

Mars Startup School

Challenge 2
Tools & Spaces

**Let's Imagine the
Future of STEM
Education in Canada**

Welcome to the **Mars Startup School.**



As students, you have the experience and creativity to create a better education system for STEM (Science, Technology, Engineering & Math). As we imagine a new society on Mars we will need new schools. This is a unique opportunity to reimagine school from the ground up. It is up to you to design the components of Mars Startup School.

This mission requires courage, curiosity and creative thinking.
Let's blast off and get started!

Your Startup Design Kit.

Designing a new education system is not an easy task, so we created this workbook to help you through the Challenge. It consists of:

1 Student Workbook.

The *Student Workbook* is your guide throughout this Challenge. It includes all the information required to develop and communicate your ideas.



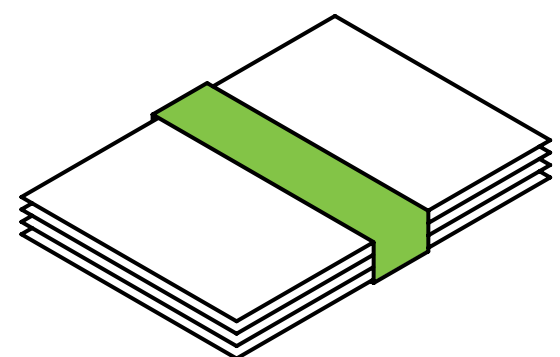
2 Worksheets.

The *Worksheets* will help your team organize your ideas as you design a component of Mars Startup School. They build on one another to ensure your team creates a solid concept.



3 Precedents Cards.

Precedents Cards showcase projects from around the world to provide inspiration and spark creativity within your team. These can be helpful at any point in the process.



Mars Startup School **Journey.**

Here are the steps your team will follow throughout the day to design a component of the Mars Startup School and totally reimagine STEM education. Let the Challenge begin!

1

Meet Your Team! (25 min.)

Meet Your Team! Get to know your teammates, their special talents and their passions.

2

Design Criteria. (40 min.)

Focusing on a component of Mars Startup School, your team will define design criteria, which will create a framework for your design concept.



3

Concept Design. (60 min.)

Building on your design criteria, your team will design a solution, experience or team that will transform STEM education.

4

Share. (45 min.)

Gather with other Mars Startup School teams who have worked on different components of the school. Share your solutions and see how they could all work together.

!

There are many unknowns throughout this Challenge, so don't be limited to the tools provided in the Mars Startup School Design Toolkit. Be creative and have fun!

Step One.

Meet Your Team!



Teamwork and collaboration are key to the success of this Challenge. Spend 25 minutes to get to know your team.

Introductions (5 min.)

Get to know each other and note the special talents each of you will contribute to the team. Quickly go around the table and share:

- Your name
- Where you go to school
- One special talent/strength

Take note of everyone's special talents because this can be helpful in the design process.

Play a Game (10 min.)

Two truths and a lie is a great game to help break the ice and loosen the mood on your team.

- Everyone write 2 truths and one lie on Post-its
- Go around the table and have members of the team guess the lies

Make sure everyone at the table has a chance to play before moving on to **Step 2**.

3. Discuss Your Vision for Mars Startup School (10 min.)

Before your team gets down to work, take a few minutes to think about how cool this challenge is... to design a Startup School on Mars. Imagine the possibilities of creating a new school. In what ways will the school you build on Mars be different from your school here on Earth? Write down the first ideas that come to mind and discuss as a group to get the creativity flowing. Make sure to take notes.



Brainstorm Tips & Rules.

Here are a few brainstorming tips to remember before your team begins imagining Mars Startup School:

- **Be open, honest and imaginative.**

When completing the Challenge, there are no right or wrong answers. Always be polite and respectful.

- **Forget about today's reality and dream big!**

Think about how much things have changed in your lifetime and imagine how much they will continue to change in the future.

