CITY LAB

Facilitation Guide
Virtual Summer 2020
June 1st-12th
9:00am-1:00pm

General Information

Contact Information

Name	Email	Phone
[redacted]	[redacted]	[redacted]
Erin Buchanan	[redacted]	[redacted]

Zoom Links/ Schedule Color Key

Large Group Zoom Link

https://zoom.us/j/96930393591?pwd=NDhVRzhkS0JwbDc5NGpPcjE5T0szQT09

Small Group Google Links

Group Number	Google Link
Small Group One [redacted]	meet.google.com/yfo-udna-zkj
Small Group Two [redacted]	meet.google.com/xiv-rvpp-ewu
Small Group Three [redacted]	meet.google.com/erd-sxyh-dkg
Small Group Four [redacted]	meet.google.com/igw-oxyk-vca

Schedule Color Key:
Red= Large Group Meeting
Purple= Small Group Meeting

Day One: June 1st

By the end of the day, students should have an understanding of City Lab expectations, and be able to describe the steps in the engineering design process.

8:50am-9:00am	Join Zoom
9:00am-9:30am	a) Introduction to City Lab 1. Brief Zoom intro (mute, chat, reactions, etc.) 2. Introduce Staff 3. What is City Lab? 4. Introduce students to City-Lab-in-a-Box: find...journal/ general supplies, activity bags, distinguish eat-whenever snacks vs. food used for activity, some of the materials will be reused so don't use them for other uses until City Lab is over 5. Attendance expectations and payment: Full participation= completing a thoughtful entry on all Google Sheets activities & Google Forms journals. Completion/uploading pictures of 5/7 STEM activities. 6. Name skills on which we will build and ask students to reflect on in daily journals; collaborative skills, creative problem solving, critical inquiry, leadership, and presentation skills. 7. Join XYZ communication platform… 8. Group List 9. Overview of schedule 10. Pre-Survey https://docs.google.com/forms/d/1fQZy6aIUemSDLKhyH0L3Daf7mB82JK68BTp6P6Oz6TE/edit?usp=sharing b) Establish daily rituals and norms (Led by Calie) Let students guide this discussion but some suggestions include: mute microphone when not talking, be on time, if you need to leave/use the restroom feel free to do so, be kind/respectful to each other, turn your camera on, participate, ask for help when confused, etc.
9:30am-10:00am	Small Group Introductions Group name generation (Change of folder with CY leader name on it to new group name here City Lab Summer Leaders) Virtual relationship activity/game: Name game + 2 truths and a lie, back up game Pictionary

10:00am-10:20am	Introduction to Design Thinking (Video and Discussion) See Design Thinking Manual
10:20am- 10:30am	Brain Break
10:30am- 11:15am	Orange Tower Challenge See STEM Activity 1
11:15am- 11:45am	Focus group/ problem discussion Review problem identified by planning team
11:45am-12:15pm	Bacteria Project discussion and set-up See STEM Activity Two
12:15pm-12:25pm	Virtual journal process overview (https://docs.google.com/forms/d/1irDWVYjRDi3XGkPZSE6GjjJPgEnmJCD0JSSUgTmNE30/edit) *These are to be used each day to capture your thoughts and feelings. The "journals" are a safe place for you to be open and honest. We will be looking through them because this is our way to learn from you. Remember in the beginning when we said you all are City Lab pioneers? – We are here to learn from you. So be honest, write, draw – shorthand is okay. There is no right or wrong way.* Make sure everyone is on XYZ chat platform… Pre Survey: https://docs.google.com/forms/d/1fQZy6aIUemSDLKhyH0L3Daf7mB82JK68BTp6P6Oz6TE/edit?usp=sharing
12:25pm-12:35pm	Reflect in journals (https://docs.google.com/forms/d/1irDWVYjRDi3XGkPZSE6GjjJPgEnmJCD0JSSUgTmNE30/edit) If you'd like to look at student answers throughout the week visit Journal Entry Form (Responses).
12:35pm-1:00pm	a) Look ahead to Tuesday Give students a heads up on what to expect tomorrow. b) Establish closing ritual (Led by Austin) ***Reminder: Fill out Pre Survey*** https://docs.google.com/forms/d/1fQZy6aIUemSDLKhyH0L3Daf7mB82JK68BTp6P6Oz6TE/edit?usp=sharing

Day Two: June 2nd

By the end of the day, small groups should have identified a suitably narrowed, manageable problem topic. As we move through City Lab, small groups will work on building a product to solve this problem.

