

— Become a Future *Trailblazer* in 6 weeks —

YOUR NAME HERE

is on a journey to become a

Trailblazer*

* *an innovator making the
world a better place*

FUTURE
READY

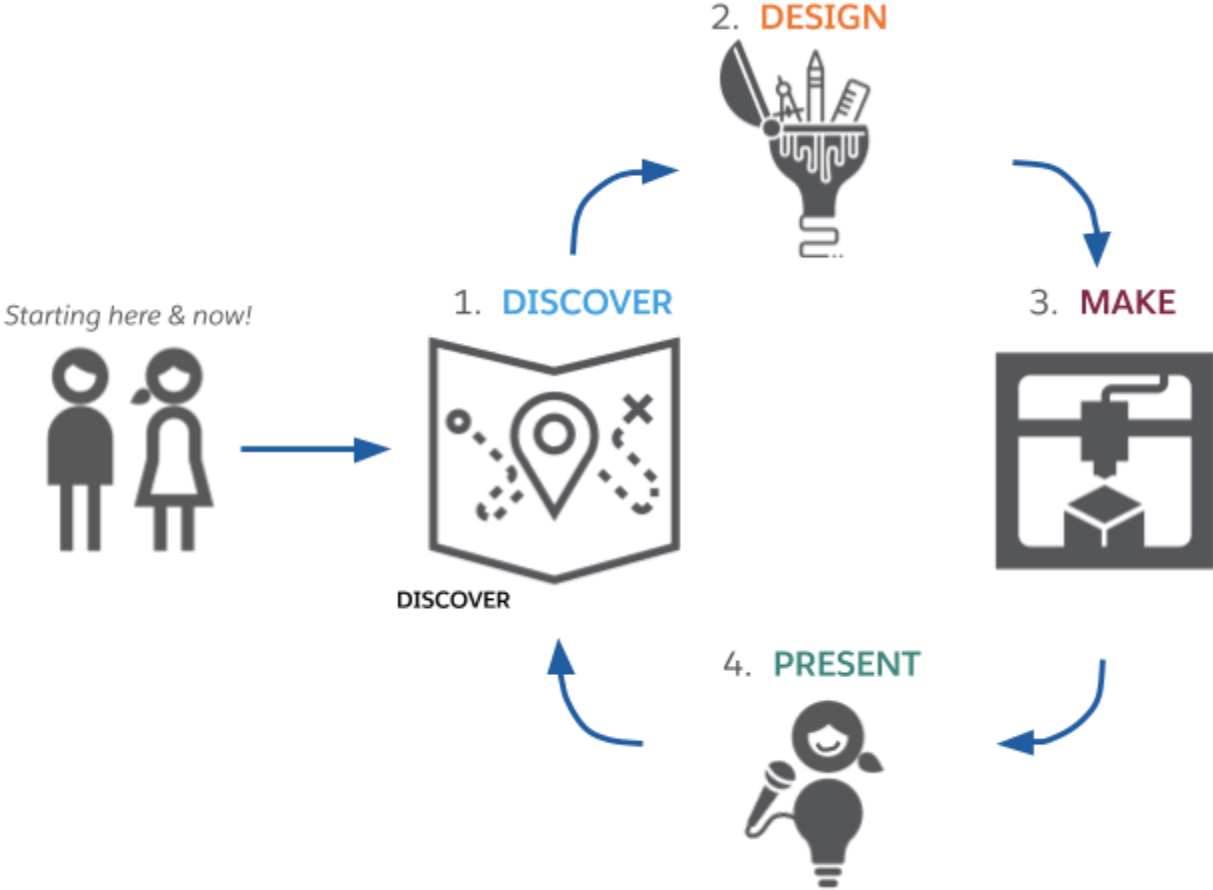
Handbook made with ❤️ by



+



The Maker Process Overview



Module 1

DISCOVER 00



In this module, you'll learn about:

- The Global Goals
- The Future Trailblazer Challenge
- New technologies for Trailblazers:
 - 3D Printing
 - Electronics with micro:bits
 - Coding

Lesson 1.1 | Learn About the Global Goals

1. Do Now

"What are the biggest problems faced by people around the world today?"

Write your answers in the box below:

2. What is the Future Trailblazer Challenge?

Watch the presentation and answer the following questions:

- Name two other cities where students participated in the Future Trailblazer Challenge:
- What are two new technologies you will learn during this challenge?

3. What are the Global Goals (aka Sustainable Development Goals or SDGs)?

Watch the video and answer the following questions:

- What year is the target completion date for the Global Goals?
- What are some of the biggest challenges that humanity 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?

4. Global Goals Scavenger Hunt

Find the answers on the Global Goals Posters

Global Goals Question	Answer
What percentage of food is wasted each year?	
How much forest was lost between 2010 and 2015?	
Most of the children who are not enrolled in school live where?	
What is the leading cause of death among adolescents in Africa?	
Globally, how many women and girls are married before the age of 18?	
How much has global emissions of carbon dioxide increased since 1990?	
What percentage of the global population lacks access to modern electricity?	
What is the increase in internet users in Africa since 1990?	
What percentage of prisoners are held without sentencing?	
How much more likely are people with disabilities to have high medical costs?	
How many countries are members of the United Nations?	
How many people live below the global poverty line (less than \$1.25 a day)?	
How many people lack access to toilets or latrines?	
How many people depend on the ocean for their livelihoods (job and food)?	

How many children around the world go to school hungry?	
What percentage of the global population does not have access to mobile broadband?	
How much more do men earn than women, on average?	
How many people live in cities today?	

Wrap Up Activity: Which Global Goals are you most interested in learning more about?

Choose 2 to 5 goals, and circle them.



What interests you about them? _____

Lesson 1.2 | Turn Your Learnings into Action

1. Do Now

Organize the 17 Global Goals into 3 main categories: Poverty, Inequality, Environment.

- Try to get at least four goals for each category
- You don't need to fit all the goals into the categories
- You can find all the goals listed on the previous page

Note: There can be more than one right answer.

Poverty	Inequality	Environment

2. Explore Solutions to the Global Goals

Video 1: Elif ([goo.gl/W4vp6c](https://www.youtube.com/watch?v=W4vp6c))

- What solution did Elif create?

Video 2: Rohit, Philadelphia, Nigeria ([goo.gl/ypSf8k](https://www.youtube.com/watch?v=ypSf8k))

- What solution did Rohit create?

- What solution did young people in North Philadelphia create?

- What solution did young people in Nigeria create?