- **Take it to heart.**

This is an opportunity to influence the next generations in a positive way. It's not often you're asked to contribute to a brighter future for Canada's youth, be thoughtful.

Step Two.

Design.



Now that your creativity is flowing, it's time to focus your efforts on one component of Mars Startup School. The component that you will be focusing on is Learning Tools and Spaces.

Classrooms are characterized by four walls, desks, blackboards and notebooks. These are the tools and spaces that make up much of the learning experience today.

It is your job to design the Learning Tools and Spaces for the Mars Startup School that will enhance the STEM learning experience and prepare students for the future.

Instructions: Design Criteria (40 min.)

Use the **WORKSHEET: OUR DESIGN CRITERIA** to help understand what tools and spaces help you learn and how they can be used at Mars Startup School to enhance STEM learning.

- Read each question on the worksheet aloud.
- Spend 2 minutes on each question and encourage everyone on the team to write as many ideas as possible onto Post-its.
- After writing ideas for each question, have everyone on the team place their ideas onto the worksheet and cluster similar ideas.

Summarize the key ideas and features at the bottom of the page to define your design criteria. Design criteria may include qualities and characteristics of the tools and spaces that you want at Mars Startup School. You can write directly on the poster!

OUTCOME: Identify the qualities, characteristics and types of learning tools/spaces that can enhance your experience at Mars Startup School.

Design.

Identify the qualities and characteristics of the tools and spaces that you want at Mars Startup School.

Our Design Criteria

What tools help you learn the best?

Consider tools you use in and out of the classroom to learn and what you might include in your backpack, on your computer or phone or in your classroom.

What environments or spaces spark your curiosity in STEM-related subjects?

Consider experiences in and out of school when you were really engaged in learning and what characteristics or qualities the spaces had that made you excited to learn.

What technologies do you use to help you learn in and out of the school?

Consider how technology helps you learn and what purpose it will serve at Mars Startup School.

What types of environments or spaces help you learn or enhance your learning?

Consider collaborative and individual learning experiences and what spaces help you learn best.

What 3 tools would you bring with you to Mars Startup School to enhance learning?

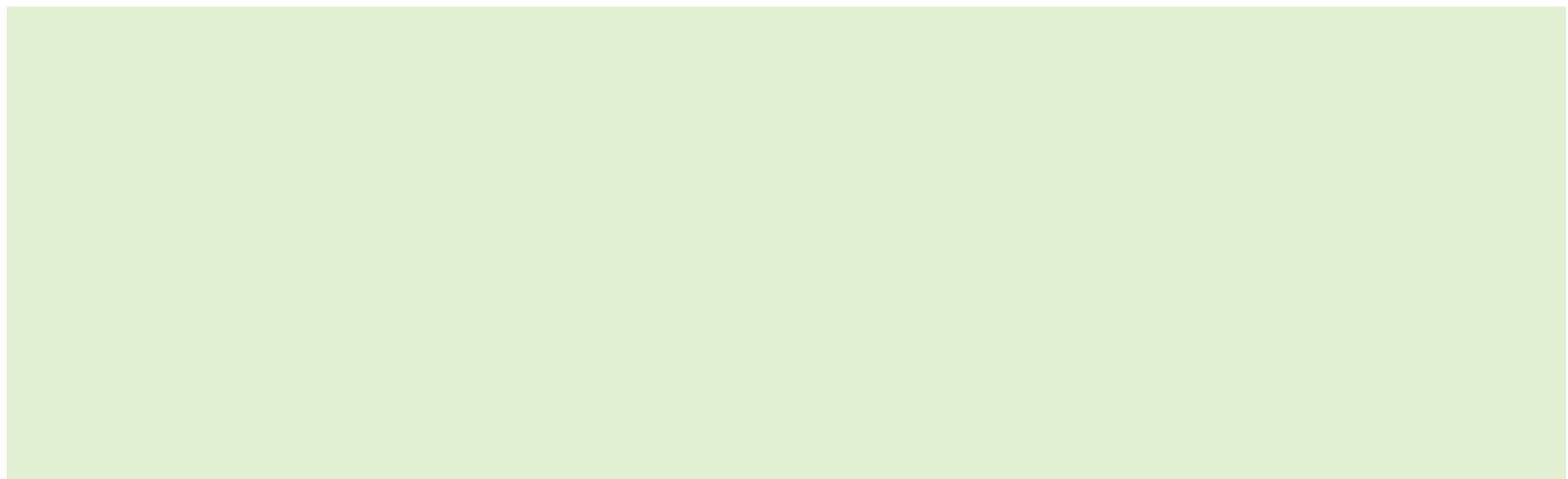
Consider the tools you believe are most important to help you learn and why you want to bring them to Mars Startup School.

