elevator pitch
- Train as a team to explain your solution
- Go present it in front of other innovators

What are the Global Goals (SDGs)?



ANSWER THESE QUESTIONS:

- What year do we need to complete the challenge by?
- What are some of the challenges that Earth currently faces?
- What is the organization, with 193 members, that works towards safety, fairness and security?
- How many Global Goals (also known as the Sustainable Development Goals) are there?

Global Goals Scavenger Hunt

- Explore the Global Goals posters to find the answers to the questions
- Try to get all the answers- and be ready for the Quiz!



Go to [Kahoot](#) to run a fun game.

Closeout: Which goals do YOU care about?

Find 1 or 2 that interest you and explain why.



Unit 2: How to Turn Learning Into Action

Module 1: Discover



DO NOW

Organize the 17 UN Global Goals into 3 main categories:

- Poverty
- Inequality
- Environment



Agenda

1. Do Now
2. Explore Projects
3. Learn about a Goal
4. Paper Chains

Video 1: Elif



ANSWER THESE QUESTIONS:

- What solution did Elif create?

What goals did Elif cared about?



Video 2: Rohit, North Philadelphia, Nigeria



ANSWER THESE QUESTIONS:

- What solution did Rohit create?
- What solution did young people North Philadelphia create?
- What solution did young people in Nigeria create?

What goals did Muzoon cared about?



Team Lawton: Fall 2018 San Francisco Bay Winner



ANSWER THESE QUESTIONS:

- What problem does the project try to address?
- How does their project address the problem
- How could you imagine improving the project?
- What additional things could the project do?
- How could it be easier to use?

Closeout: Paper Chains

Select 1-3 goals you care the most about and write at least 2 sentences explaining why you are interested in those goals.

You can write about:

- How thinking about the goal makes you feel...
- How you (or others you know) have been affected by the topic...
- Tell me a story about when you were affected by the goal...
- What are pros/cons of acting on that goal...?
- What questions do you have about the goal?
- What is currently being done about the goal?

Then, one at a time, read your explanation out loud and stick your paper to the previous one that spoke.

Unit 3: Why should we care: Global Goals Advocacy

Module 1: Discover



Welcome to the Age of Makers!

Time to play a new game

1. Open Chrome
2. Go to bit.ly/aom-game to install the game



Welcome to the Age of Makers!

Time to play a new game

Complete Quests to advance through the Ages



Explore the Maker Mount to learn more

Start from the first available Quest and make your own path!

Quests	~ Time
What have other students done?	20 min.
Advocate for your goal!	20 min.



Can Technology Help Us Save the World?

You might be wondering:

- “How can I use technology to solve for the Global Goal I care about?”
- “What did other students do around the world to solve for those?”



Closeout: Tell why your goal is important

Start from the first available Quest and make your own path!

Advocate for your goal in

2 minutes

and get feedback!

SWITCH!

Unit 4: Code a Scrolling Namebadge

Module 1: Discover



Agenda

1. Micro:bits Overview
2. Code your Micro:bits!
3. Explore new electronics horizons

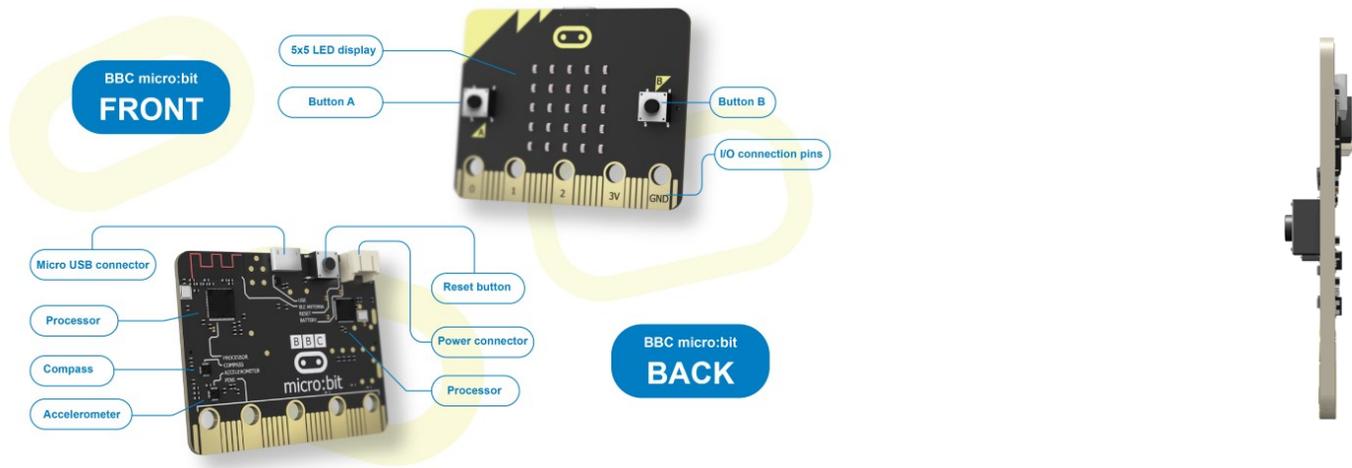
What is a Micro:bit?



ANSWER THESE QUESTIONS:

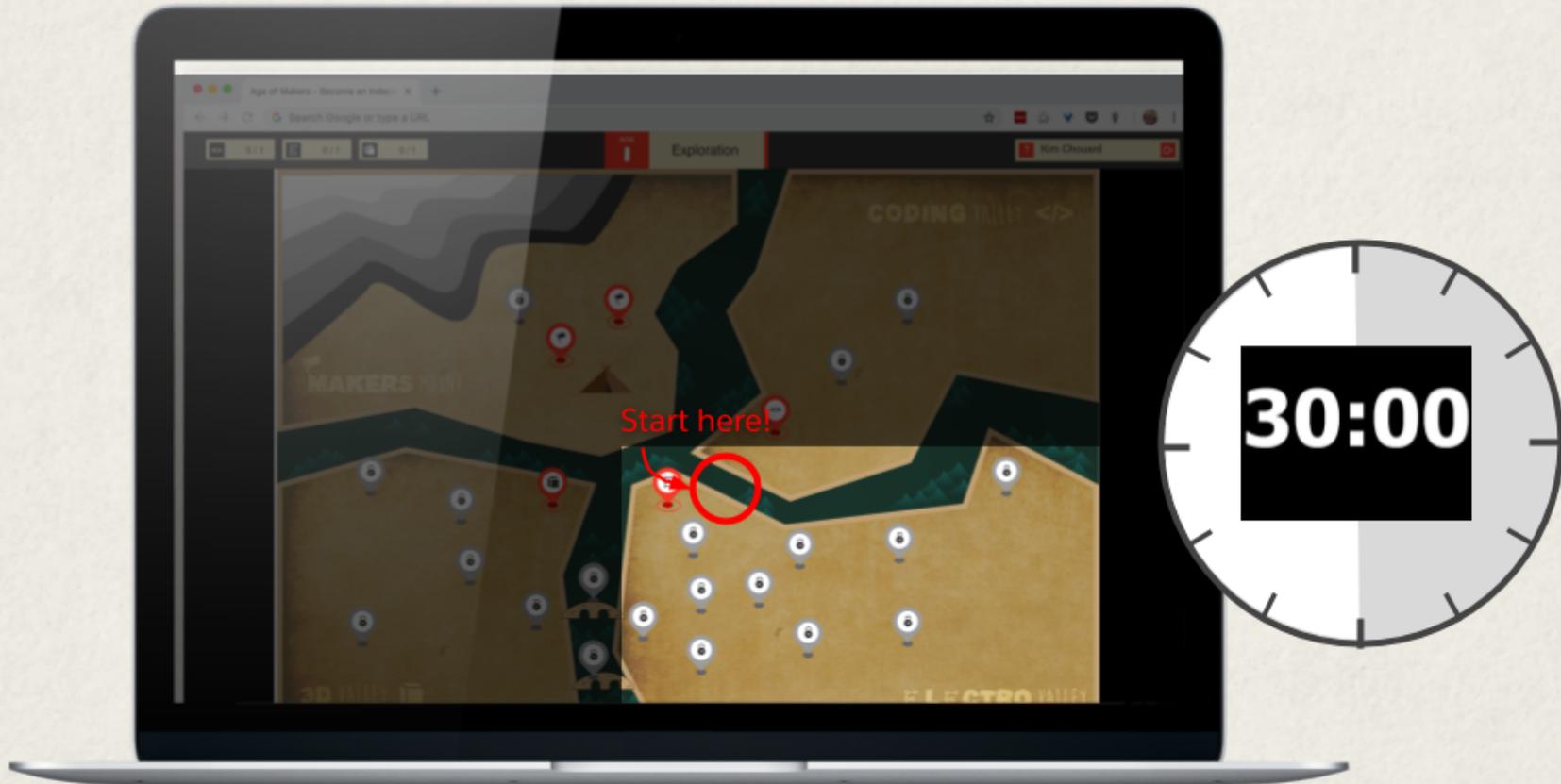
- What are 2 objects that you can build with a Micro:bit?
- Name 2 of the features that the Micro:bit has?