Video 3: Bali and Jordan (goo.gl/b23t9L)

- What did young people in Bali accomplish?

- What solution did Muzoon create?

3. Learn from an Example: Team Lawton, Fall 2018 Challenge Winner

Watch the video and answer the following questions:

What problem does the project try to address?	
Name three ways their project addresses the problem.	
How could you imagine improving the project? <ul style="list-style-type: none"> • What additional things could the project do? • How could it be easier to use? 	

Lesson 1.3 | Code a Scrolling Namebadge

1. What is the Micro:bit?

Watch the video and answer the following questions:

- What are 2 objects that you can build with a Micro:bit?

- Name 2 of the features that the Micro:bit has?

2. Micro:bit Tutorial Check List

Take note of which Tutorials you complete, and what you learn from them that you might be able to use in your project.

Name of Tutorial	Date Attempted	What did you learn? New component or feature
Electronic Nametag		
Smiley Buttons		
Code a Micro:Chat bit.ly/microbit-quest1		
Banana Keyboard bit.ly/microbit-quest2		
Hack your headphones bit.ly/microbit-quest3		
Stopwatch bit.ly/microbit-quest4		
Show the Light Level bit.ly/microbit-quest5		
Reaction Pad Game bit.ly/microbit-quest6		

Lesson 1.4 | Design and 3D Print Your Own Keychain

1. What is 3D Printing?

Watch the video and answer the following questions:

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

2. Tinkercad Instructions

1. Go to tinkercad.com
2. Login either with your school account or the class ID your teacher gave you
3. Navigate to Learn > Lessons > Learning the Move to get started and complete those tutorials:
 - a. Learning the Moves
 - b. Camera Controls
 - c. Creating Holes
 - d. Scale, Copy & Paste
 - e. Key Ring, Letters!

Great job, once you're done with the keyring tutorial, you can have your own name in there and get it to 3D print if you have a printer in your classroom.

3. 3D Printing Tutorial Checklist

Take note of which Tutorials you complete, and what you learn from them that you might be able to use in your project.

Name of Tutorial	Date Attempted	What did you learn? New component or feature
Keychain bit.ly/3d-start		
Bookmark bit.ly/3d-quest1		
Diamond Ring bit.ly/3d-quest2		
Simple House bit.ly/3d-quest3		
Bat Button bit.ly/3d-quest4		
Glowing Penguin bit.ly/3d-quest5		
Moving Bee bit.ly/3d-quest6		
Waving Monkey bit.ly/3d-quest7		

Module 2

DESIGN



In this module, you'll:

- Find your group
- As a group, agree on a way to solve a Global Goal
- Create your own comic book to illustrate a Global Goal
- Start to build a prototype of your solution in cardboard!

Lesson 2.1 | Find Your Group and Select Your Challenge

1. Do Now

- Which Global Goals are you most interested in building solutions for?

- What questions do you have about them?

2. Group Formation

Team Name

Choose a team name and write it below:

Global Goal

Which goal will your group focus on?

(Don't worry about what specifically you will create at this point, just consider what type of problem you are interested in.)

3. Discovery

Part I: Set Global Goal Targets

Review the targets for your group's Global Goal, based on the list from:

bit.ly/goal-targets

Identify two or three that your project could focus on and list them below.

Example: Target 1.1 Eradicate Extreme Poverty

Part II: Conduct Additional Research

List three to five important facts about your topic. You can use this page bit.ly/goal-facts or search engines.

1	
2	
3	

4	
5	

4. Problem Statement

A problem statement is a tool to help innovators focus on the most important things to solve for.

1. **First**, write down what problem you are trying to solve
2. **Second**, identify who your users are and what their needs are
3. **Third**, incorporate a key learning or insight from your research about why it is important to solve the problem

Work with your team to write a problem statement by answering the questions below.

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

Who does the problem affect and what do the people who are affected need most?

Why is it important to solve the problem?

Example of a Problem Statement:

(Who - your audience or group of users):

Students who care about endangered species

(need(s) a way to - your audience's need):

need a way to easily find out about the animals that need the most help

(because - your insight, or what you learned in research):

because they would like to participate in activities to save the animals.

Your Group's Problem Statement:

(Who - your audience or group of users):

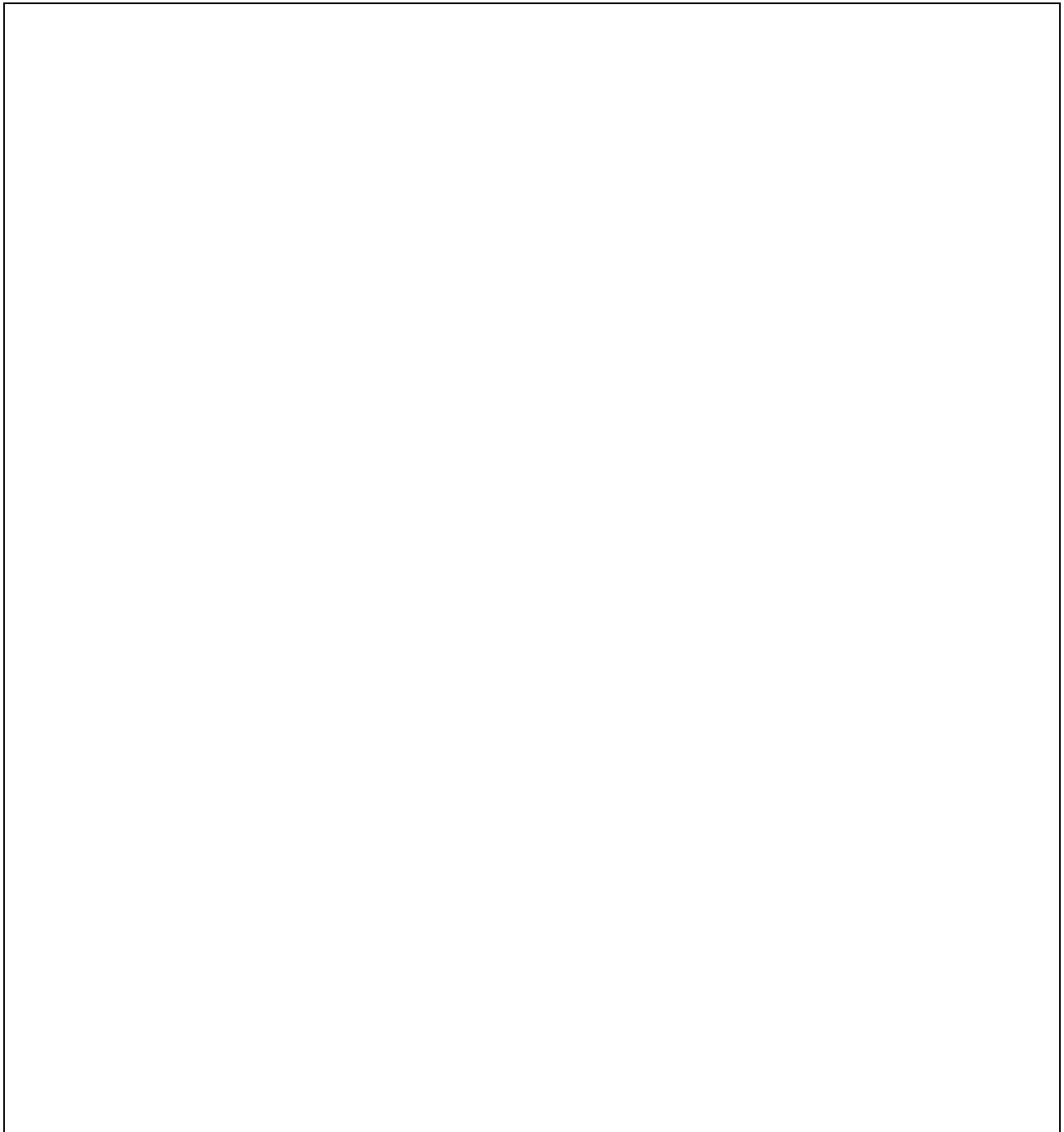
(need(s) a way to - your audience's need):

