

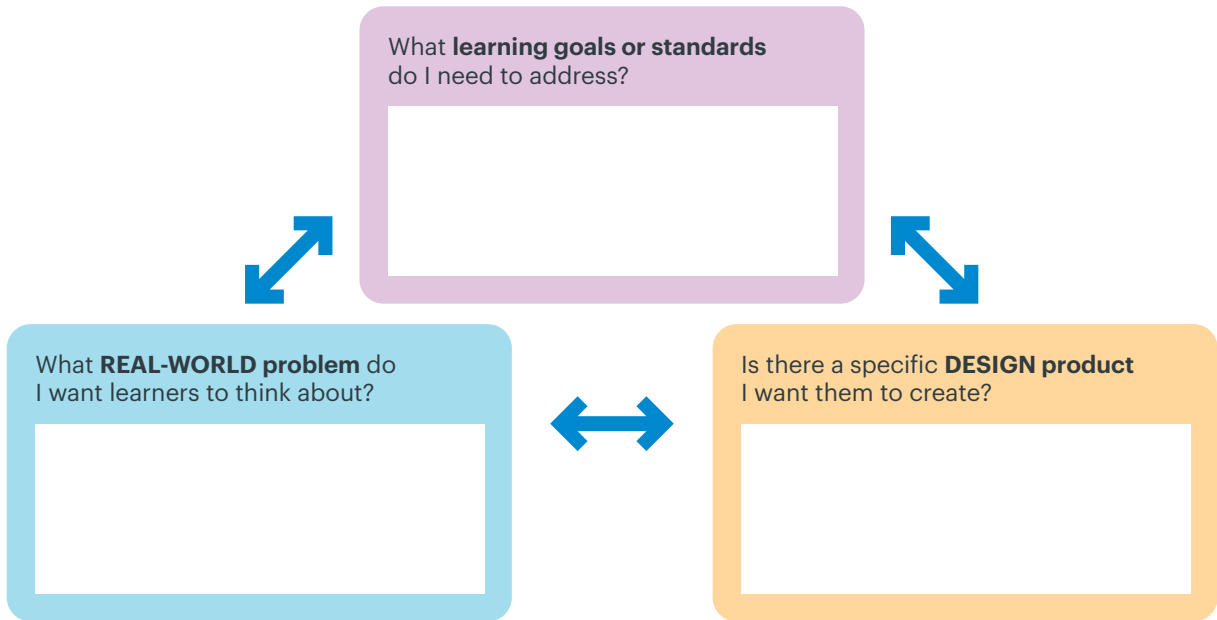


## 1 Developing your Design Problem

**Reflect** on your learners and setting.

<b>Learners</b>	<ul style="list-style-type: none"> <li>• Areas of strength</li> <li>• Areas of interest</li> <li>• Areas for growth</li> </ul>	
<b>Setting</b>	<ul style="list-style-type: none"> <li>• Learning goals and standards</li> <li>• Additional program/organizational goals</li> <li>• Allotted time</li> <li>• Opportunities for connecting to curriculum or current projects</li> <li>• Constraints</li> </ul>	

**Brainstorm** what will influence your design challenge and develop your design problem statement.



**Draft your design problem statement**



## 2 Draft Criteria, Constraints and Testing Methods

**Criteria** (determines success of the design, ex: holds 3 passengers)

**Constraints** (design limitations, ex: can only be 3 inches tall)

### Testing methods

Where and how will students test their solutions?

What data or feedback will students collect? When and how will students collect it?

Do you need to build a 'test rig'? Or develop a mechanism for getting students feedback? If so, plan them here.

Double check that your design problem aligns with the four key elements:



Solvable by multiple solutions



Opportunity for iteration



Participant interest



Real-world/career connections

**Materials for Engineering Design Challenge** (What categories of materials and specific items will learners need?)

Category				
List items per category				



## Materials management strategies

Materials storage	How are students accessing materials?	Clean-up strategy

## Resource type

	Details	Notes
Media		
Technology		
Expert guests		





## 4 Create your Lesson Flow

Use your own planning tools to draft a lesson. Try to include:

- Introduce the Challenge
  - Frame
  - Define the Problem
  - Criteria and Constraints
- Brainstorming
- Prototyping: Create, Test and Reflect (timing and structure for building, testing and iterating)
- Sharing Solutions (timing and format for sharing design products and process)
- Assessment

Consider student group size and processes. Recommendations: Groups of 2-4 students for engineering challenges and 4-6 students for systems challenges.

For sample design challenges and problems see the following lessons:

- [Solve the Fall](#) - Engineering Design Challenge
- [Vaccine Distribution Challenge](#) - Systems Design Challenge

## 5 Do the Challenge!

Record how it went! What went well? What would you adjust?



### Share out

Share your process and successes with others in person or via social media.