What is a Micro:bit?



Explore the Electronics Valley to learn more

Start from the first available Quest and make your own path!



Unit 5: Design & 3D Print Your Own Keychain

Module 1: Discover



Agenda

1. 3D Printing overview
2. Your First 3D Quest with Tinkercad
3. Print Your Keychain in 3D!

You said 3D Printing??

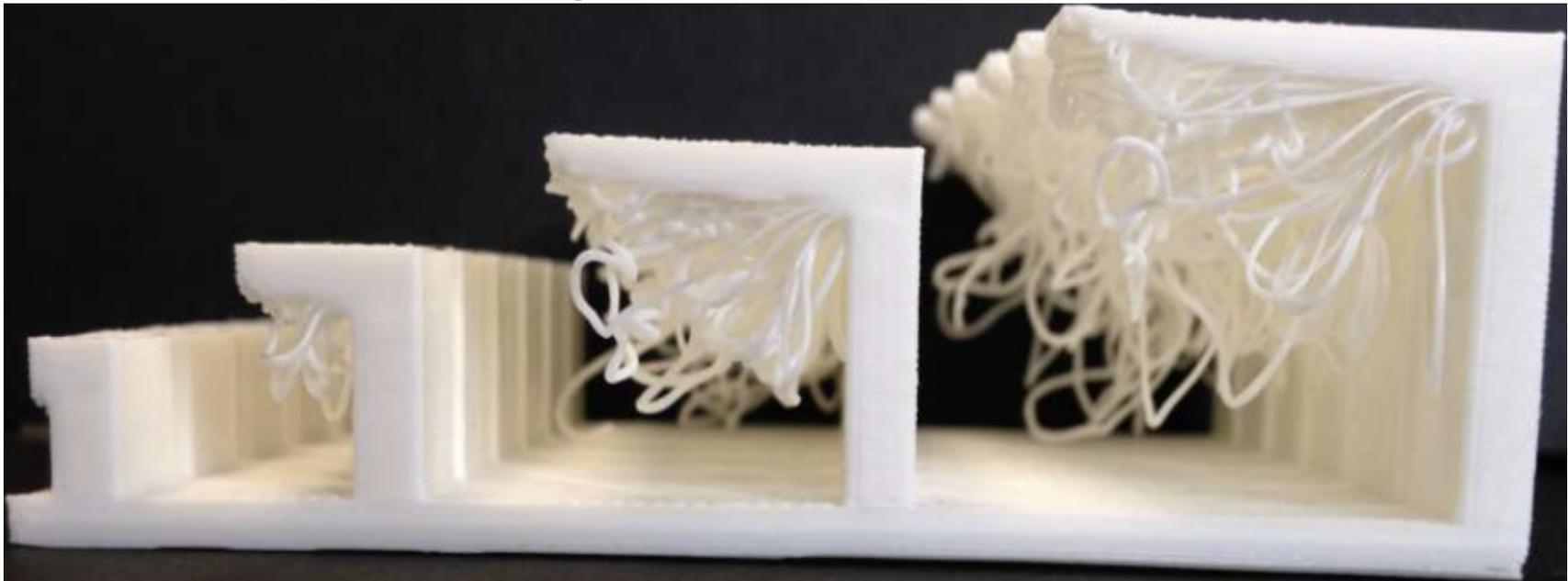


ANSWER THESE QUESTIONS:

- What is the name of the process used in 3D printing? How does it work?
- Name at least 2 things or objects that can be 3D printed.
- If you'd be able to print anything, what would you like to 3D print?

3D Printing Process

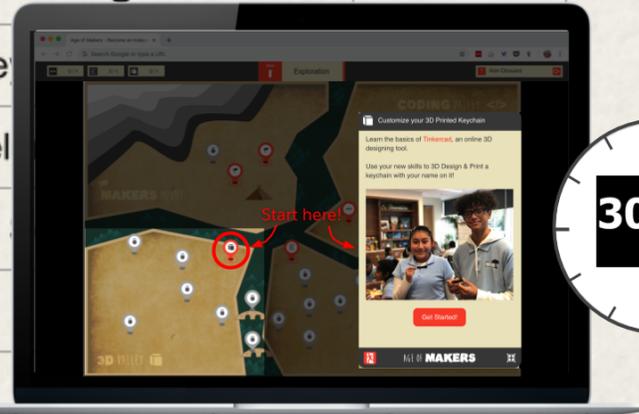
Failed Horizontal Overhangs



Explore the 3D Valley to learn more

Start from the first available Quest and make your own path!

Quests	~ Time
Electronic Nametag	5 min.
Code a Smile	
Plot the Accel	
Rock, Paper,	
Flip Coin	
Stopwatch	
High-Five Machine	15 min.
Micro:Chat	15 min.
Show the Light Level	5 min.
Hack your Headphone	15 min.

