

# Facilitator Guide

Challenge 3  
The Program

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

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Presented by



Mars Startup School Challenge developed by



INSTITUTE WITHOUT  
BOUNDARIES

Mars Startup School materials were produced by Groundswell Projects and the Institute without Boundaries for Canada 2067, an initiative by Let's Talk Science, a national, charitable organization that is focused on education and outreach to support Canadian youth.

For more information on Canada 2067, please visit: [www.canada2067.ca](http://www.canada2067.ca)

**This guide has everything you need to lead your team through the Mars Startup School Challenge and help young people's voices be heard.**





# Welcome to the **Mars Startup School.**

Schools need to innovate and young people have solutions. Mars Startup School is a Canada2067 initiative to engage students from across Canada to reimagine school from the ground up, with a particular focus on STEM (Science, Technology, Engineering & Math) education.

As a facilitator, it is your role to lead the team through the Mars Startup School Challenge, encouraging creativity and collaboration as students reimagine components of the school system to better meet their needs.

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

# The Startup Design Kit.

Designing a new education system is not an easy task, so we created the following tools and templates to help your team through the Challenge:

## 1 Student Workbook.

The *Student Workbook* is the students' guide through this Challenge. It includes all the information required to develop and communicate their ideas.



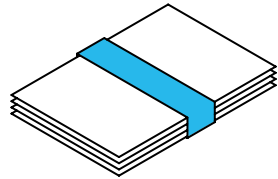
## 2 Worksheets.

The *Worksheets* will help your team organize your ideas as they 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.



**Note to facilitator:** This facilitator guide includes all the same content as the student workbook and worksheets, with some added tips and tools to help you guide your team in the right direction.

# Mars Startup School Challenge.

Here are the steps your team will follow 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.)

Your team will summarize and share their ideas with Mars Startup School teams who have worked on different components of the school. This is an opportunity to discuss how the ideas work together.

**Note to facilitator:** As the facilitator it will be up to you to ensure the team stays on track and completes each step of the Challenge. Detailed instructions are provided for each step, but don't be limited to the tools and questions provided. Encourage your team to 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.

## 1. Introductions (5 min.)

Get to know each other and the special talents each team member will contribute to Mars Startup School. 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.

## 2. 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.

- Have 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. Ask your team to imagine the possibilities. In what ways will the school they build on Mars be different from their school here on Earth? Ask students to write down the ideas that first come to mind on Post-its and discuss as a group to get their creativity flowing. Make sure to take notes.

**Note to facilitator:** When facilitating the team introductions, make sure to introduce yourself! Your participation in this is essential to creating an inclusive, non-hierarchical team. This is an opportunity to briefly describe your role in the Mars Startup School Challenge.





# Brainstorm Tips & Rules.

Here are a few brainstorming tips to point out 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.

**Note to facilitator:** After the team gets to know each other, it is a great time to set some ground rules and emphasize their role in influencing change in the education system. The points above can help to set the tone prior to moving into your first group brainstorm and creating a vision for Mars Startup School.

# Step Two. Design.



Now that the students' creativity is flowing, it's time to focus on one component of the Mars Startup School. The component that you will be focusing on is creating a New STEM Program.

*Our education experience is organized by separate subject areas and specialization, and evaluates students' ability for memorization and retention versus process, integration and application.*

**It is up to your team to imagine a New STEM Program. How could this program respond to global Challenges and promote competencies like problem solving and collaboration?**

## **Instructions: Our Program Criteria (40 min.)**

Use the **WORKSHEET: OUR PROGRAM CRITERIA** to understand what your team wants to learn, how it might be delivered and the attitudes, skills and knowledge Mars Startup School will equip you with to excel in the future.

- 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 program criteria. This should describe your ideal program, what it includes, how it is delivered and how it will prepare you for solving complex Challenges in the future. You can write directly on the poster!

**OUTCOME:** Identify students' passions and interests to help define an ideal STEM Program that can be offered at Mars Startup School.



# Program Criteria Worksheet.

**Identify what your team wants to learn, how it might be delivered and the attitudes, skills and knowledge Mars Startup School will equip you with to excel in the future.**

**Note to facilitator:**

The questions and content from each worksheet are listed to the right. Make sure the students answer each of the questions to the best of their ability and encourage creativity. Remind them that Mars Startup School can be whatever they want it to be! If a number of similar ideas emerge, don't panic. This can be extremely helpful in identifying the ideas and themes that the team is most passionate about. Make sure to spend at least 10 minutes to summarize your design criteria and reach a consensus as a team before breaking for lunch.

