



STEM Toolkit

Competitor Guide

**Interested in solving
problems that
matter?**

**Welcome to World
Series of Innovation
(WSI).**

**We celebrate global
youth
entrepreneurship and
the power of
innovative ideas.**

Are you up for the challenge?
See if you can think like a STEM entrepreneur.

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What is STEM?

STEM stands for **Science, Technology, Engineering, and Mathematics**. It's a way of grouping together subjects that involve using your knowledge and skills to understand and solve real-world problems.



Tech entrepreneurship is a part of STEM that involves using technology to create and run a business. This could mean coming up with innovative ideas for products or services, building and using technology to make them a reality, and then turning that into a successful business. It's about using your creativity and technical skills to make a positive impact on the world while also potentially making a living from it. Most tech entrepreneurs:

- Had an idea for an app that solved a unique problem for their customers. In other words, they saw a *business opportunity*.
- Marketed their idea so that customers found their product.

Tech entrepreneurs with a strong entrepreneurial mindset



Sheila Marcelo

Care.com

An app that connects people to quality caregivers



Jordi Muñoz

3D Robotics

Drone software for engineering and construction firms



Paypal Kadiaka

ClassPass

An app that gives access to fitness classes near you

Designing a Business Using STEM

How do tech entrepreneurs design innovative products?

Tech entrepreneurs design innovative products through a combination of creativity, design thinking, and STEM expertise to solve real world problems.

A tech entrepreneur typically develops the following steps:

1. Empathize and Define: Understand user needs deeply, define the problem clearly.
2. Ideate and Prototype: Generate creative ideas, create tangible representations.
3. Test and Iterate: Gather user feedback, refine the solution based on real-world interactions.
4. Develop and Design: Dive into technical aspects and focus on user experience.
5. Launch and Scale: Release the product, and if successful, work on strategies for growth and innovation.

A tech entrepreneur realizes that:

- Many different products can solve a problem
- Tech entrepreneurs create innovative products by finding unique solutions to problems

The relationship between a problem and a solution is a key building block for tech entrepreneurs to create successful businesses.

Designing a Business Using STEM

Let's Practice: Pet Innovation Game

Dogs and cats are causing mischief when left at home alone. Design a technology-based solution that will provide a unique solution to this problem.

Step 1: Empathize and Define:

Consider who will be using your product? What are their motivations?

Step 2: Ideate and Prototype:

Brainstorm creative solutions to this problem. Which solution seems the most effective?

_____What might your tech product or app look like? Sketch or prototype your idea below.

Key tips for your tech innovation:

- Your product will entertain dogs or cats to relieve boredom and keep them out of mischief.
- Consider what makes your product stand apart from other products. What makes it unique?

Designing a Business Using STEM

Let's Practice: App Startup

Pretend you are tech entrepreneurs. You have a startup company in need of a hot new app. Quickly brainstorm ways you could build an app that changes the way you could do one of these three things:

- How you get ready for school
- How you get ready for work
- How you get ready to sleep

Tech entrepreneurs question everything to create business opportunities.

How does your app solve a problem?