How do you interact with your existing tools and spaces?

Consider how you interact with both digital and physical environments and identify the qualities you find most important in both the tools and spaces for learning.

Our Design Criteria.

Describe the key elements of the tools and spaces that will enhance your learning at Mars Startup School.



Step Two Cont'd.

Concept Design.



Now that you have some clear ideas about the characteristics and qualities of the tools and spaces that can enhance your learning experience, you will need to work out the details of the design.

Instructions: Design New Learning Tools & Spaces (60 min.)

Use the **WORKSHEETS: DESIGN NEW LEARNING TOOLS/SPACES** to help your team develop the details of the new Learning Tools and Spaces at the Startup School.

- Answer each of the questions on the worksheet in as much detail as possible. Go back to your brainstorm to remember the key ideas that everyone agreed should be included in your concept.

Note: You may want to split into two teams to design the Learning Tools and Spaces. You can get back together to discuss after creating a concept for each.

- Write or draw the details of your concept directly onto the poster.

Don't be limited by the questions on the poster. If you feel something else should be included or communicated about your concept - add it!

OUTCOME: Design the tools and spaces that will shape Mars Startup School and enhance your learning experience. Make sure you have the key tools and spaces needed to be successful!

Design.

Develop concepts for new learning tools that will enhance the learning experience at Mars Startup School.

Design New Learning Tools

What is it?

Define what the new tools will look and feel like.

How does it work?

Define what the tools include and how they will help you learn and achieve your goals.

How do these tools enhance STEM learning?

Consider who uses the tools and how they will use them to enhance STEM Learning.

Why will students, teachers and others want to use it?

Define why the tools will transform learning.

Where will you use it?

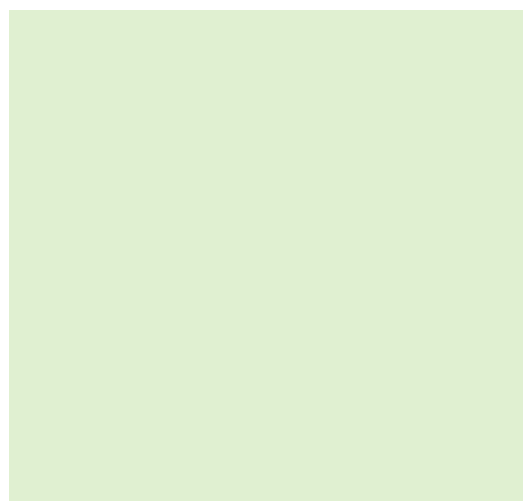
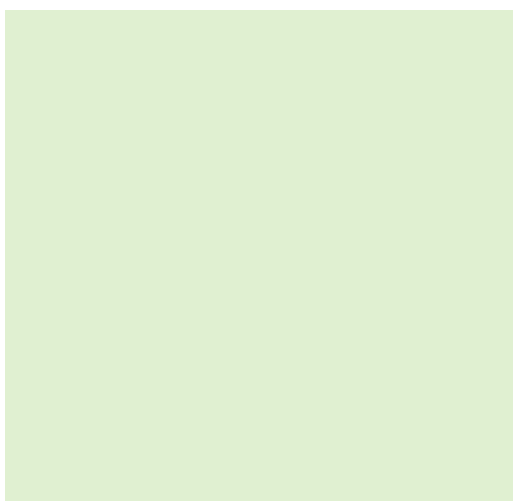
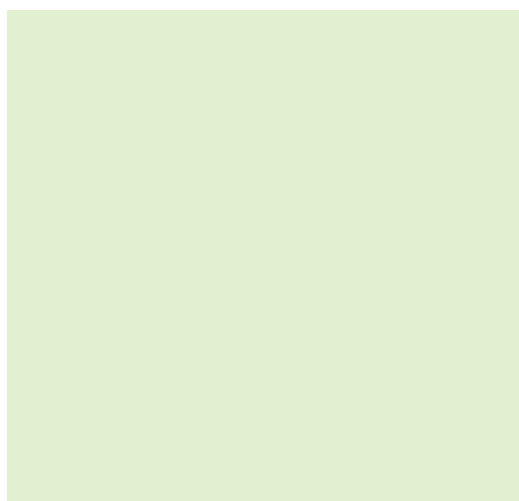
Define where the tools exist and how you access the tools.