- What are you most passionate / curious about? *Consider how your passions and curiosities can be included in the New STEM Program offered at Mars Startup School.*
- What problems are you most interested in solving? *Consider what motivates you and what STEM Program can help you solve these problems at Mars Startup School.*
- What attitudes, skills and knowledge do you want to gain at Mars Startup School? *Consider what skills might be needed in the future and specifically what STEM knowledge and skills you want to gain.*
- When do you learn best? *Think of your most memorable learning experiences and when you learn best in and out of school.*
- What learning experiences (STEM or otherwise) do you find most engaging? *Consider what formats, qualities and characteristics make these experiences or programs engaging.*
- What do you want to change most about your existing programs and how they are delivered? *Consider how your New STEM Program will better meet the needs of students and the ways they want to learn.*
- Our Program Criteria. *Describe your ideal program at Mars Startup School and what it includes.*

# Step Two Cont'd.

## Concept Design.



Now that your team has some clear ideas about their learning preferences, what the program might include, how the program will be delivered and the outcomes of the program, they will need to work out the details of the design and create a concept.

### **Instructions: Our New STEM Program (60 min.)**

Use the **WORKSHEET: OUR PROGRAM DESIGN** to help your team develop the details of the New STEM Program at Mars Startup School.

- Answer each of the questions on the worksheet in as much detail as possible. Encourage your team to build upon ideas from the previous brainstorm sessions.
- Create a timeline that showcases what types of courses and assignments might be included in the program and when students will participate in the program.
- 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:** Create a concept for a New STEM Program and how it responds to global challenges and shapes Startup School students' attitudes, skills and knowledge.



# Program Design Worksheet.

**Develop the details of your ideal program at Mars Startup School and how it will help prepare you for the future.**

**Note to facilitator:**

Your team needs to shift from thinking about what the program might be to actually designing it. This is where you can draw upon the strengths and interests of the team to produce different aspects of the STEM Program. Don't hesitate to break into smaller teams if it increases productivity, but make sure to come back together to summarize a unified concept.

- **What is it?** *Define what will the program include (e.g. are there courses and assignments?) and what skills and knowledge a graduate of the program will have.*
- **How is it delivered & evaluated?** *Define how the program will be delivered and how students will be assessed.*
- **Who is involved in the program?** *Define everyone who will be involved in teaching and learning through this program.*
- **Why will students, teachers and others want to take this program?** *Define why the program will transform learning.*
- **Where will you take the program?** *Define the spaces, places and experiences of your New STEM Program.*
- **When will you take the program?** *Define the timing of the program and how it is accessible for all students at Mars Startup School.*
- **Our Program Schedule / Timeline** *Create a diagram that outlines the courses and assignments that will be included in the program and when students will participate in the program.*

# Step Three.

## Share.



During this step your team will summarize their Challenge and ideas to share with the other teams in Mars Startup School. Each team will only have **5 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 summarize ideas. This should only take a few minutes to help your team recap the ideas developed throughout this Challenge. Your team can use all the completed posters to help them present.

- Have the team restate the design Challenge in their own words.
- Encourage the team to create a final sketch of the solution and describe how it addresses the design criteria identified at the bottom of the **WORKSHEET: OUR PROGRAM CRITERIA**.
- Describe how the program will change the education system and positively impact 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 Worksheet.

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

**Note to facilitator:**

As the team fills out the final worksheet encourage them to come up with creative ways to present their ideas to the other teams. Encourage your team to take notes of the other teams' ideas.

- Our vision for Mars Startup School is...  
*Summarize your initial thoughts on Mars Startup School as discussed during Meet Your Team.*
- Our design Challenge was...  
*Restate your design Challenge in your own words.*
- Our program criteria...  
*Summarize key ideas from your program criteria.*
- This will be different from the education system on Earth because...  
*Describe how the STEM Program will transform the educational experience and prepare students for the future. How does this differ from school on Earth?*
- What it looks like and how it works...  
*Use sketches, day in the life scenarios and words to showcase your final design.*

# Let's Wrap It up!



Thank you for participating in this Youth Summit and leading your team through the Mars Startup School Challenge. The ideas that they produced throughout the day will help shape the future of STEM education in Canada.

**IMPORTANT NOTE:** Before you depart please gather the worksheets, Post-its, sketches and notes your team produced over the course of this Challenge. Place everything on the table in order. Make sure no ideas or sketches are lost! Volunteers will be collecting all workbooks and materials at the end of the day.





# Next Steps.

## Canada2067

The ideas your team produced today will be collected, captured, summarized and presented to policy makers from across Canada to help shape the future of STEM education.

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### 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](http://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](http://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](http://www.explorecuriosity.org/canada2067)



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