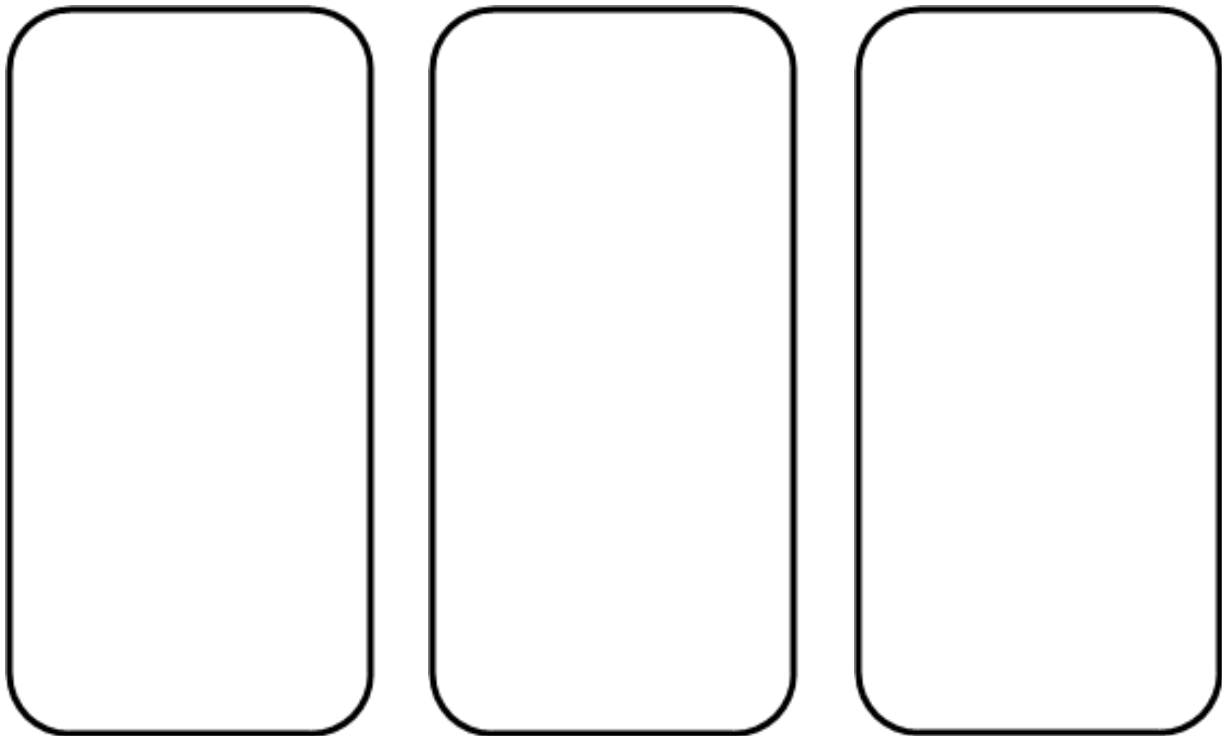
What features of your app make it innovative or unique?

Designing a Business Using STEM

Let's Practice: App Startup

Construct a wireframe of your app design to showcase the user interface.

An app wireframe is sketch but for making phone apps! It's a basic drawing that shows where buttons, pictures, and different parts of the app will go. It helps the people building the app understand how it should look and work. It's a rough plan before the real work begins.

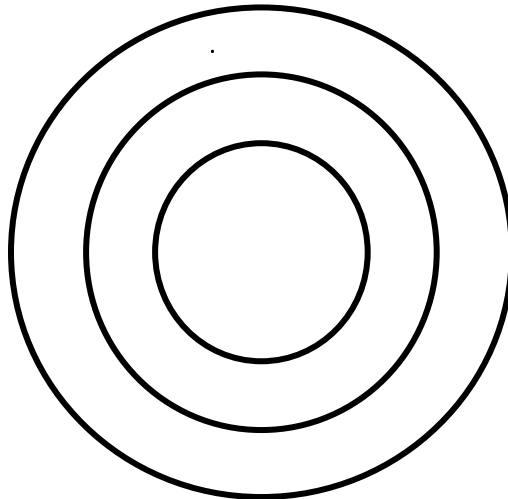


Coming up with an App Idea

How can I use the entrepreneurial mindset to create an original idea for an app?

Brainstorming is a way to spark your creativity and innovation to come up with many ideas at once. The best brainstorming happens in groups, where people can listen, build and discuss each other's ideas. The goal is to come up with as many ideas as possible, without any judgment.

As a group, think of reasons why people cannot get medicine when they are sick.



Step 1: As a group, use a critical thinking mindset to think of three reasons why people cannot get out to get medicine when they are sick.