<table>
<tr><th colspan="2">Tuesday, June 2</th></tr>
<tr><td>8:50am-9:00am</td><td>Join Zoom</td></tr>
<tr><td>9:00am-9:10am</td><td>Review daily rituals and norms</td></tr>
<tr><td>9:10am-9:15am</td><td>Large group 5 minute check-in</td></tr>
<tr><td>9:15am-9:40am</td><td>Virtual relationship activity/game: Never Have I Ever (Raise Hand Function)

<table>
<tr>
<td>1. Never have I ever missed a high five.
2. Never have I ever sang in the shower.
3. Never have I ever blamed farts on an animal.
4. Never have I ever secretly wished I were a wizard at Hogwarts.
5. Never have I ever slept in regular clothing.
6. Never have I ever had a nightmare about zombies chasing me.
7. Never have I ever pretended to laugh at a joke I didn't get.
8. Never have I ever been scared of clowns.
9. Never have I ever thought a cartoon character was hot.
10. Never have I ever faked being sick so I could play video games.</td>
<td>14. Never have I ever played Candy Crush.
15. Never have I ever won a game of Scrabble.
16. Never have I ever made a duck face when taking a selfie.
17. Never have I ever looked out the car's passenger seat window and imagined it was a scene from a music video.
18. Never have I ever actually laughed out loud when typing "LOL".
19. Never have I ever reread an email immediately after sending it.
20. Never have I ever daydreamed about being on a talk show and what I'd talk about.</td>
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	11. Never have I ever liked Star Wars more than Star Trek. 12. Never have I ever tried out to be an extra in a movie. 13. Never have I ever scored over 100 while bowling. 21. Never have I ever Googled my own name to see what comes up. 22. Never have I ever pretended I was running from zombies while on a run. 23. Never have I ever sat in the shower.
9:40am-9:55am	Design Process Step One Overview (Define) See Design Thinking Manual
9:55am-10:30am	In small groups, students individually brainstorm problems related to problem topic (See drive folder City Lab Summer Leaders for your group's specific sheet nestled in your group folder under "Step One: Problem Brainstorm") Small group problem discussion Spend some time discussing student's entries for each column on the June Problem Brainstorm Spreadsheet.
10:30am- 10:40am	Brain Break
10:40am- 11:10am	Continue with small group problem discussion Discuss and choose one specific problem and solution to work on as a group. Which problem provides the best chance of making a product that helps with school next Fall?
11:10am- 12:00pm	Hand Washing Challenge: Devise the most effective way to wash your hands (See STEM Activity 3)
12:00pm-12:30pm	Brain Break/Lunch
12:30am-12:40pm	Bacteria project check-in Have students check on petri dishes and discuss observations with their small group members. Remind them to wash their hands after handling the plastic bags.

12:40pm-12:50pm	a) Look ahead to Wednesday b) Closing ritual
12:50pm-1:00pm	Reflect in journals (https://docs.google.com/forms/d/1irDWVYjRDi3XGkPZSE6GjjJPgEnmJCD0JSSUgTmNE30/edit)

Day Three: June 3rd

By the end of the day, students should have identified the criteria and constraints that exist for their chosen problem, and have developed empathy interview questions.

Wednesday, June 3rd	
8:50am-9:00am	Join Zoom
9:00am-9:30am	Relationship Activity: Virtual scavenger hunt, back up 5 seconds (https://cityyear-my.sharepoint.com/:p:/r/personal/nsanon_cityyear_org/_layouts/15/Doc.aspx?sourcedoc=%7BDF3CCAF0-E719-477F-A516-6E6B0BDBEAC4%7D&file=5%20sec.pptx&wdOrigin=OFFICECOM-WEB.START.REC&action=edit&mobileredirect=true)
9:30am-9:45am	Design Process Step Two Overview (Identify https://cityyear-my.sharepoint.com/:p:/r/personal/nsanon_cityyear_org/_layouts/15/Doc.aspx?sourcedoc=%7BDF3CCAF0-E719-477F-A516-6E6B0BDBEAC4%7D&file=5%20sec.pptx&wdOrigin=OFFICECOM-WEB.START.REC&action=edit&mobileredirect=trueCriteria/Constraints) See Design Thinking Manual
9:45am - 10:15am	Group Work (Step Two) (See drive folder City Lab Summer Leaders for your group's specific sheet nestled in your group folder under "Step Two: Criteria & Constraints") 1. Have students work in their small groups to identify the criteria and constraints on their design using the sheet above (there are 2 tabs). In doing so, they should think about potential effects. 2. Have each group rank their criteria and constraints from most important to least important. Students should think about which are absolutely necessary and which would be nice to have.
10:15am-10:25am	Brain Break
10:25am-10:45am	Introduction to Empathy Interviews Why Empathy Interviews? When we attempt to solve problems, we tend to try and solve them for us, or people like us. Empathy interviews help us understand people that are different than we are. This understanding helps us solve problems for a lot more people, people that aren't like us (older, living in different areas, etc.)
10:45am-11:00am	Introduce StoryCorps

