# EXPONENTIAL EDUCATION

## Building Moonshot Solutions

*Guide on how to run the Moonshot Sprint*

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Exponential Education is an open source education program maintained by Team Exponent with a focus on bringing moonshot thinking and projects to K-12 schools and programs. Moonshot Sprints encourages kids to realize and build 10x solutions to humanity's most difficult problems that they are passionate about solving and want to positively impact.
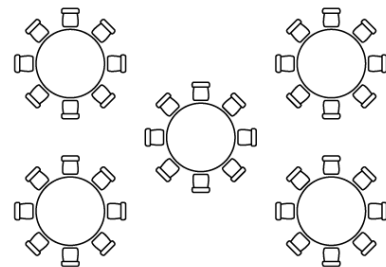More info...

## Setup

| Materials | Classroom |
|---|---|
| ● 1 24-pack of 3M Post-it 3 x 3 inch *per 12-24 people*<br><br>● 1 Post-it Tabletop Easel Pad *per table/team of 3-6*<br><br>● 1 pack Sharpie Flip Chart Markers *per team*<br><br>● 1 pack of Avery Removable Color Coding Labels<br><br>● Pens *1 per person* | ● 1 Table + chairs *per 5-6 people* in cluster/banquet formation<br>● A projector for a laptop to show slides<br><br> |

## Sample schedule

Steps 1-5 are the ideating portions and can be condensed to 1 class session or expanded into 5 individual +1 hour sessions.
Steps 6-12 are the project building and entrepreneurial portions and can be expanded for as much as time allows (students can keep building on their projects throughout the school year).

| | Activity | Outcome |
|---|---|---|

| 1 | • Each student introduces himself/herself (name/grade/interest)<br>• Presentation Moonshot Sprint ([Slide Deck](#))<br> ○ Rock/paper/scissor game to get them energized and in a supportive-team-member-mindset (is part of the Moonshot Spring presentation) | Students are introduced to 10x thinking and are energized |
|---|---|---|
| 2 | • Provide potential themes/topics (climate change, community, education, health, etc.)<br>• Students individually make a list of *major* problems they have noticed that needs a solution<br>• Students get into teams based on shared interest for solving a problem (3 to 5 students/team) | Students start to identify problems they are passionate about solving and select an area to focus |
| 3 | • Quick review of the problem areas each team is pursuing<br>• Individual members write down as many ideas as possible, with a minimum of 10 ideas and 1 idea per post-it sheet (timed at ~20 min, with a timer running to induce a sense of urgency)<br>• Teams organize their collective post-it's of ideas on to the 10x graph, based on value and complexity<br>• If time, decide on problem solution, or think about it for the following week | Students come up with lots of potential solution ideas to the problem their team has set out to solve |
| 4 | • Teams decide which moonshot solution to the selected problem they plan to pursue<br>• Teams draw a paper prototype of their moonshot solution, describing: what problem they are solving and why, and a technical explanation of how their solution is supposed to work<br>• Teams decide what milestones (incremental steps to the bigger moonshot solution) are needed in order to achieve the 10x goal | Teams identify which 10x solution they want to pursue and paper prototype their solution |
| 5 | • Teams decide on a scrappy pilot project to build in order to model the moonshot solution<br>• Teams research and make a paper prototype plan for how to build the scrappy pilot of their moonshot solution (may involve some planning) revisions<br>• Teams present to the rest of the class and get feedback | Teams develop a plan to build a pilot of their moonshot solution<br><br>Students learn to give and receive constructive feedback |
| 6 | • Teams continue to refine their pilot plans | Teams strategize on what materials they need to build a scrappy pilot prototype, and come up with a shopping list |

| | | |
|---|---|---|
| | ● Teams create a list of materials needed in order to build the scrappy pilot project (they will need to purchase and acquire the materials prior to the next session)<br>　○ This will require setting a budget | Teams may need to persuasively pitch their ideas to "investors" in order to obtain funding for the materials |
| 7 | ● Teams continue to research and start to build the scrappy pilot of their moonshot solution<br>　○ May result in the need to rethink materials required | Students are learning how to make a lot with very little |
| 8/9/10 | ● Teams continue to research and build their pilot project.<br>　○ If they complete their scrappy pilot, then they can reiterate and build out the next phase of their project towards another milestone. | Teams and individual students start to come head to head with failures, and the need for grit and perseverance to move forward |
| 11/12 | ● Each team pitches their project, presents the milestones and the prototype for their first milestone<br>● Pitches in front of other groups/parents/students | |