When will you use it?

Define when in your academic and personal life you will use the tools and for how long?

Sketch it!

Add some sketches of your concept to help communicate how it works, what it looks like and how it might be used.



Step Three.

Share.



Summarize your Challenge and ideas to share with the other teams in Mars Startup School. Each team will only have **3 minutes** to present their final concepts, so be sure the team captures and communicates the most important features of your design!

Instructions: Share (45 min.)

Use the **SHARE WORKSHEET** to help you summarize your ideas. This should only take a few minutes to help you recap your ideas. You can use the other posters to help you present.

- Restate the design Challenge in your own words.
- Summarize the tools and spaces you designed and describe how they meet the design criteria you identified at the bottom of the **WORKSHEET: OUR DESIGN CRITERIA**.
- Describe how the tools and spaces will change the education system and their impact on future students.

Gather with the other teams in your Startup School community to share solutions and have a closing discussion about the future of STEM education.

OUTCOME: Summarize the key ideas your team developed throughout this Challenge and communicate your ideas to the other teams.

Share.

Summarize your Challenge and ideas to share with the other teams.
This should include the most important features of your design!

Our Team Summary

Our vision for Mars Startup School is...

Summarize your Mars Startup School vision.

Our design Challenge was...

Restate your design Challenge in your own words.

Our design criteria is...