	Students will have until Friday morning to complete one interview (a family/household member or themselves). They can do this any time in the next few days. The purpose of this time block is to get them familiar with the StoryCorps app and how to use it to record interviews. ***Note: Some students/ their parents may have opted out of participating in StoryCorp. Those students may either a) Take detailed notes on their interview here StoryCorps: Interview Data or b) record their interview using their phone or another device to share with leaders*** See Instructions for StoryCorps The first question that ALL students should ask is "Do you consent to being recorded and having this audio uploaded to the Library of Congress for archiving?"
11:00am-11:30am	Write empathy interview questions Encourage students to think about who they could interview to help them understand the problem in more depth (ie. teacher, parent, student, etc. they may also interview themselves if they would like) See Design Thinking Manual (See drive folder City Lab Summer Leaders for your group's specific sheet nestled in your group folder under "Empathy Interview Questions") Students should work together to come up with empathy interview questions. They have their own space on the spreadsheet to type their thoughts/questions but encourage them to share ideas and work together to come up with ideas.
11:30am-12:05pm	STEM Activity: Angry Bird Challenge See STEM Activity 4
12:05pm-12:35pm	Brain Break/Lunch
12:35pm-12:40pm	Bacteria project check-in Have students check on petri dishes and discuss observations with their small group members. Remind them to wash their hands after handling the plastic bags.
12:40pm-12:50pm	a) Look ahead to Thursday b) Closing ritual ***Reminder! StoryCorps Empathy Interviews (Due by Friday)***
12:50pm-1:00pm	Journal and reflection time

	(https://docs.google.com/forms/d/1irDWVYjRDi3XGkPZSE6GjjJPgEnmJCD0JSSUgTmNE30/edit)

Day Four: June 4th

By the end of the day, students should have begun brainstorming solution ideas and narrowing those ideas in preparation for selecting a solution to prototype.

Thursday, June 4th	
8:50am-9:00am	Join Zoom
9:00am-9:30am	Relationship Activity: Emoji check in (pep talk reminder, "after today we are 40% finished!)
9:30am-10:00am	Design Process Steps Three and Four Overview (Brainstorm & Select) (quick pep talk reminder, "we're almost halfway through. Keep working, stay creative!) See Design Thinking Manual
10:00am-10:20am	Group Work (Steps Three and Four) (See drive folder City Lab Summer Leaders for your group's specific sheet nestled in your group folder under "Steps 3 & 4: Solution Brainstorm") 1. Students should begin by brainstorming as many solutions as possible using the guidelines outlined in the See Design Thinking Manual 2. Have small groups share out ideas with the rest of the class. If there is time, you can allow questions after each group shares their idea. 3. After students have brainstormed a bunch of solutions, have students evaluate all of the brainstormed solutions and select the most promising solution (or merge their ideas). ● First, each group should review their ranked lists of criteria and constraints. ● Then, based on their lists, each student chooses their favorite three solutions by placing their initials next to each of those ideas on the spreadsheet ● The solution with the most initials is the solution that gets selected. If there is a tie, then the group works together to choose the one solution that best meets the criteria and constraints.
10:20am-10:30am	Brain Break
10:30am-10:50am	Group Work Continued (Steps Three and Four) (See drive folder City Lab Summer Leaders for your group's specific sheet nestled in your group folder under "Steps 3 & 4: Solution Brainstorm") 4. Students should begin by brainstorming as many solutions as possible using the

	guidelines outlined in the See Design Thinking Manual 5. Have small groups share out ideas with the rest of the class. If there is time, you can allow questions after each group shares their idea. 6. After students have brainstormed a bunch of solutions, have students evaluate all of the brainstormed solutions and select the most promising solution (or merge their ideas). ● First, each group should review their ranked lists of criteria and constraints. ● Then, based on their lists, each student chooses their favorite three solutions by placing their initials next to each of those ideas on the spreadsheet ● The solution with the most initials is the solution that gets selected. If there is a tie, then the group works together to choose the one solution that best meets the criteria and constraints.
10:50am-12:05pm	STEM Activity: Let's Bounce Challenge See STEM Activity 5
12:05pm-12:35pm	Brain Break/ Lunch
12:35pm-12:40pm	Bacteria project check-In Have students check on petri dishes and discuss observations with their small group members. Remind them to wash their hands after handling the plastic bags.
12:40pm-12:50pm	a) Look ahead to Friday b) Closing ritual *****Reminder! StoryCorps Empathy Interviews (Due Tomorrow)*****
12:50pm-1:00pm	Journal and reflection time (https://docs.google.com/forms/d/1irDWVYjRDi3XGkPZSE6GjjJPgEnmJCD0JSSUgTmNE30/edit)

Day Five: June 5th

By the end of the day, students should have reviewed their StoryCorps interviews, completed brainstorming solution ideas, and selected the most promising one to begin to build a prototype.