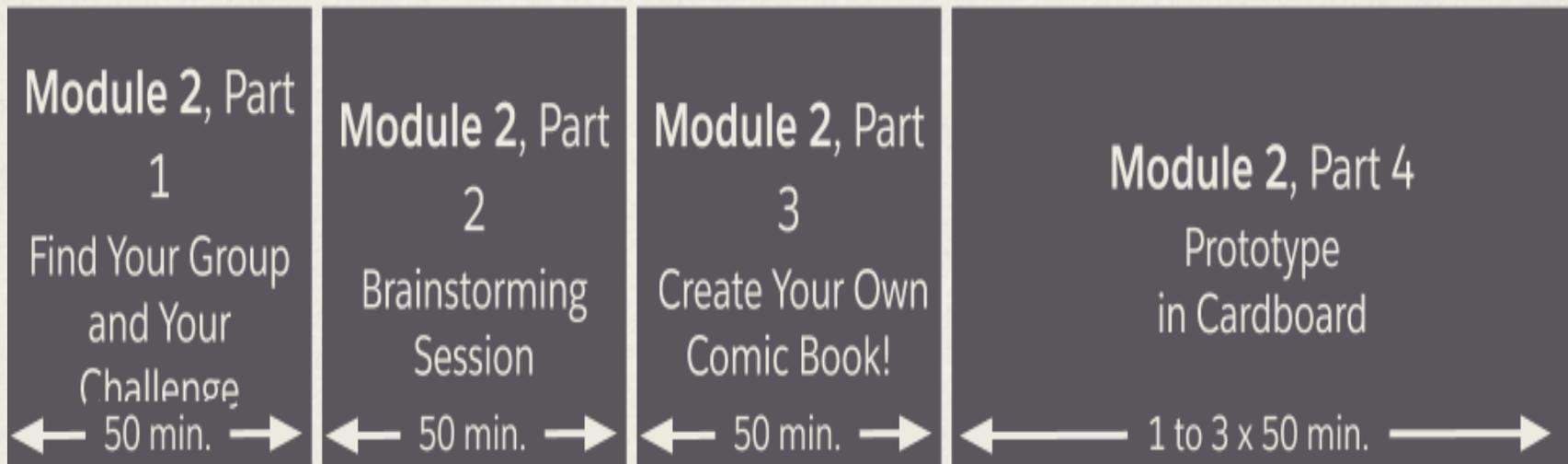


Export for 3D Printing

Become a Future *Trailblazers* Challenge in 6 weeks

WEEK 2: DESIGN

Total: 4-6
hours



Unit 1: Code a Scrolling Namebadge

Module 2: Design



DO NOW

- Think about which Global Goals you are most interested in building solutions for
- What questions do you have about them?

Agenda

1. Do Now
2. Find your team!
3. Problem Statement
4. Closeout

Find your team!

Group Formation

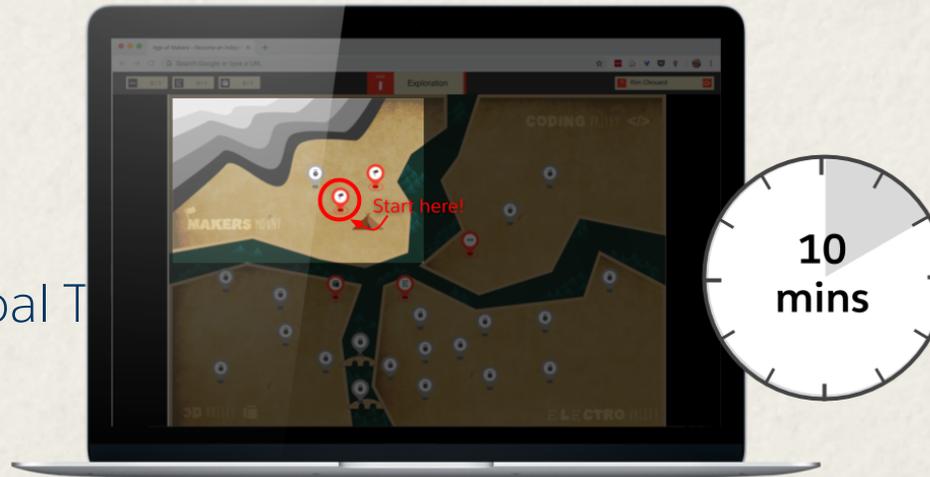
1. Go under the poster of the Global Goal you're the most interested in!
2. Team-up with students you have similar interest with.
3. Find a team name!!

Discovery

Set the right targets for your project.

With your group:

1. Identify 2-3 Global Goal Topics for your project
2. List 5 important facts about your topic



Understand Your Problem

Work with your team to answer the question below.

What is the problem you're trying to solve? (refer to one Global Goal Target)

Who does the problem affect?

Why is it important to solve?

Create a Problem Statement

Problem Statements help innovators focus on the most important things to solve for.

1. Identify who your users are.
2. Explain their need(s).
3. Explain why it's important to them.

⇒ Consider the targets associated with your Goal.

You can find each Global Goal targets at the end of your Handbook p. Y.

Your Groups Problem Statement:

(your audience or group of users):
Students who care about endangered species

need(s) a way to (your audience's need):
easily find out about the animals that need the most help

because (your insight, or what you learned in research):
they would like to participate in activities to save the animals

Handbook p. X

Create a Problem Statement

Tips for Creating a Problem Statement, it should:

- Not impose limitations

Don't worry about technical, financial, time constraints, or other challenges.

- Be actionable

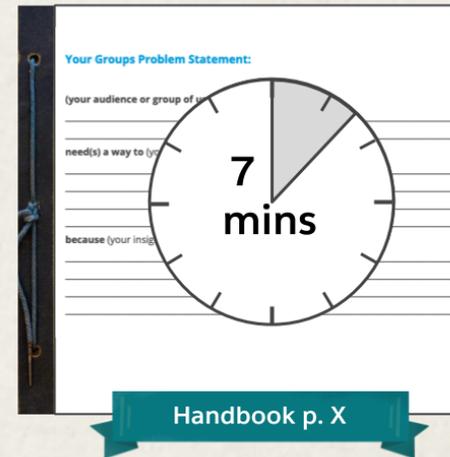
Use strong verbs, like “How might we teach...”, or “How might we provide...”

- Be specific

Be specific about the job to be done and the people that you're designing for.

- Be succinct

Keep it brief and clearly explained.



Closeout: Share-out

Each group tell its problem statement

1 minutes

and get feedback!

Unit 2: Brainstorming Session

Module 2: Design



DO NOW

Write down ~5 CRAZY ideas on how you'd use tech to solve your problem

Agenda

1. Do Now
2. Wild Idea Dash
3. One Standout Idea
4. Closeout

Wild Idea Dash

Think about 4 potential solutions for your Global Goal.

- Sketch quickly to do as many as you can
- No limit on time is impossible!



Wild Idea Dash

Brainstorm potential solutions. Sketch as many ideas as you can. Don't worry if they're crazy!

#1

Draw your ideas
HERE!

Partners Feedback:

A. Does this solution **address the problem**? ← 1 2 3 4 →
not at all definitely

B. Would a user find this solution **helpful**? ← 1 2 3 4 →
not at all definitely

C. Is building this solution **feasible** (doable)? ← 1 2 3 4 →
not at all definitely

D. Other Notes: _____

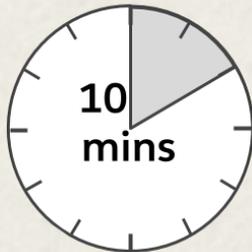
Handbook p. X

Group Sharing

Share your Wild Ideas to the other teammates!

Don't forget to get feedback:

- Your partners reply to A, B & C
- Can add other feedbacks in the bottom



Wild Idea Dash
Brainstorm potential solutions. Sketch as many ideas as you can. Don't worry if they're crazy!

#1

Get feedback below :

Partners Feedback:

A. Does this solution address the problem? 1 not at all 2 3 4 definitely

B. Would a user find this solution helpful? 1 not at all 2 3 4 definitely

C. Is building this solution feasible (doable)? 1 not at all 2 3 4 definitely

D. Other Notes: **Great but might be hard to do!**

Handbook p. X

One Standout Idea

Select one idea from your groups' wild ideas

- Use the feedback from your teammates
- Try to merge the good wild ideas together!

→ Write a fuller description of it.



One Standout Idea

Use the best parts of your wild ideas and feedback from others to think about the first prototype for your creation. Then, write a fuller description of what it will do below. It's fine if your design changes later, you just need a place to start!

Notes: Try to think how you would use 3D printing, the micro:bits and even connect it to a computer.

Title: _____

Pick **ONE** Idea
with your group

Fuller Description: _____

We developed this idea because during our research, we learned: _____

Handbook p. 1

Closeout: Share-out

Each group share its One Standout Idea

2 minutes

and get feedback!