- 1.
- 2.
- 3.

Step 2: In pairs, continue brainstorming the why: list as many reasons as you can.

Step 3: In a different pair, brainstorm the how/what: What is an app/based solution? How does it solve the problem?

Let's Practice: User Feedback Design Sprint

A **user feedback design sprint** is when a team works together to quickly create something in response to a challenge.

Design an app, as a team, that helps young people study.

Step 1: Use the boxes below to create “vignettes” that describes an idea for an app. Each teammate should create as many vignettes as possible. Then, choose the one you want to wireframe.

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Step 2: Swap wireframes with your teammates. Provide customer feedback on something.

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Step 3: Rapidly, revise your wireframe based on the feedback.

Intro to MIT App Inventor

MIT App Inventor is a tool that allows you to create your own mobile apps! It's a fun playground for app creation, even if you don't know much about coding.

Imagine building with virtual Lego blocks - you drag and drop different pieces to create an app. It's designed to be user-friendly and doesn't require advanced coding skills. So, even if you're new to programming, you can make your own apps for Android phones.

It's used by students, hobbyists, and even some professional developers to quickly build apps for various purposes. MIT App Inventor makes app creation accessible and fun!

Getting Started with MIT App Inventor

On your device, go to the MIT App inventor site by visiting <https://appinventor.mit.edu>

Once there, select "Create Apps!"



Create Apps!

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Donate



Sign in with a Google Account if you don't have one.



MIT App Inventor Resources

Here's a collection of resources you can use to learn various skills in MIT App Inventor!

Visit <https://appinventor.mit.edu/explore/resources> for more information.

Tech Entrepreneur Stories

MVMNT



MVMNT, an app that partners eco-conscious consumers with local green businesses and activism networks to foster sustainable lifestyles. Developed by 16-year-old Jason Lin and 16-year-old Daniel Shi, students at Cranbrook Kingswood School in Bloomfield Hills, Michigan.

Find out how the winners of the EY Collaborate for Impact challenge used design thinking to tackle UN Sustainable Development Goal 17.

1: Empathize

MVMNT was designed for customers between the ages of 20-30, with an average income of \$90k per year in the Michigan area. MVMNT's customers care about the environment and are willing to spend time and money on eco-friendly causes.

2: Define

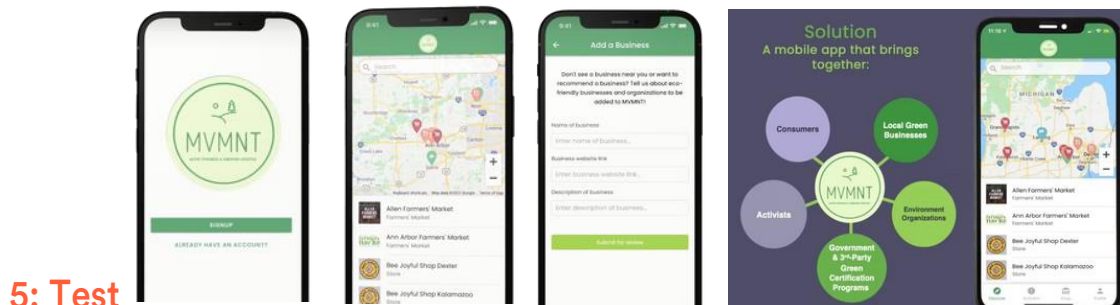
MVMNT identified that customers have no existing platform that lists sustainable products in one place. Local sustainable brands receive limited exposure. Customers have difficulty determining when a product is truly sustainable or eco-friendly.

3: Ideate

With MVMNT, users can discover local green businesses through the map feature, get involved with local environmental organizations through the activism network by signing up for activities, and make sustainable purchases through the product store.

4: Prototype

MVMNT developed a working application.



5: Test

Download the MVMNT app now by visiting themvmntapp.com