Friday, June 5th	
8:50am-9:00am	Join Zoom
9:00am-9:30am	Relationship Activity: Ask me anything 3-5 minutes per person (pep talk & reflection prompt, "at the end of the day, City Lab will be half complete. As you move through the day, be extra attentive for examples of times you or your peers show collaborative skills, creative problem solving, critical inquiry, leadership, and presentation skills. We will focus on this in journaling at the end of the day.")
9:30am-10:00am	Debrief on StoryCorps Interviews and Compile data/review StoryCorps: Interview Data
10:00am-10:15am	Brain Break
10:15am-11:00am	STEM Activity: Rescue Rover See STEM Activity 5
11:00am-11:55pm	Finish Group Work (Steps Three and Four) See Design Thinking Manual (See drive folder City Lab Summer Leaders for your group's specific sheet nestled in your group folder under "Steps 3 & 4: Solution Brainstorm") 1. Students should work together in their groups to further develop their solution. They can adjust their ideas based on any input they received when they shared their ideas with the class. 2. In their notebooks, students can record the following: ● A rough sketch of their solution ● Major features of their design ● The kind of prototype they will be creating: a visual prototype (looks like their solution) or a working prototype (works--and possibly looks--like their solution) ● Materials and tools they will need to build their prototype ● Questions or concerns they have with their design

11:55am-12:05pm	Group journal discussions/ feedback flagging
12:05pm-12:35pm	Lunch/Brain Break
12:35pm-12:40pm	Bacteria project check-In Have students check on petri dishes and discuss observations with their small group members. Remind them to wash their hands after handling the plastic bags.
12:40pm-12:50pm	a) Look ahead to Monday/Next Week b) Closing ritual Journal
12:50pm-1:00pm	and reflection time (prompt students to focus on examples of when they or their peers showed collaborative skills, creative problem solving, critical inquiry, leadership, and presentation skills and ask if they notice improvement in themselves or their peers.) (https://docs.google.com/forms/d/1irDWVYjRDi3XGkPZSE6GjjJPgEnmJCD0JSSUgTmNE30/edit)

Day Six: June 8th

By the end of the day, students will have begun to build a prototype of their solution.

Monday, June 8th	
8:50am-9:00am	Join Zoom
9:00am-9:30am	Relationship Activity: Debate (pep talk focus, "this is our last week. Let's stay active and creative. We are building things for problems that don't have solutions. We are making school better. We need all of us to keep our heads in the game. We need all of our creative muscles flexing.") Debate Topics: • Year round school vs. summer break? Argue for or against it. • Should zoos be banned? Argue for or against it. • Kids under the age of 18 should only be aloud 2 hours per day of screen time?
9:30am-9:45am	Design Process Step Five Overview (Prototype) See Design Thinking Manual
9:45am-10:45	Group Work (Step Five) 1. Instruct students to assign a notekeeper(s) and a timekeeper in their small groups a. Notekeeper Role: enter all information into a spreadsheet or Google Doc for their group (whichever they prefer or both) (CY leaders can find both of these in their group folder found at City Lab Summer Leaders under "Steps 5-7: Group Work") b. Timekeeper Role: make sure the team is making progress at an appropriate pace 2. Next, students should begin to build their prototypes. They should focus on bringing their ideas to life by storyboarding, writing content, and modeling the processes that users will use while interacting with their products. 3. Encourage students to plan and assign roles for each task that needs to be completed
10:45am-11:00am	Brain Break
11:00am-11:30am	STEM Activity: Ship-a-Chip Challenge See STEM Activity 7
11:30am-12:00pm	Group Work (Step Five) 1. Switch notekeeper and timekeeper up if desired 2. Continue to build prototype
12:00pm-12:30pm	Lunch/Brain Break

12:30pm-12:40pm	Bacteria project check-In Have students check on petri dishes and discuss observations with their small group members. Remind them to wash their hands after handling the plastic bags.
12:40pm-12:50pm	a) Look ahead to Tuesday (pep talk "we've got four more days. You all have been doing some hard work, and doing it well. I am amazed at what you've accomplished. Let's meet back here tomorrow and keep building! Keep bringing your 'A' games!") b) Closing ritual
12:50pm-1:00pm	Journal and reflection time (https://docs.google.com/forms/d/1irDWVYjRDi3XGkPZSE6GjjJPgEnmJCD0JSSUgTmNE30/edit)