Unit 3: Create Your Own Comic Book!

Module 2: Design



Design your own Comic Book!

Tell the story of how your creation will solve a Global Goal.

You will create a Comic book about the project you're about to make!

Focus on:

- People facing issues related to your Global Goal.
- How could you design a solution to their issues?
- Don't limit yourself! Imagine everything is possible.



Start by creating your character(s).

Create one or more character(s):

- Inspire yourself from real/realistic persons
- Pick someone facing challenges related to your Global Goal
- Invent it! Just make it realistic.
- Be creative. Don't limit yourself to human!
(what if your character was an animal? an alien?)

3. Character(s)

Name(s):
Age:
Profession:
City:
Other Information/Passion:

Habits:

Struggles:

Opportunities:

How could we...?

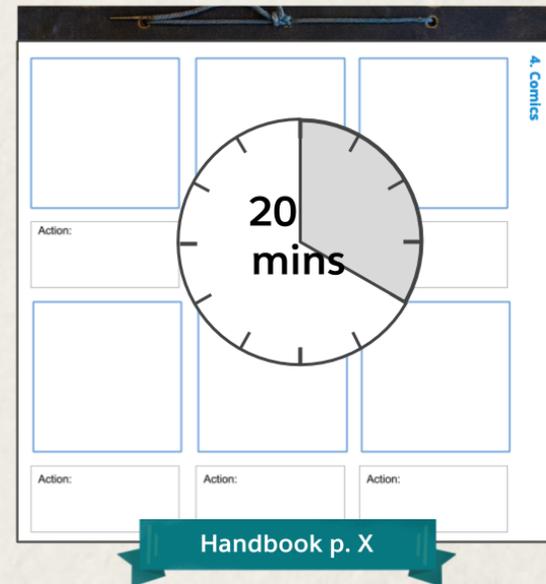
10 mins

Handbook p. X

Tell us a story about your character(s)!

Break down your story into:

- [1-2 boxes] Introduce the character(s)
→ describe a typical thing they're doing
- [1-3 boxes] Show challenges they're facing.
- [1-3 boxes] Show how they would be using your creation.
→ what can you build that solves their issues?
- [1 box] Highlight what impact your creation had into the character(s) life.



Closeout: Presentations

Each group read through its comic

3 minutes

and get feedback!

Unit 4: Prototype in Cardboard

Module 2: Design



DO NOW

Imagine in your head what would your prototype look like in 3D

Agenda

1. Examples: from Prototype to Finish
2. Get Your Hands Dirty (literally!)
3. Present

PAULA

Sustainable Fountain

I made a water fountain to have clean water from the mountain, not fake water with a lot of chemicals. It has a counter to tell people that water is a precious resource.

1- DESIGN

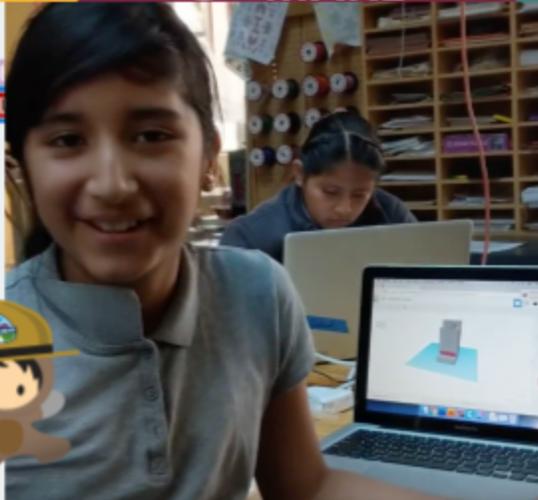


2 -

PROTOTYPE

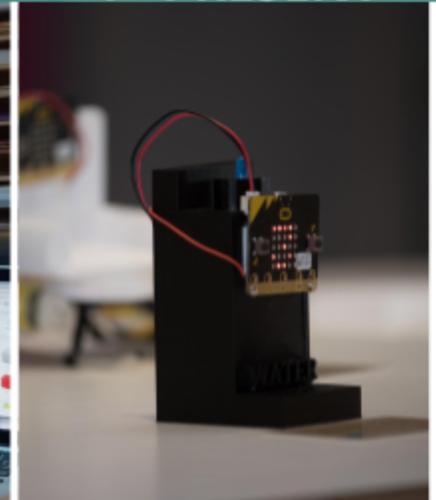
```
on start
  set Water Level to 3
  show number Water Level

on button A pressed
  if Water Level >= 0
  then
    digital write pin P0 to 1
    pause (ms) 1000
    digital write pin P0 to 0
    set Water Level to Water Level - 1
    show number Water Level
  else
    show string "No water"
    show number Water Level
```



3 - MAKE

4 - PRESENT



E'MONI & SASHA

SF School

My school is better for the future because it is a K-College school, where you don't have to transfer, college is free and you don't have to be in a classroom when you learn.

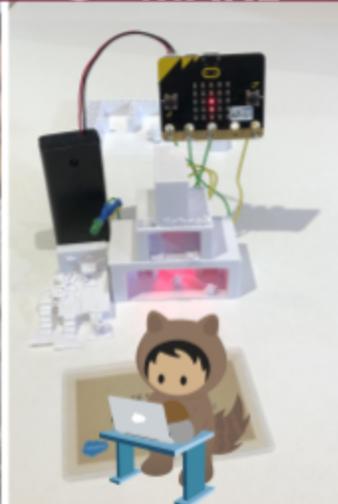
1 - DESIGN



2 - PROTOTYPE



3 - MAKE



4 - PRESENT



KAREN

Learning Center for Homeless People

I did this so that homeless people can learn how to be responsible for their lives. They will find the job they need to earn money to have a real home.

1- DESIGN



2 -
PROTOTYPE



3 - MAKE



4 - PRESENT



BEATRIX

Autonomous Couch Hoverboard

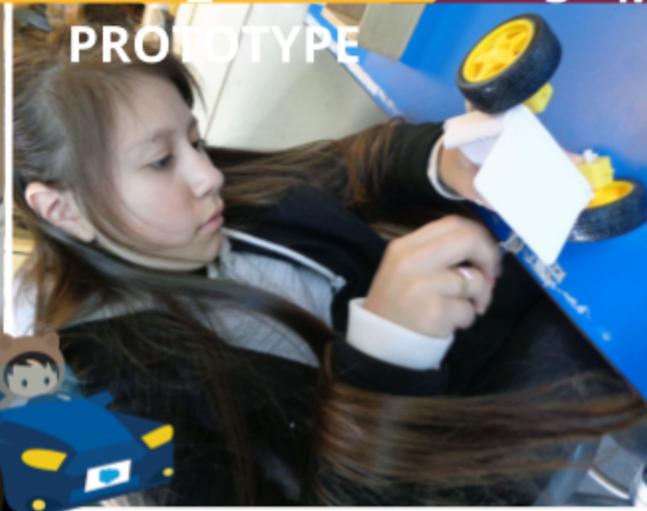
It's a hoverboard so you don't have to use a car anymore. It can take you where you want to go and everybody can use it. You don't have to worry about losing your keys.