(because - your insight, or what you learned in research):

Lesson 2.2 | Brainstorm Solutions

1. Do Now

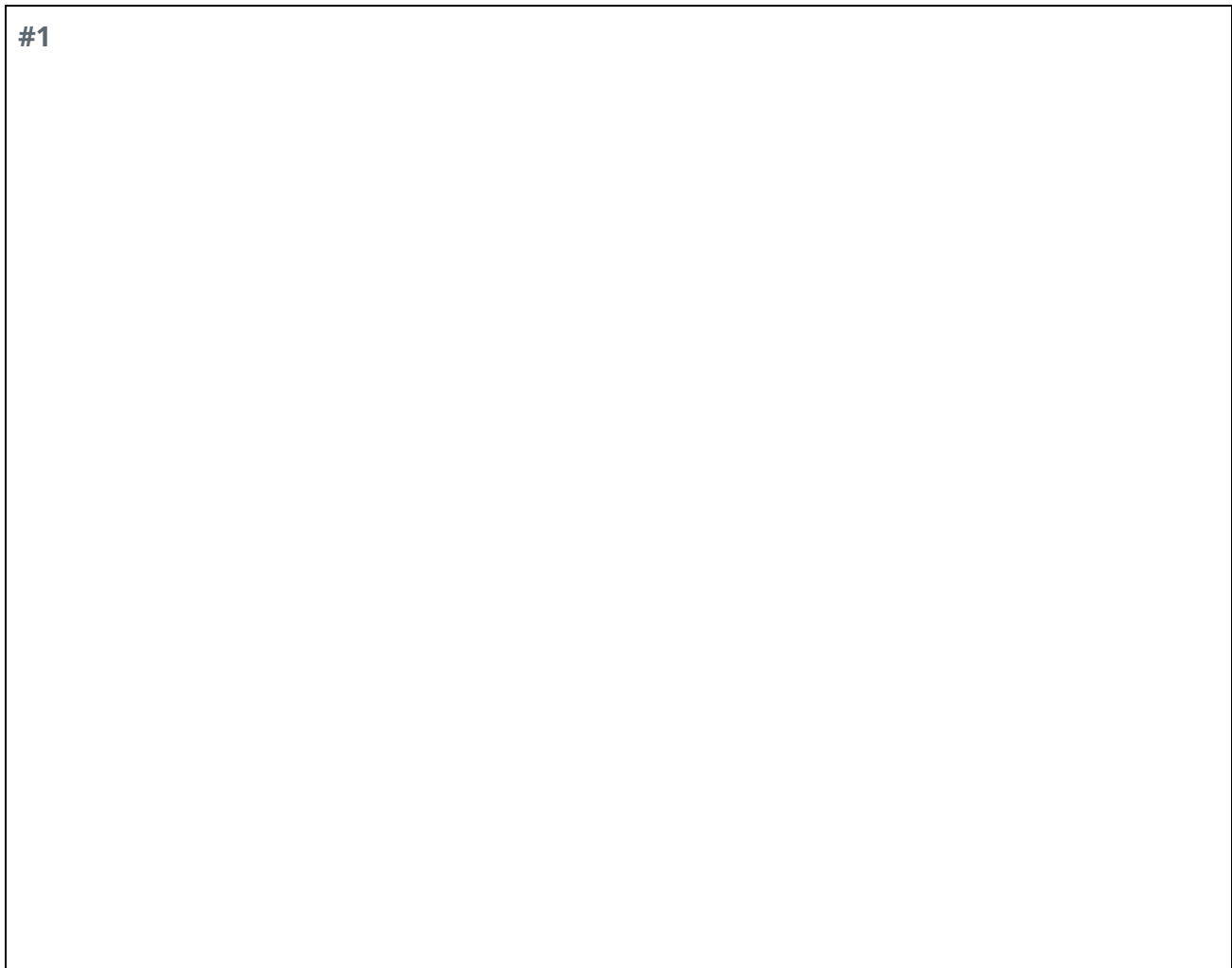
Write down at least five CRAAAZZZZY ideas on how you'd use tech to solve the problem in your problem statement

A large, empty rectangular box with a thin black border, intended for students to write down their brainstormed ideas. The box is currently blank.