## Details and Resources
*This section is in progress*

**What's a moonshot?** (time 30 min)
This is the intro for students on how to think $10^x$, what it means to be a part of a high-impact team, and strategies to collaborate effectively.
- Resources on how to talk about exponentials ([Slide Deck](#))
  - Storytelling and literacy: Creating the feel of being a part of this story
  - How to motivate
  - How people form teams
  - Getting in the mindset of a high-impact team

**Present the Challenge**  (time 5 min)
- Identify a big problem facing humanity
  - Resources on climate change ([Video clip](#))
  - [UN Sustainable Development Goals](#)

**Get Kids into Teams** (time 5 min)
- Tips for forming teams
  - Let the kids pick their own teams
  - Keep team sizes limited to 3-6 individuals
- Tips for keeping teams happy

- Let kids switch teams at any time if it's not working out, keep an open door policy

**Create a Collaborative Environment**
- Psychological safety
  - Create a safe space for ideas
  - Let them know that "crazy" ideas are great and welcome
  - Yes, And! Attitudes towards each other's ideas
  - Play rock, paper, scissors with the whole room until there's one winner, encourage students to support and cheer on the opponent they lose to as they move on to their next round. Play until there is only one winner left in the room and all the kids are cheering them on.
  - How to understand the other's perspective
- Setting Ground rules
  - How to give positive feedback
  - How to respond to negative feedback and criticism
  - How to ask the right kinds of questions and explore
  - How to negotiate

- Maintaining a good environment
  - How to maintain team good energy
  - How to recognize intractable conflicts
  - Daily reflective sessions to identify what went right and what went wrong
  - How to start over
  - How to be persuadable

- Be on the lookout for Transformative experiences
  - The moment you realize the right solution and are ready and energized to scrap the progress to date and pursue the new path

**Ideating** (time 20 min)
- Using the post-it pads
- Focusing / individual time
- Use a timer to create a sense of time pressure
- One idea per post-it
- No details needed

**Graphing** (time 10 min)
- Graph each post-it idea onto the 10x graph in order to identify the moonshot ideas
- Using the big poster pad
- Each individual decides where their idea belongs on the graph
- Minimum group dialogue
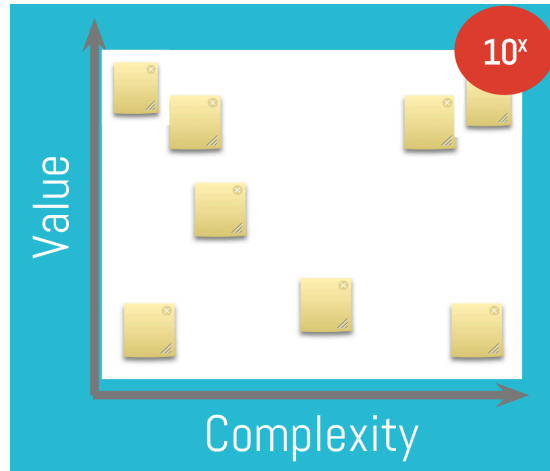
**Identifying the moonshot** (time 10 min)
- Group dialogue

**Paper Prototyping**
- Drawing what it might look like
- Describe how it works
- What are incremental milestones to achieving the moonshot solution
- What's the first step to get started with building it
- What does a pilot project look like

**Pitches**
- Each team presents their paper prototype
  - Tips for structuring the presentations

**Closing**
- Review the process and how we got here
- Review transformative moments
- Discuss what went right and what went wrong