1- DESIGN

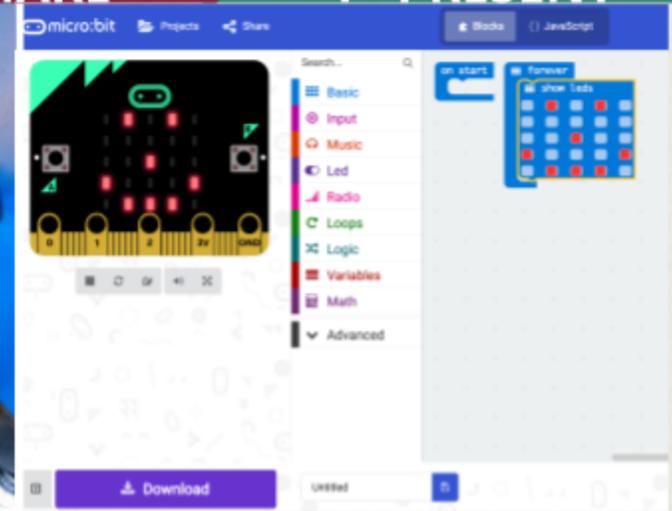


2-

PROTOTYPE



3 - MAKE



4 - PRESENT

ANNETTE & PRINCESS

Flying Ice Cream Museum

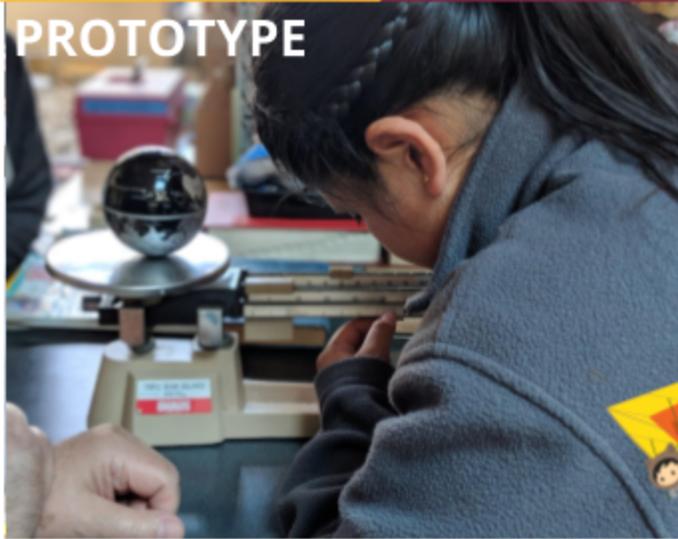
This project is a museum for people to enjoy ice-cream. It's awesome because it floats to your house to make ice cream, and no ice-cream museum does that.

1- DESIGN



2 -

PROTOTYPE



3 - MAKE

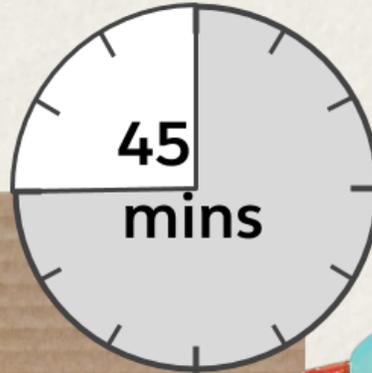


4 - PRESENT

Time to Prototype!



CUT



GLUE GUN

- **No wrong way**
- **Try, fail...
and try again**
- **Imagine by drawing**



Closeout: Presentations

Each group share its One Standout Idea

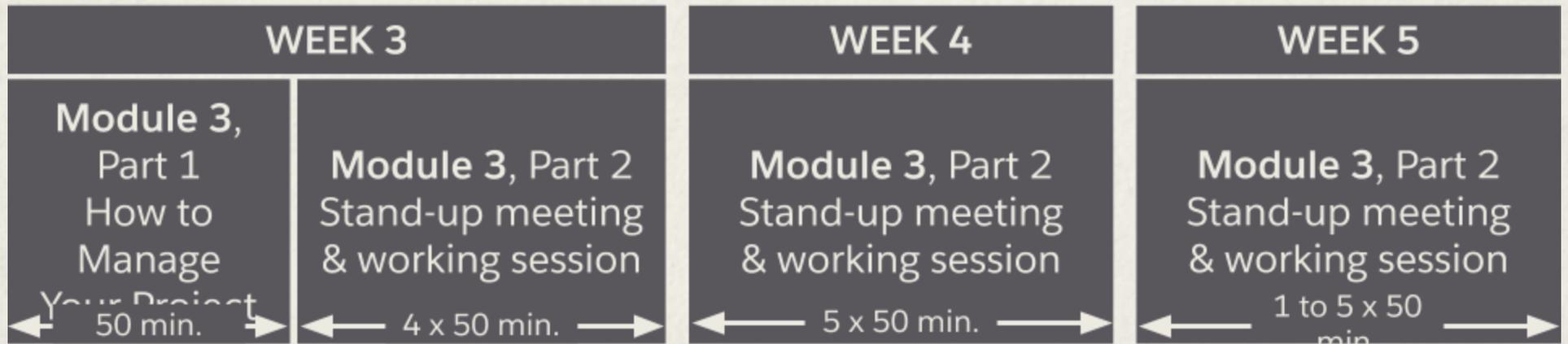
2 minutes

and get feedback!

Become a Future Trailblazers Challenge in 12 hours

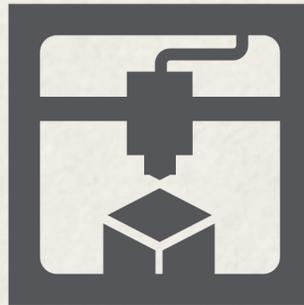
WEEK 3-5: MAKE

Total: 10 to 15 hours



Unit 1: Learn How to Manage Your Project

Module 3: Make



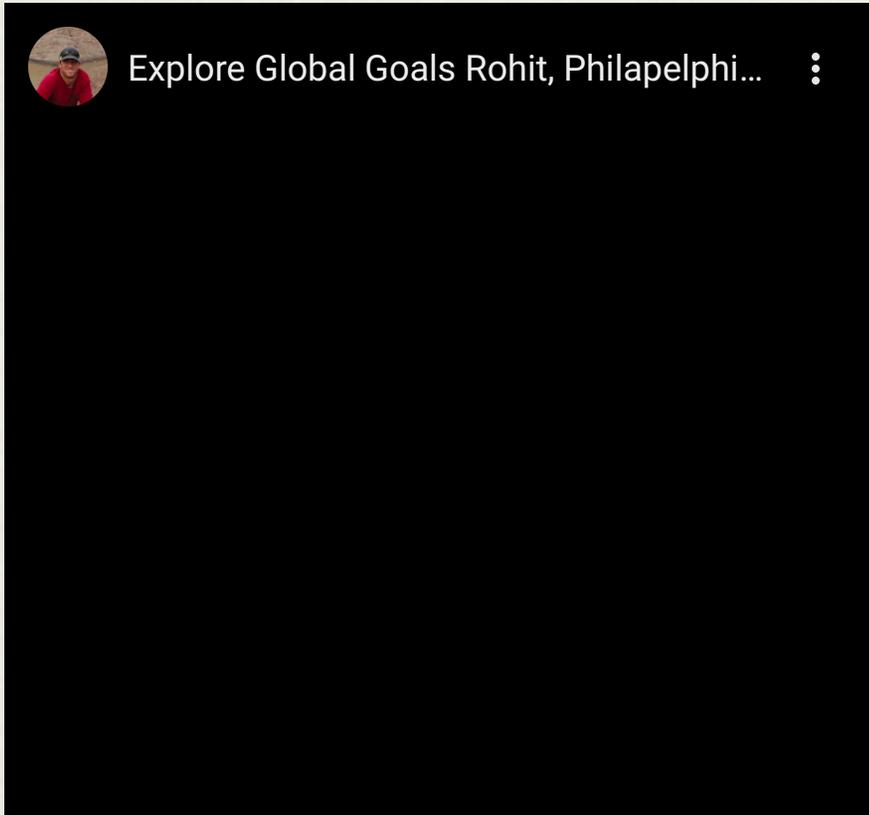
DO NOW

What was a project you worked on this year?
→ What was your role?
→ Were you able to finish it in time? Why?