Day Seven: June 9th

Tuesday, June 9th	
8:50am-9:00am	Join Zoom
9:00am-9:30am	Relationship Activity: Emoji Check-in (https://getemoji.com/)
9:30am-9:45am	Design Process Step Six (Test and Evaluate) See Design Thinking Manual
9:45am- 10:30am	Group Work (Step Four/Five/Six) (See drive folder City Lab Summer Leaders for your group's specific sheet nestled in your group folder under "Step 5-7: Group Work") 1. Catch up on any prototype work 2. Students should discuss testing/evaluation methods for their prototypes 3. Begin testing methods
10:30am-10:35am	City Year Informational
10:30am-10:45am	Brain Break
10:45am-11:30am	Guest Speaker: Jeremy Benedik
11:30am-12:00pm	STEM Activity: Ship the Chip or Project Work
12:00pm-12:30pm	Lunch/ Brain Break
12:30pm-12:40pm	Bacteria project check-In Have students check on petri dishes and discuss observations with their small group members. Remind them to wash their hands after handling the plastic bags.
12:40pm-12:50pm	a) Look ahead to Wednesday b) Closing ritual
12:50pm-1:00pm	Journal and reflection time (https://docs.google.com/forms/d/1irDWVYjRDi3XGkPZSE6GjjJPgEnmJCD0JSSUgTmNE30/edit)

Day Eight: June 10th

Wednesday, June 10th	
8:50am-9:00am	Join Zoom
9:00am-9:30am	Relationship Activity: Trivia game for popular media (Make sure to give the kids time to think) **30 Pop Culture Trivia Questions and Answers** 1. Question: What are the names of Kim Kardashian and Kanye West's kids? Answer: North, Saint, Chicago and Psalm. 2. Question: What is Joe Exotic a.k.a the Tiger King's real name? Answer: Joseph Allen Maldonado-Passage. 3. Question: What is Rihanna's real name? Answer: Robyn Fenty 4. Question: How many kids does Angelina Jolie have? Answer: Six (Maddox, Pax, Zahara, Shiloh, Knox and Vivienne). 5. Question: What did Mandalorian fans name "The Child" in the Disney+ series? Answer: Baby Yoda. 6. Question: Who did Forbes name the youngest "self-made billionaire ever" in 2019? Answer: Kylie Jenner. 7. Question: How many times did Ross Geller get divorced on Friends? Answer: Three times (Carol, Emily, Rachel). 8. Question: Who was the first Bachelorette in 2003? Answer: Trista Sutter (née Rehn). 9. Question: Who does Michael Scott hit with company property on company property in The Office? Answer: Meredith Palmer.

10. Question: Which movie won the first official Best Picture Academy Award?
Answer: Wings.

11. Question: Which actor voiced both Darth Vader and The Lion King's Mufasa?
Answer: James Earl Jones.

12. Question: What modern-day item made a cameo in the final season of Game of Thrones?
Answer: A Starbucks cup.

13. Question: What is Chandler Bing's middle name?
Answer: Muriel.

14. Question: What does the acronym "smh" stand for?
Answer: Shaking my head.

15. Question: Where did Prince William and Kate Middleton first meet?
Answer: St. Andrews University.

16. Question: How many Harry Potter books and movies are there?
Answer: 7 books and 8 movies.

17. Question: What is the name of Michelle Obama's 2018 memoir?
Answer: Becoming.

Related: 50 Fun Facts About Everyone's Favorite Sitcom, The Office

18. Question: Felicity Huffman and Lori Loughlin were among dozens of individuals involved in what 2019 investigation?
Answer: Operation Varsity Blues/college admissions scandal.

19. Question: Who sings the song "Say So" that's behind the popular TikTok dance?
Answer: Doja Cat.

20. Question: Troy Bolton's dad in High School Musical is the brother-in-law of which famous actress in real-life?
Answer: Blake Lively.

21. Question: What are the names of the Sanderson sisters from Hocus Pocus?
Answer: Winifred, Mary and Sarah.

	22. Question: Which Avenger other than Captain America was able to pick up Thor's Mjolnir in the Marvel movies? Answer: Vision. 23. Question: Who was the first winner of The Masked Singer? Answer: T-Pain. 24. Question: Who wrote the Twilight books? Answer: Stephenie Meyer. (Related: Stephenie Meyer Sends Twihards Into a Tizzy With Announcement of Midnight Sun's Release!) 25. Question: Who replaced Kathie Lee Gifford on the TODAY show? Answer: Jenna Bush Hager. 26. Question: What was the first non-English-language film to win Best Picture at the Oscars? Answer: Parasite. 27. Question: What day is Star Wars Day? Answer: May 4. 28. Question: Which movie kicked off the Skywalker saga in 1977? Answer: A New Hope. 29. Question: Who was the highest-paid actress of 2019, according to Forbes? Answer: Scarlett Johansson. 30. Question: Which pop star is the godmother of both Elton John's sons? Answer: Lady Gaga.
9:30am-9:45am	Design Process Steps Seven (Iterate) See Design Thinking Manual
9:45am-10:45am	Group Work (Step Six/Seven) 1. Finish testing/ evaluating prototypes 2. Use information gathered in testing to work on improving design
10:45am-11:00am	Brain Break
11:00am-11:30am	STEM Activity: Ship the Chip or Project Work