Wild Idea Dash #1

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

#1



Partners Feedback:

A. Does this solution **address the problem**?



B. Would a user find this solution **helpful**?



C. Is building this solution **feasible** (doable)?

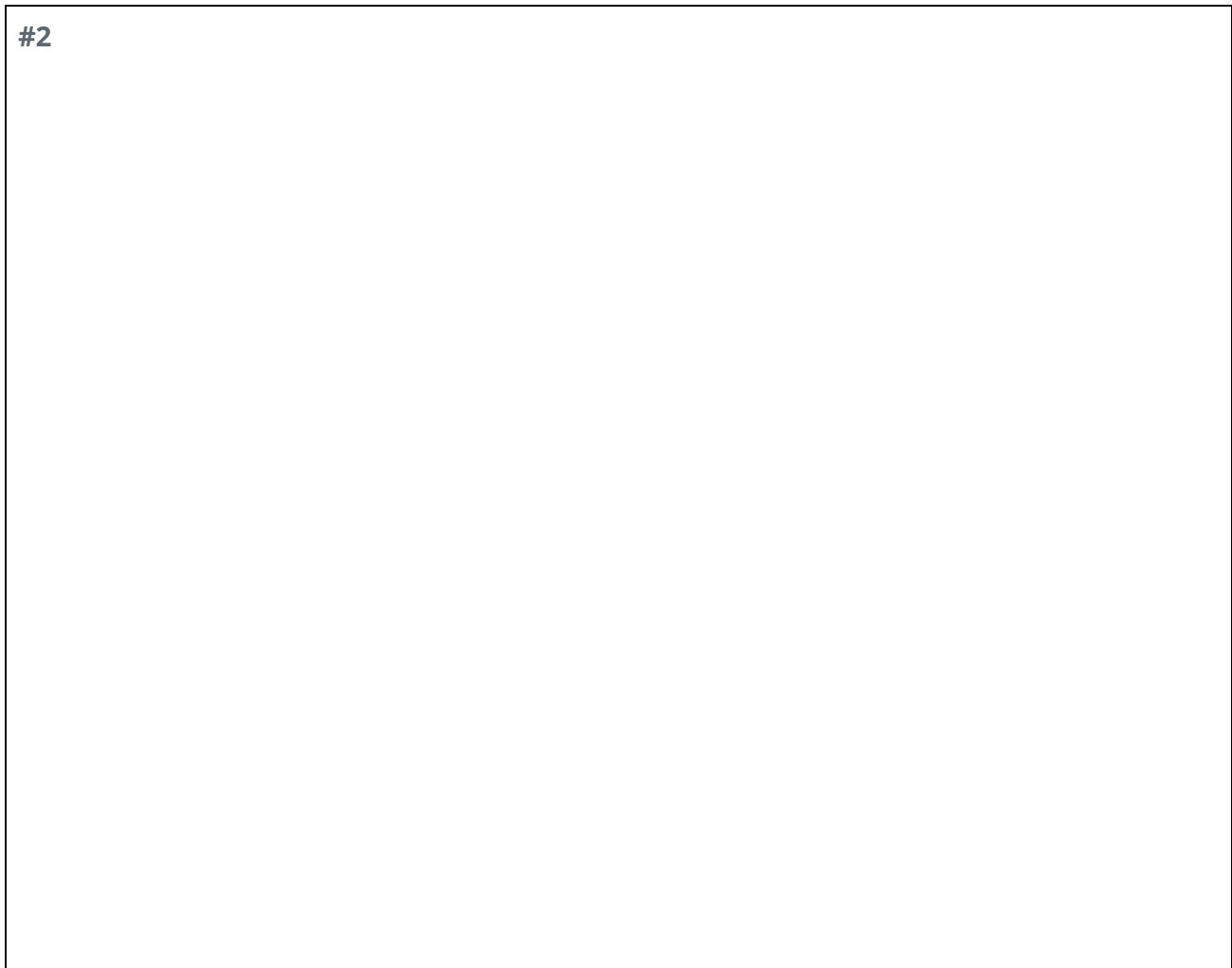


D. Other Notes: _____

Wild Idea Dash #2

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

#2



Partners Feedback:

A. Does this solution **address the problem**?



B. Would a user find this solution **helpful**?



C. Is building this solution **feasible** (doable)?

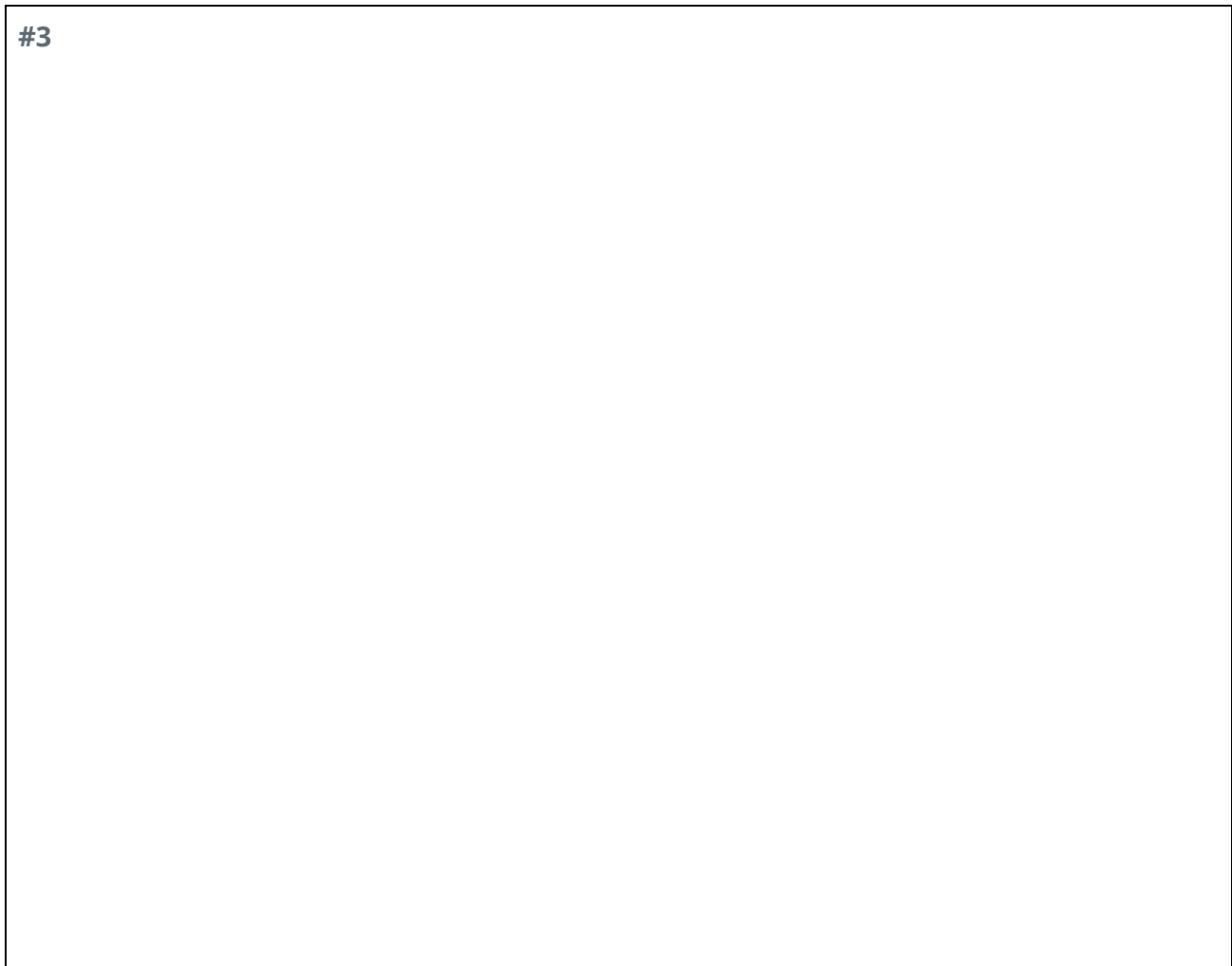


D. Other Notes: _____

Wild Idea Dash #3

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

#3



Partners Feedback:

A. Does this solution **address the problem**?



B. Would a user find this solution **helpful**?



C. Is building this solution **feasible** (doable)?

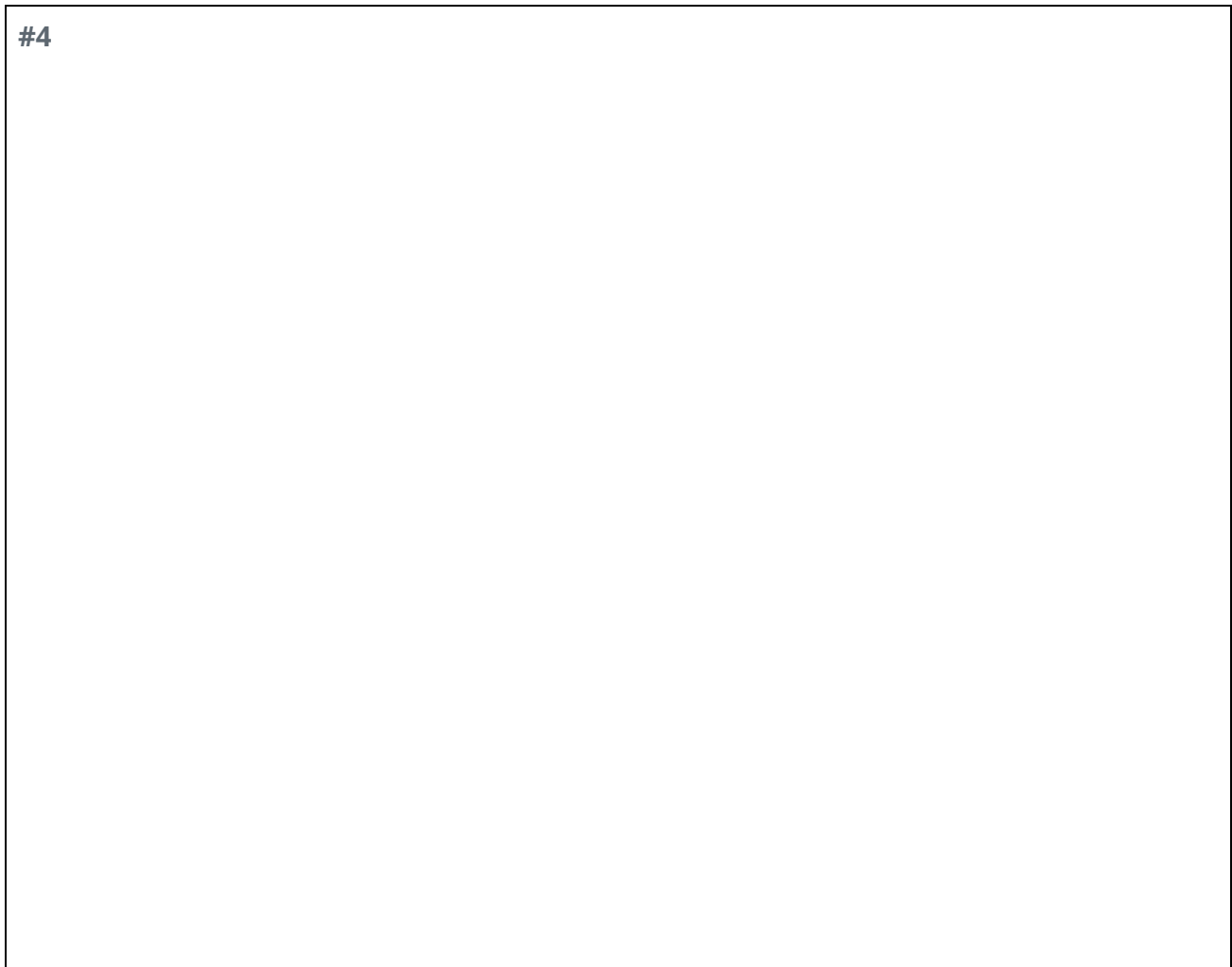


D. Other Notes: _____

Wild Idea Dash #4

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

#4



Partners Feedback:

A. Does this solution **address the problem**?



B. Would a user find this solution **helpful**?



C. Is building this solution **feasible** (doable)?



D. Other Notes: _____

Narrow it Down to 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 full description of what it will do. It's fine if your design changes later, you just need a place to start!

Note: Try to think how you would use 3D printing, the micro:bits or even a phone or a computer.

Prototype Title: _____

Full description of what it does: _____

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

Lesson 2.3 | Illustrate a Global Goal: Create a Comic Book!

In this lesson you will bring your selected Global Goal and solution to life through a comic book character that you create and some situations that you design. Let's start by creating your main character:

1. Character(s)



Name(s):

Age:

Profession:

City:

Other Information/Passion:

Habits: Daily Routine

Struggles:- How is the person affected by the challenge named in the Goal?

Opportunities:- What could be done to improve this person's life?

How could we solve the person's struggles?