Agenda

1. Do Now
2. Project Management Overview
3. Define Your Roles
4. Goal Definition
5. Breaking Down the Tasks
6. Agile Methodology

The Project Management Process



ANSWER THESE QUESTIONS:

- What is the first thing you do in Project Management?
- What do you need to create a plan of action?
- What do you do when you run into barriers?

Project Manager



- Manages the spreadsheet
- Run the daily stand-ups for the team
- Make sure everybody is on track and not blocked.

Electronics Guru



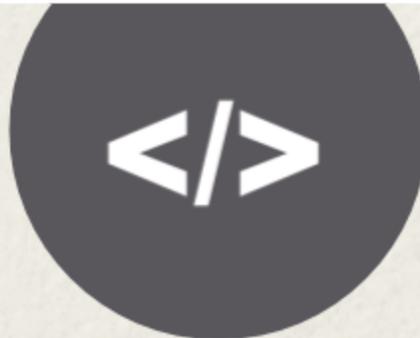
- Code the micro:bits used in the project
- Assemble the micro:bits with the electronic pieces (LEDs...)
- Test and iterate on the circuits

3D Artist



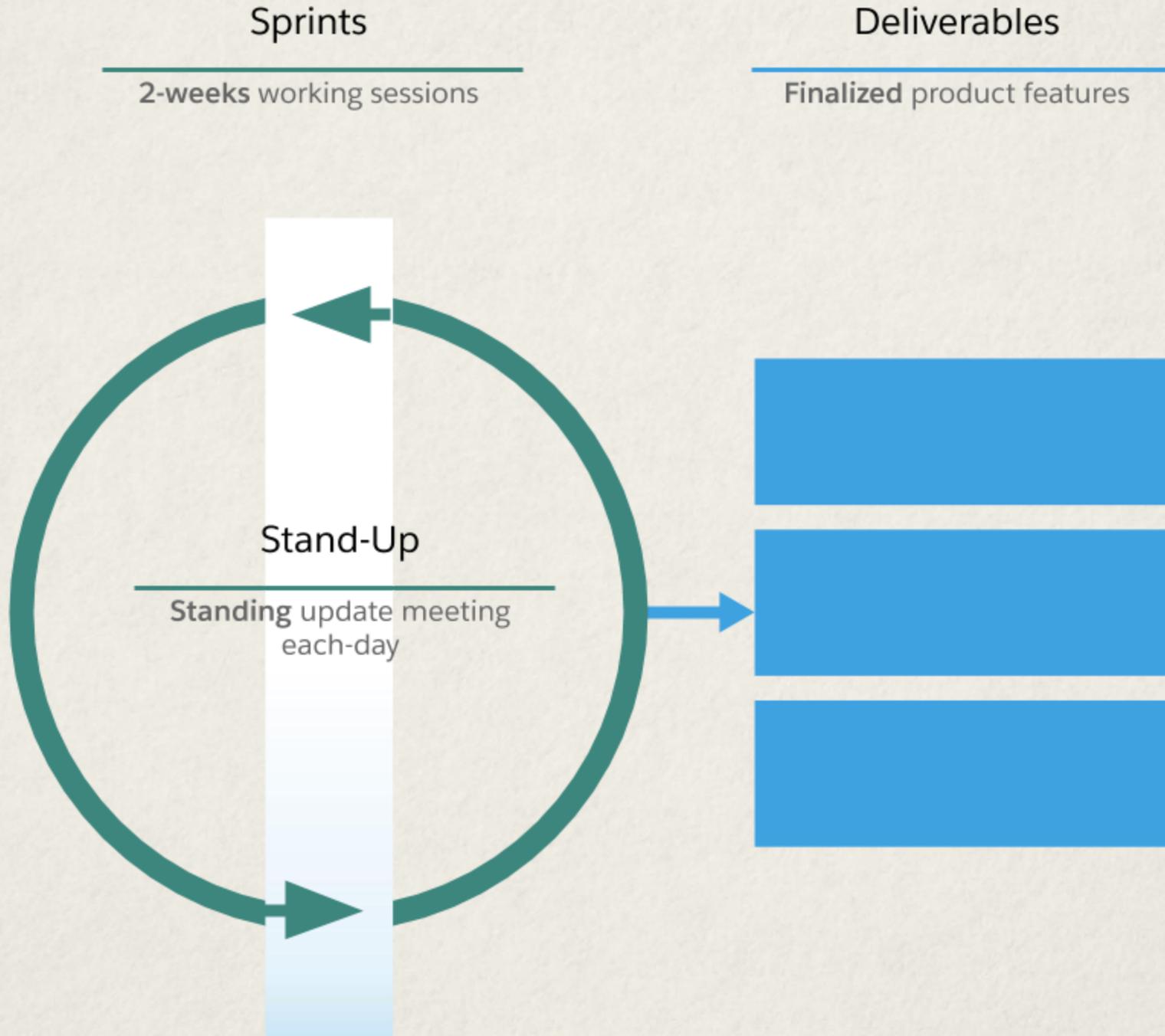
- Design the required 3D models
- Print the models using the 3D Printer
- Test and iterate on the designs

Mad Coder

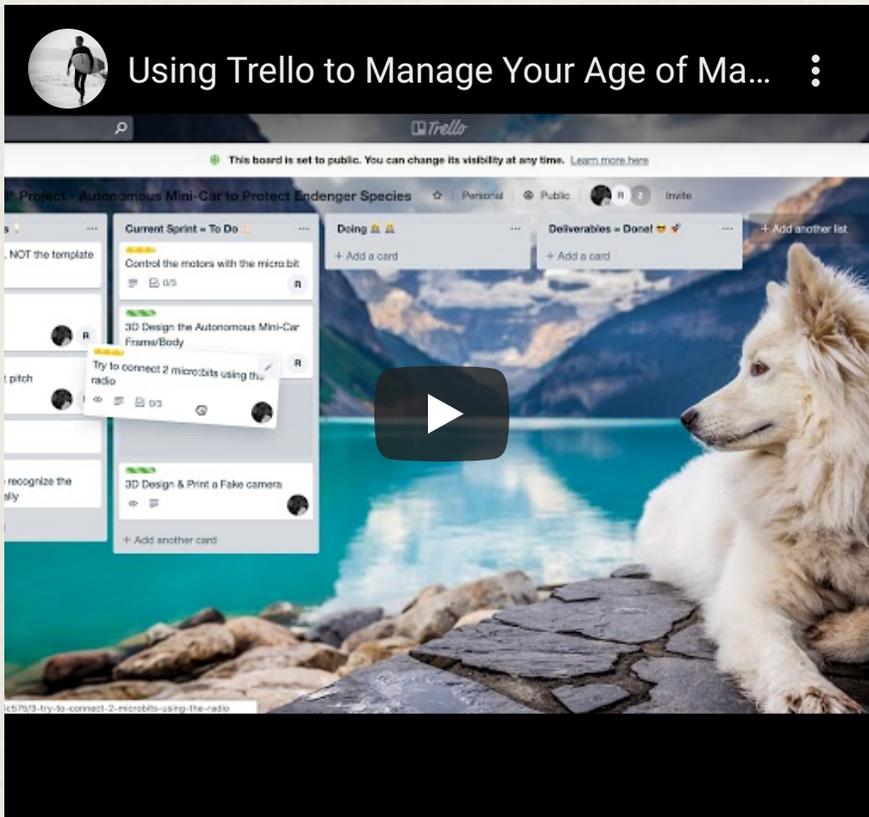


- Code the Sketch/Web App (if any)
- Run/test the code
- Integrate code with micro:bits