11:30am-12:00pm	Group Work (Step Six/Seven) 1. Finish testing/ evaluating prototypes 2. Use information gathered in testing to work on improving design
12:00pm-12:30pm	Lunch/ Brain Break
12:30pm-12:40pm	Bacteria project check-In Have students check on petri dishes and discuss observations with their small group members. Remind them to wash their hands after handling the plastic bags.
12:40pm-12:50pm	a) Look ahead to Thursday b) Closing ritual
12:50pm-1:00pm	Journal and reflection time (https://docs.google.com/forms/d/1irDWVYjRDi3XGkPZSE6GjjJPgEnmJCD0JSSUgTmNE30/edit)

Day Nine: June 11th

Thursday, June 11th	
8:50am-9:00am	Join Zoom
9:00am-9:15am	Relationship Activity: Guess that song (Students have to name the artist and the title of the song. **make sure to stop the song after 5-10sec** Make sure to give each student a chance to name the song.) 1. https://youtu.be/G-AyVGpnlP0?t=68 Answer: Megan Thee Stallion - Savage (Clean) 2. https://youtu.be/8UVNT4wvIGY?t=18 Answer: Gotye - Somebody That I Used To Know (feat. Kimbra) 3. https://youtu.be/fE_64SdD27w?t=17 Answer: V.I.C - Wobble 4. https://youtu.be/yLRa773SV4U?t=15 Answer: Before I Let Go (Homecoming Live Bonus Track) 5. https://youtu.be/wH8KwPyCdP4?t=76 Answer: Blake Shelton - Go Ahead and Break My Heart 6. https://youtu.be/QKPxNQfrtzU?t=3 Answer: Work- Rihanna 7. https://youtu.be/Gwb3XMfrYDk?t=126 Answer: 24K Gold - Bruno Mars 8. https://youtu.be/kNAZa-ORLIU?t=58 Answer: This Is How We Do It · Montell Jordan 9. https://youtu.be/jxc4e92roHc?t=158 Answer: Migos - Stir Fry 10. https://youtu.be/Kr0tTbTbmVA Answer: DJ Jazzy Jeff & The Fresh Prince - Summertime

9:15am-9:30am	Design Process Step Eight (Communicate) See Design Thinking Manual
9:30am-10:30am	Presentation Group Work (See drive folder City Lab Summer Leaders for your group's specific sheet nestled in your group folder under "Steps 8: Communicate Your Solution") Presentations Should: 1. State the problem/need that is being addressed (why is it a problem?) 2. Describe and show their solution in detail 3. Describe how their solution meets the need 4. Expected outcomes of your solution 5. Who have you talked to? 6. What steps have you taken to begin initiating the solution? 7. What steps have you taken to ensure that someone else could pick up your project and continue it? 8. Concrete ideas for testing your current model 9. Next steps? What needs to happen now?
10:30am-10:45am	Brain Break
10:45am-11:30am	Presentation Group Work
11:30am-12:00pm	Dry Runs and Debrief/Corrections 1. Students should perform a dry run of their presentation 2. Have BK/EB/other staff combine to watch or join with another small group (let us know ahead of time and we can set up a breakout room) 3. Leave plenty of time for students to get feedback, debrief and make corrections as needed
12:00pm-12:30pm	Lunch/ Brain Break
12:30pm-12:40pm	Final Bacteria project check-In Have students check on petri dishes and discuss observations with others. They should dispose of these bags in a bin (bags and all). Remind them to wash their hands after handling the plastic bags.
12:40pm-12:50pm	a) Look ahead to Friday (pep talk: strong finish!) b) Closing ritual
12:50pm-1:00pm	Journal and reflection time (https://docs.google.com/forms/d/1irDWVYjRDi3XGkPZSE6GjjJPgEnmJCD0JSSUgTmNE30/edit)

Day Ten: June 12th

Friday, June 12th	
8:50am-9:00am	Join Zoom
9:00am-9:15am	Relationship Activity: Past, present, future
9:15am-10:30am	Presentation Group Work (See drive folder City Lab Summer Leaders for your group's specific sheet nestled in your group folder under "Steps 8: Communicate Your Solution")
10:30am-10:45am	Brain Break
10:45am-11:45am	Presentations Special Guests Include: TPS Superintendent **Dr. Gist**, TPS Design + Innovation Lab (**Joey, Susan, Mindy, Amanda, Lynn, Meghan, & Andrea**), **Eder Williams-McKnight** (Holland Hall English teacher, Tulsa Term Co-Founder, *Focus: Black Oklahoma* NPR radio show contributor), **Jane Beckwith** (Holland Hall Social Studies teacher, Tulsa Term Co-Founder), **Anissia West** (TPS Student & Family Support Services, *Focus: Black Oklahoma* contributor), parents, families, & friends.
11:45am-12:00 pm	Debrief
12:00pm-12:15pm	Brain Break
12:15pm-12:30pm	Exit Surveys
12:30pm-1:00pm	a) Lunch/ Virtual Party!!! b) STEM Activity: Ship a Chip Reveal/ Project Share c) Closing Ritual