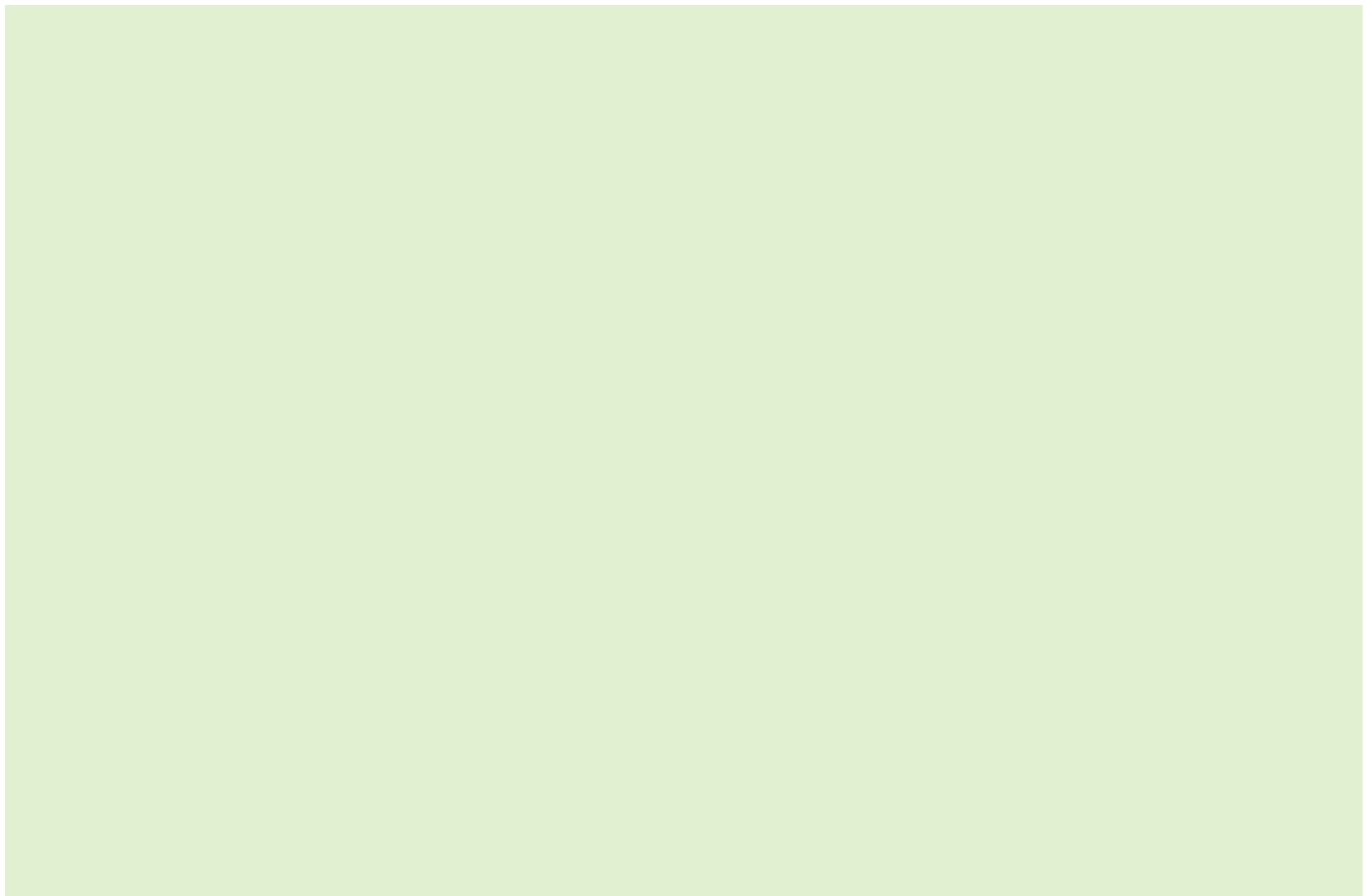
Summarize key ideas from your design criteria.

This will be different from the education system on Earth because...

Describe how the tools and spaces you designed will transform the educational experience and how they differ from the traditional system.

What it looks like and how it works...

Use sketches, day in the life scenarios or words to showcase what your design is trying to achieve.



Let's Wrap It up!

Thank you for participating in this Youth Summit and contributing ideas that will help shape the future of STEM education in Canada.

Before you depart please gather the worksheets, Post-its, sketches and notes your team produced over the course of this Challenge. **Place everything back on the table in order.**



Next Steps.

Canada2067

Believe it or not, **your ideas can influence change.** The ideas you produced today will be collected, captured, summarized and presented to policy makers from across Canada to help shape the future of STEM education.

How to Stay Involved.

If you enjoyed taking part in the **Canada 2067** Youth Summit and completing Mars Startup School Challenge you can stay involved in a number of ways:

- Host your own Canada 2067 Startup School workshop by downloading the materials we used today! www.explorecuriosity.org/canada2067
- Host a conversation about STEM learning using the Canada2067 Conversation Guides. Choose from: STEM and Everyday Life; The People We Learn From; and STEM and the Student's Role in Learning. www.canada2067.ca/en/are-you-a-student/#youth-workbooks
- Join us on social media to raise awareness about Canada2067 initiatives. Support us [@Can2067STEM](https://twitter.com/Can2067STEM). Together we can make difference! [#Can2067](https://twitter.com/Can2067)
- Learn more about STEM opportunities through CurioCity career profiles. www.explorecuriosity.org/canada2067





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