The Agile Methodology



Plan Your First Sprint with Trello



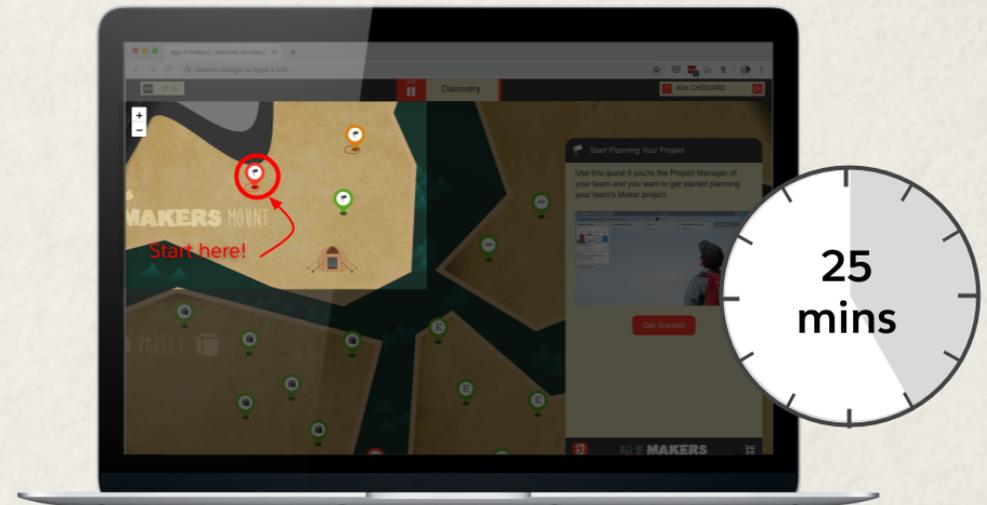
ANSWER THESE QUESTIONS:

- What does the Backlog contains?
- What lists is a Task going through before being Done?

Set up your Trello Project

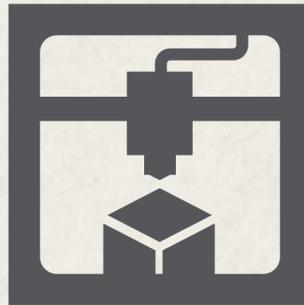
Follow those steps:

1. In your group, the Project Manager ONLY takes the Trello Quest
2. Share the copied board to your team members
3. Add all the tasks in the backlog from your handbooks
4. Drag some tasks to the sprint list



Unit 2: sprint Days

Module 3: Make



Stand-up Meeting

Updates
5 min

Parking Lot
<15 min

OR

Working Session

Working Session

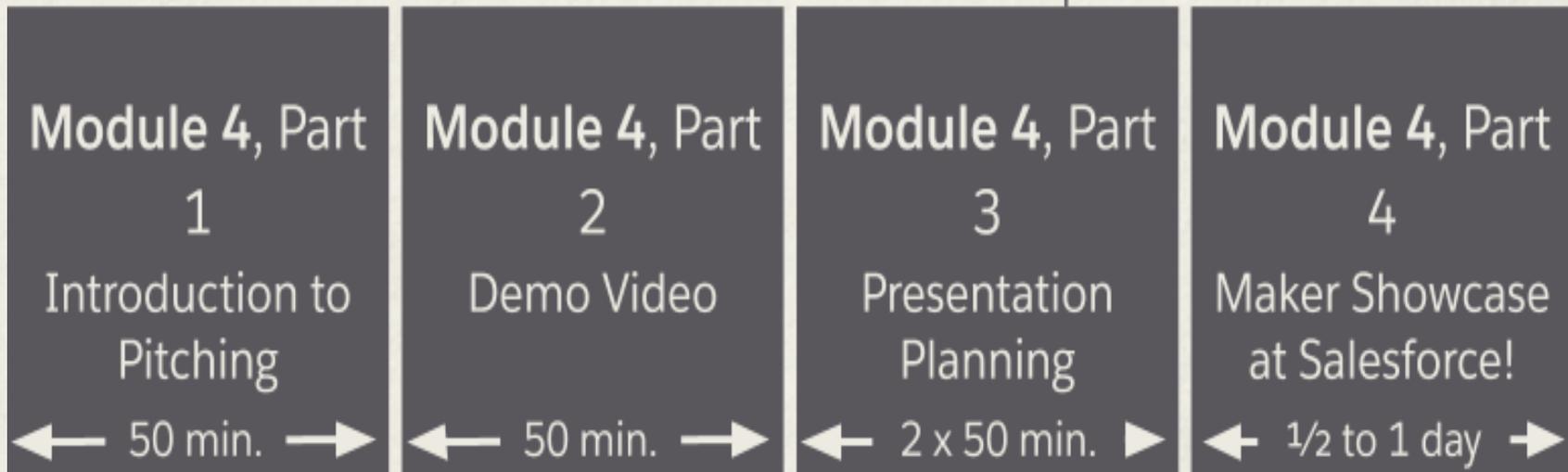
Everyone works on his task

Closeout

Fill in the
“Last class, I worked on...”
for next time!

WEEK 6: PRESENT

Total: 4-6
hours
+ Field Trip



Unit 1: sprint Days

Module 4: Present



DO NOW

What is the greatest fear among people in developed countries?
→ Glossophobia: the fear of public speaking

Agenda

- Do Now
- Glossophobia Spectrum
- Effective Public Speaking Strips
- Persuade Me!

Glossophobia Spectrum

- Stand up
- Go to the Entry Door if you are completely comfortable with public speaking
- Go to the Closed Door (in the back) if you would NEVER do public speaking

Glossophobia Spectrum

- What concerns you about Public Speaking?
 - Who are effective public speakers?
- What do they do that makes them effective?

Effective Public Speaking

- 4-6 Volunteers
- Distribute Effective Public Speaking Strips
- Dramatize Tips

Persuade Me: Instructions

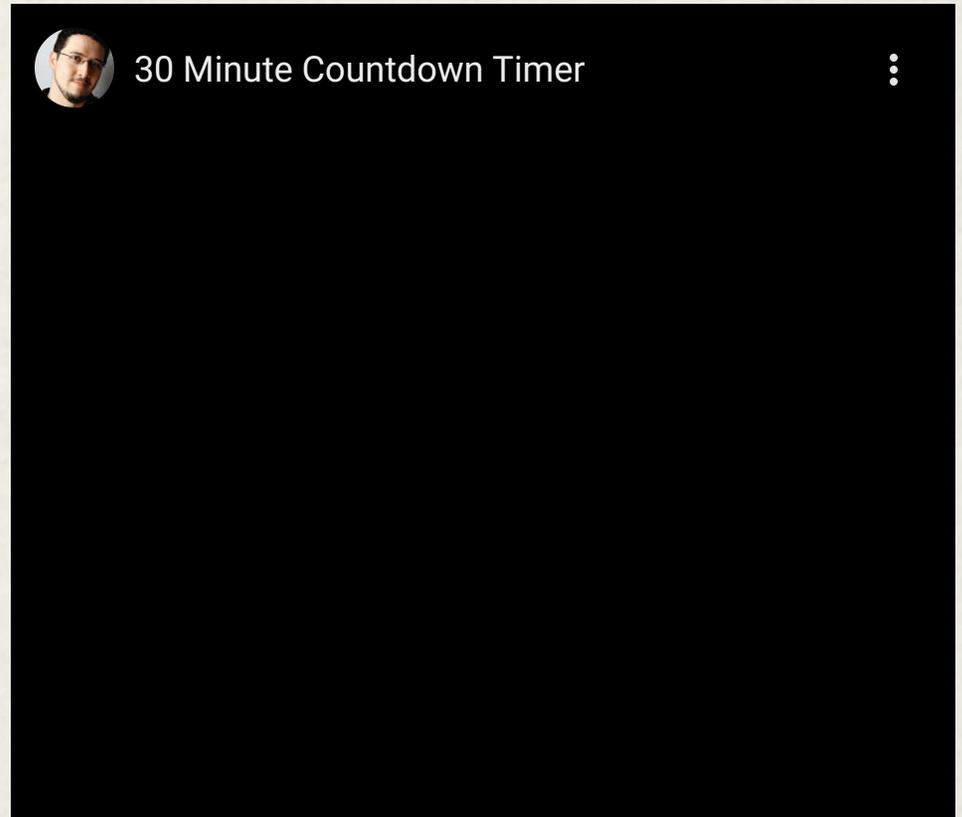
1. Pick a topic (example: Cats vs. Dogs) and pick a side (Dogs)
2. On your handbook, write 3 Pros (reasons for your side) and 3 Cons (reasons against the other side)
3. Using your Pros and Cons, each person in your group will speak for 30 seconds on your topic.