Design Thinking Manual

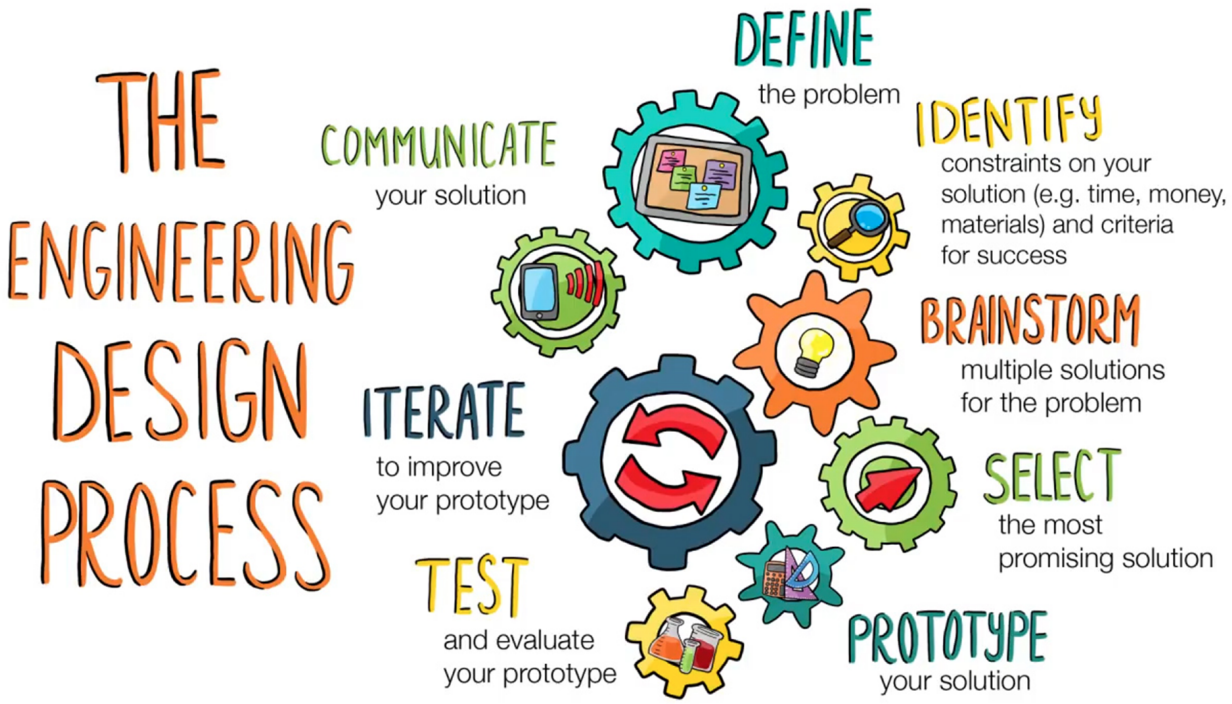
Introduction to Design Thinking

What is our Challenge?
This week you will be working to design solutions to help our Tulsa area schools better handle the transition to virtual learning.

Frame the Work
Throughout the week, you will be participating in a design sprint. The design process includes defining a problem, identifying the constraints of your solution, brainstorming solutions, selecting a solution, prototyping, testing and improving your solution, and finally communicating your solution to community members. We call it a 'sprint' design process because the process is fast, intense, and fun!

What is the Design Process?
Let's take a step by step overview of this process...

Video: The Engineering Design Process: A Taco Party



Steps One & Two

Define the Problem

The first step of the process is defining the problem so that engineers will be able to design a successful solution.

To define a problem, engineers answer questions about why something is a problem, who it's a problem for, and the intended outcome of the solution. The goal is to narrow their focus on a specific problem.

- What is the problem?
- Why is it a problem?
- Who is it a problem for? (Who would use your solution?)
- What is the desired outcome of your solution?
- Using the answers to their questions, have students write their problem statement. They can use the following sentence frame as a guide: "_____ needs a way to _____ so that _____."

Identify the Criteria and Constraints of Your Solution

Students will identify the criteria and constraints of the solution for their design problem by considering scientific principles and potential impacts. Criteria are things the design needs to do in order to be successful--its requirements. Constraints are limitations on the design.

1. Have students work in their small groups to identify the criteria and constraints on their design. In doing so, they should think about potential effects.

2. Have each group rank their criteria and constraints from most important to least important. Students should think about which are absolutely necessary and which would be nice to have.