2. Comics



Action:



Action:



Action:



Action:



Action:



Action:

2. Comics (2)



Action:



Action:



Action:



Action:



Action:

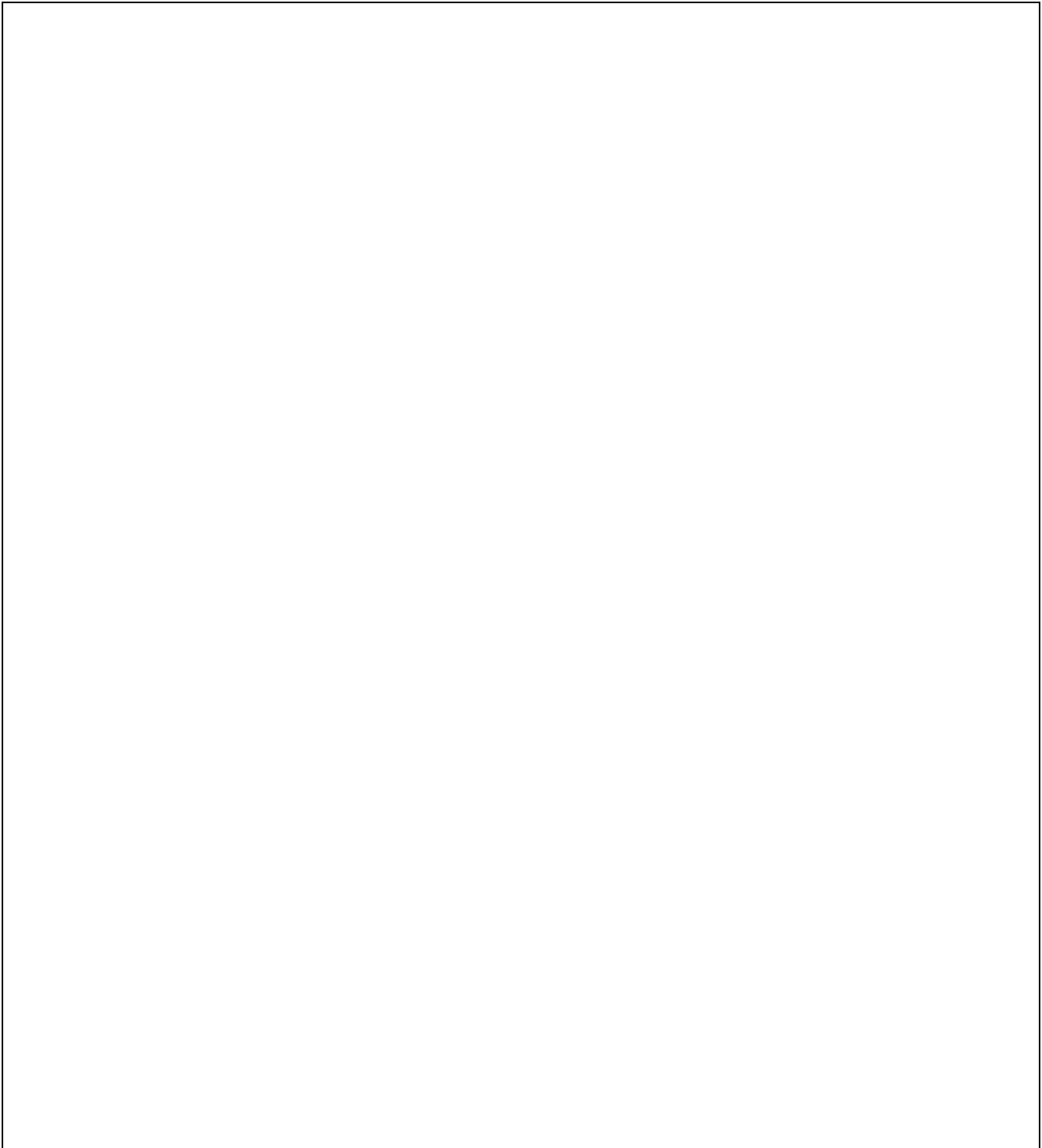


Action:

Lesson 2.4 | Prototype in Cardboard

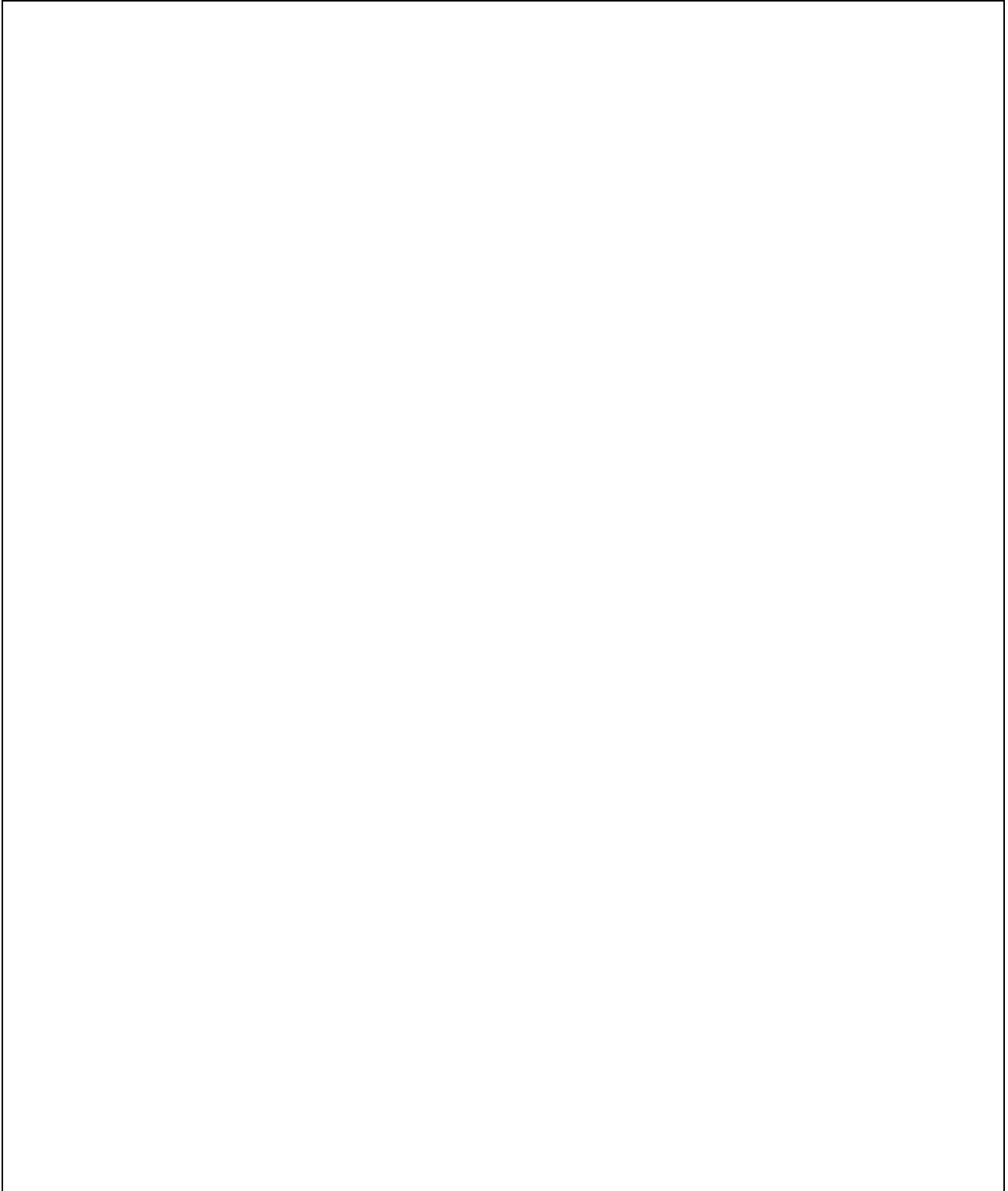
1. Brainstorming Space #1

This is a blank canvas you can use to draw your first draft of a prototype in 3D . Drawing it first will help you envision the end result before you get into cutting cardboard!



2. Brainstorming Space #2

This is a blank canvas you can use to refine the first draft of your prototype.



Module 3

MAKE



In this module, you'll:

- Learn how to manage your project using the Agile methodology
- Define your roles and tasks
- Make your creation!

Lesson 3.1 | Learn How to Manage Your Project

1. Learn About the Project Management Process

Watch the video and answer the following 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?

2. Define Your Roles

Talk with your teammates about roles, and each member picks a role.

Role	Team Member Name(s)
<div data-bbox="228 1436 727 1528">Project Manager</div> <div data-bbox="321 1530 610 1764"></div> <ul data-bbox="217 1797 764 1934" style="list-style-type: none">• Manage the spreadsheet• Run the daily stand-ups for the team• Make sure everybody is on track and not blocked.	<p data-bbox="862 1902 1382 1934"><i>1 person only, can have another role too</i></p>

Role	Team Member Name(s)
<p data-bbox="272 222 680 310">3D Artist</p>  <ul data-bbox="217 583 769 684" style="list-style-type: none"> • Design the required 3D models • Print the models using the 3D Printer • Test and iterate on the designs 	<p data-bbox="943 653 1295 684"><i>1 person or more, if needed</i></p>
<p data-bbox="228 724 724 812">Electronics Guru</p>  <ul data-bbox="217 1085 708 1260" style="list-style-type: none"> • Code the micro:bits used in the project • Assemble the micro:bits with the electronic pieces (LEDs...) • Test and iterate on the circuits 	<p data-bbox="943 1226 1295 1257"><i>1 person or more, if needed</i></p>
<p data-bbox="272 1299 680 1388">Mad Coder</p>  <ul data-bbox="217 1661 716 1761" style="list-style-type: none"> • Code the Sketch/Web App (if any) • Run/test the code • Integrate code with micro:bits 	<p data-bbox="943 1730 1295 1761"><i>1 person or more, if needed</i></p>

3. Break Down the Tasks

Task Details	Assigned to	Hours of work needed

4. Learn How to Use Trello

Watch the video and answer the following questions:

- What is Trello?

- How is your team is going to use it?

5. Create Your Trello Board

One team member (and only 1!), the **Project Manager**, needs to go to this url to create a Trello Board for your team: bit.ly/ftc-trello

1. Click **Sign Up** on the top right
2. Don't bother entering all that manual information, just click **Sign Up with Google** and use your school google account
3. Voilà! You're signed-in and can go to the next step

You'll need to make a copy to use it with your project.

1. Click **Show More** on the top right
2. Click **... More** in the right panel, that'll show you more option.
3. Click **Copy Board** to create your own copy of this template.
4. Put a title, like the name of your team or your project. Click **Create**.
5. Boom! You just have your own Trello board now!

Good job! Now that you've copied the board, time to add your team to start collaborating on it!

1. Click **Invite** next to the board title on the top
2. Add your teammates emails
3. Make sure your teammates sign up for Trello with their google account too!

Then, everybody can access it on Trello and work on it together. Now that you have your own board, time to can start filling it!

To guide you:

1. Open the "**How to use this??** 🤔" card
2. Work on the "**TO DO - Get Started**" items.
3. You can tick each item once you've done it.
4. Have fun!

Lesson 3.2 | Sprint Day 1

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the "Parking Lot"

(<15 min)

Write down what you want to discuss with the team later after each member's update.

3. Get to Work!

Work on your tasks for the day.

Lesson 3.2 | Sprint Day 2

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the "Parking Lot"

(<15 min)

Write down what you want to discuss with the team later after each member's update.

--

3. Get to Work!

Work on your tasks for the day.

Lesson 3.2 | Sprint Day 3

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the "Parking Lot"

(<15 min)

Write down what you want to discuss with the team later after each member's update.

3. Get to Work!

Work on your tasks for the day.

Lesson 3.2 | Sprint Day 4

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the "Parking Lot"

(<15 min)

Write down what you want to discuss with the team later after each member's update.

3. Get to Work!

Work on your tasks for the day.

Lesson 3.2 | Sprint Day 5

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the "Parking Lot"

(<15 min)

Write down what you want to discuss with the team later after each member's update.

3. Get to Work!

Work on your tasks for the day.

Lesson 3.2 | Sprint Day 6

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the “Parking Lot”

(<15 min)

Write down what you want to discuss with the team later after each member's update.

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3. Get to Work!

Work on your tasks for the day.

Lesson 3.2 | Sprint Day 7

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the "Parking Lot"

(<15 min)

Write down what you want to discuss with the team later after each member's update.

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3. Get to Work!

Work on your tasks for the day.

Lesson 3.2 | Sprint Day 8

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the "Parking Lot"

(<15 min)

Write down what you want to discuss with the team later after each member's update.

3. Get to Work!

Work on your tasks for the day.

Lesson 3.2 | Sprint Day 9

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the "Parking Lot"

(<15 min)

Write down what you want to discuss with the team later after each member's update.

3. Get to Work!

Work on your tasks for the day.

Lesson 3.2 | Sprint Day 10

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the “Parking Lot”

(<15 min)

Write down what you want to discuss with the team later after each member's update.

3. Get to Work!

Work on your tasks for the day.

Lesson 3.2 | Sprint Day (extra)

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the "Parking Lot"

(<15 min)

Write down what you want to discuss with the team later after each member's update.

3. Get to Work!

Work on your tasks for the day.