Ex: "I think Cats are better than Dogs because..."

-add an anecdote "My cat killed a bird and brought it to me!"

Persuade Me: Topics

- Dogs vs. Cats
- Watching the movie vs. reading the book
- Regular MS vs. K-8
- Rich and unhappy vs. broke and happy
- Drake vs. Migos



Unit 2: sprint Days

Module 4: Present



4.2 Presentation

Using the provided presentation template,
prepare to present about:

- The problem they set out to solve
- Their process of project development
- The ways the prototype address the problem

Designing a Presentation: Engage, Inform, & Inspire

1. Engage: How will you get your audience's attention?
2. Inform: What strategies will you use to give information to your audience?
3. Inspire: What will you do to make sure your audience cares about or remembers your presentation?

Prepare your Presentation

- 2 minutes
- Engage your audience
- Inform using Prototype Posters
- Inspire: How will your audience use this app to solve a problem or challenge?

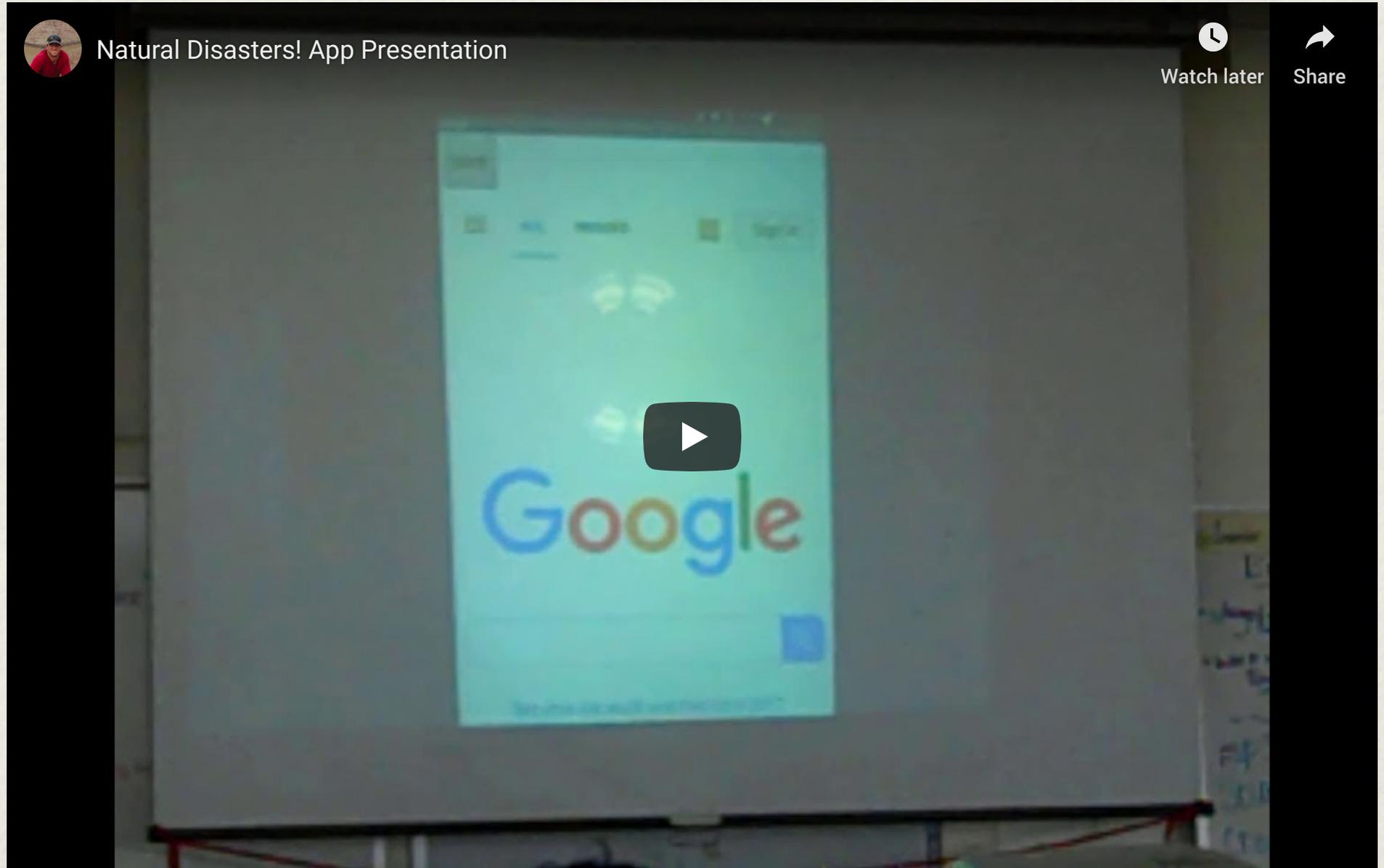
20 Minute Countdown Timer



Example Presentations: Endangered Animal App



Example Presentations: Natural Disasters App



Example Presentations: SF High Schools App



Presentations!



Feedback Rubric

Engage (did the group attempt to engage the audience?)				
Inform (did the group give background info on their Global Goal?)				
Inspire (did the group include a story that showed the importance of their project?)				
Public Speaking <ul style="list-style-type: none">○ Energy and Enthusiasm○ Speaks Loudly and Clearly○ Make Eye Contact with the Audience	T			

Unit 3: Demo Video

Module 4: Present



4.3 Film a Demo Video

1. Inspiration: Watch past videos to get ideas
2. Storyboard: Organize and brainstorm the storyboard of your Demo Video
3. Make Video: Film, edit and create your pitch video

Demo Video: 4W's

- A demo video is a product demonstration – you are showing off your project and all its awesome features you created!
 - The demo video should let the viewer experience the project as if they were a user, so they understand how the project works, and how it can help them.
- Video can be up to 2 minutes long. A demo video should be short. It should be able to stand alone and be primarily focused on the features on the Project.
- Clearly demonstrate the functionality of your project. You can get as creative as you want here! Use a variety of methods to tell your story. Some examples are: skits, slide presentations, testimonials from users, or interviews. You might even want to add some text, arrows, or images to the video to clearly demonstrate what you are talking about.
- Highlight the unique features of your project. Show off all the awesome things you developed. These features will help you stand out from the crowd! If you can show them off in an original way, even better!

Unit 4: Demo Video

Module 4: Present



THANK YOU!

More slides coming soon!