Lesson 3.2 | Sprint Day (extra)

1. Prepare for the Stand Up Meeting

(5 min)

Fill in the table and share it with your group.

Last class, I worked on...	Today, I'm working on...

2. Note Topics for the “Parking Lot”

(<15 min)

Write down what you want to discuss with the team later after each member's update.

3. Get to Work!

Work on your tasks for the day.

Module 4

PRESENT



In this module, you'll:

- Learn how to pitch your project
- Practice with your friends
- Pitch your project to Salesforce employees and customers! 🕶️

Lesson 4.1 | Learn How to Pitch Your Project

1. Tips for Effective Public Speaking

Speak Loudly

- Speak to the person farthest away from you to ensure your voice is loud enough to project to the back of the room.

Speak Loudly

- Vary the tone of your voice and dramatize if necessary

Speak Clearly

- Speak SLOWLY

Speak Clearly

- Use PAUSES

Speak Clearly

- Don't mumble

Use Body Language Effectively

- Stand up straight

Use Body Language Effectively

- Don't fidget

Make Eye Contact

- Do NOT read directly from your notes

Make Eye Contact

- You can glance at your notes infrequently. When you do this, look at your notes while pausing, and THEN speak.

Project Confidence

- Smile and look relaxed (even if you are nervous!)

Project Confidence

- Breathe

Project Confidence

- Be enthusiastic

Remain calm

- Remain calm- If you make an error, correct it, and continue. Do not make excuses or apologize profusely.

Know your material

- Speak with conviction as if you really believe in what you are saying

Know your material

- PREPARE!!! PRACTICE!!

2. Practice Exercise: Persuade Me

Topic chosen: _____
(for example: cats vs. dogs, wake up early vs. staying up late...)

PROS	CONS
<i>Write 3 pros</i>	<i>Write 3 cons</i>

What's a fun story that shows why one is better than the other?

Lesson 4.3 | Presentation Planning

1. Engage, Inform and Inspire: Tools and Techniques

Engage: Get the audience's attention	Inform: Give information about your topic	Inspire: Get others to take positive action
<ul style="list-style-type: none"> ● Ask a questions <ul style="list-style-type: none"> ○ -raise your hand if... ○ -have you ever... ○ -pair/share ○ -shareout ● Call and Response <ul style="list-style-type: none"> ○ (when I saw jala you say peno) ○ clap once if you can hear me ● Connect with audience through: <ul style="list-style-type: none"> ○ Use Humor/Tell a joke ○ Play a Game ● Use energy, Be energetic <ul style="list-style-type: none"> ○ Music ● Introduce the problem/topic <ul style="list-style-type: none"> ○ tell them the issue ○ why is it relevant to the class ● Use energy, Be energetic <ul style="list-style-type: none"> ○ Music ● Public Speaking Skills <ul style="list-style-type: none"> ○ speak loudly and clearly ○ make eye contact ○ vary the tone of your voice 	<p>*Hit 'em in the head with facts!</p> <p>Use:</p> <ul style="list-style-type: none"> ● Visuals <ul style="list-style-type: none"> ○ Posters ○ Pictures ○ Flyer ○ Handout ○ Pamphlet ○ Use color! ● Slides ● Videos ● Kinesthetic Activities <ul style="list-style-type: none"> ○ Demo through skit/play 	<p>*Hit 'em in the heart with stories!</p> <ul style="list-style-type: none"> ● How will this project have a positive social impact? ● Tell a story of a potential user ● Explain how these stories inspired you to take actions ● Add your own Life Experiences and Passion!

2. Presentation Planner: Engage, Inform, Inspire

What Strategy will you use to Engage your audience (get their attention)?	
What Strategy will you use to Inform your audience (give them information)?	*You will use your Prototype*, but feel free to add more
How will you Inspire your audience (make sure they remember your presentation)?	*A common strategy is to tell a story about how the User will use the solution or prototype to solve a problem or a challenge

3. Pitch Your Project

(instructions or guidance here?)

Appendix | Useful items for you 🙄

Deliverables

Here is the list of the items you will produce throughout the program. You can check them off as you complete them!

Module 1

- Paper Chain
- Advocacy Presentation (Slide, Sketch, HTML...)

Module 2

- Your Group Problem Statement
- A Small Comic Book
- A Cardboard Prototype!

Module 3

- A List of Tasks to be Accomplished
- Project Overview with Trello
- Prototype for Demo 🤪🚀

Module 4

- 2 to 3 minute Pitch
- Demo Video (*optional*)
- At Least 1 Pitching Session in Front of Salesforce Employees!

 If you arrived at this point... CONGRATULATIONS!



Global Goals (or Sustainable Development Goals, SDGs)



— Become a Future *Trailblazers* Challenge in 6 weeks —



WEEK 1: DISCOVER

Total: 5-7 hours

Module 1, Part 1 Global Goals & Trailblazer Challenge ← 50 min. →	Module 1, Part 2 Turn Learnings into Action ← 50 min. →	Module 1, Part 3 Global Goals Advocacy ← 50 min. →	Module 1, Part 4 Micro:bits Workshop(s) ← 1 or 2 x 50 min. →	Module 1, Part 5 3D Printing Workshop(s) ← 1 or 2 x 50 min. →
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WEEK 2: DESIGN

Total: 4-6 hours

Module 2, Part 1 Find Your Group and Your Challenge ← 50 min. →	Module 2, Part 2 Brainstorming Session ← 50 min. →	Module 2, Part 3 Create Your Own Comic Book! ← 50 min. →	Module 2, Part 4 Prototype in Cardboard ← 1 to 3 x 50 min. →
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WEEK 3-5: MAKE

Total: 10 to 15 hours

WEEK 3		WEEK 4		WEEK 5	
Module 3, Part 1 How to Manage Your Project ← 50 min. →	Module 3, Part 2 Stand-up meeting & working session ← 4 x 50 min. →	Module 3, Part 2 Stand-up meeting & working session ← 5 x 50 min. →		Module 3, Part 2 Stand-up meeting & working session ← 1 to 5 x 50 min. →	



WEEK 6: PRESENT

Total: 4-6 hours
+ Field Trip

Module 4, Part 1 Introduction to Pitching ← 50 min. →	Module 4, Part 2 Demo Video ← 50 min. →	Module 4, Part 3 Presentation Planning ← 2 x 50 min. →	Module 4, Part 4 Maker Showcase at Salesforce! ← 1/2 to 1 day →	Module 4, Part 5 Finalist at TrailheaDX ← 1/2 to 1 day →
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