Empathy Interviews

Understanding the User

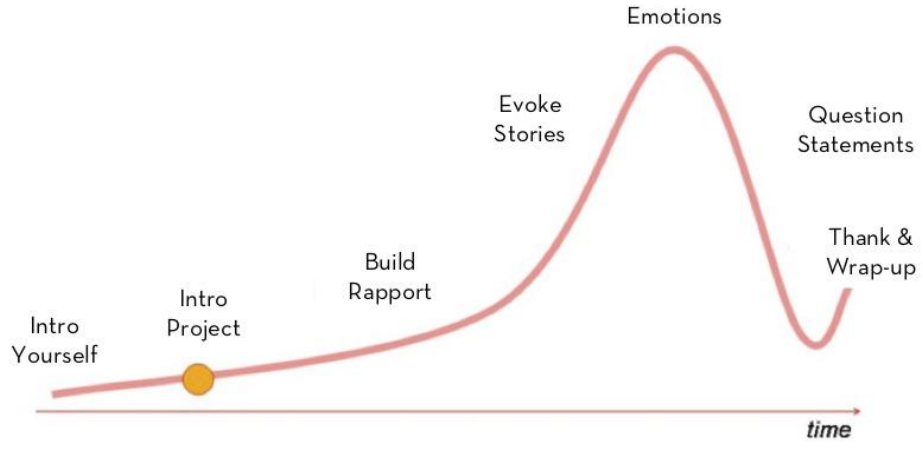
A large part of defining the problem and identifying criteria and constraints of our solution is understanding the user. One tool to help us do this is by completing empathy interviews and observations.

WHY interview

You want to understand a person's thoughts, emotions, and motivations, so that you can determine how to innovate for him or her. By understanding the choices that person makes and the behaviors that person engages in, you can identify their needs, and design to meet those needs.

HOW to interview

Ask why. Even when you think you know the answer, ask people why they do or say things. The answers will sometimes surprise you. A conversation started from one question should go on as long as it needs to.
Never say "usually" when asking a question. Instead, ask about a specific instance or occurrence, such as "tell me about the last time you ___"
Encourage stories. Whether or not the stories people tell are true, they reveal how they think about the world. Ask questions that get people telling stories.
Look for inconsistencies. Sometimes what people say and what they do are different. These inconsistencies often hide interesting insights.
Pay attention to nonverbal cues. Be aware of body language and emotions.
Don't be afraid of silence. Interviewers often feel the need to ask another question when there is a pause. If you allow for silence, a person can reflect on what they've just said and may reveal something deeper.
Don't suggest answers to your questions. Even if they pause before answering, don't help them by suggesting an answer. This can unintentionally get people to say things that agree with your expectations.
Ask questions neutrally. "What do you think about buying gifts for your spouse?" is a better question than "Don't you think shopping is great?" because the first question doesn't imply that there is a right answer.
Don't ask binary questions. Binary questions can be answered in a word; you want to host a conversation built upon stories.
Make sure you're prepared to capture. Always interview in pairs. If this is not possible, you should use a voice recorder—it is impossible to properly engage a user and take detailed notes at the same time.



Steps Three & Four

Brainstorm Multiple Solutions for the Problem & Select the Most Promising Solution

What is the best solution for your problem, based on your criteria and constraints? Students will brainstorm possible solutions for their problem and select the most promising one.

Remember your challenge is to deliver a product/model that seeks to gamify learning in order to help with student motivation in times of distance learning. This product should be detailed enough so that other people can use it to continue the work that you started.

Introduce Brainstorming Guidelines:

- Record all ideas, even if they seem wild or crazy.
- Go for quantity, not quality.
- No judgement or discussion on ideas.
- Build off others' ideas.
- No interruptions when someone is sharing an idea.

Questions to Prompt Brainstorming (Only use if students are stuck):

- What problems do you foresee arising?
- What are the solutions to those problems?
- What should your room look like?
- How will you know what the needs are?
- What happens when the participants get there?
- How will you make participants feel comfortable?
- What materials would you need?

Now that students have brainstormed a bunch of solutions, they will select the most promising solution based on the criteria and constraints they defined earlier.

Have students evaluate all of the brainstormed solutions and select the most promising solution (or merge their ideas).

- First, each group should review their ranked lists of criteria and constraints.
- Then, based on their lists, each student chooses their favorite three solutions by placing a star sticker next to each of those ideas on the poster paper.
- The solution with the most stickers is the solution that gets selected. If there is a tie, then the group works together to choose the one solution that best meets the criteria and constraints.

Have small groups share out ideas with the rest of the class. If there is time, you can allow questions

after each group shares their idea.

Independent Practice:

1. Students should work together in their groups to further develop their solution. They can adjust their ideas based on any input they received when they shared their ideas with the class.

2. In their notebooks, students can record the following:

- A rough sketch of their solution
- Major features of their design
- The kind of prototype they will be creating: a visual prototype (looks like their solution) or a working prototype (works--and possibly looks--like their solution)
- Materials and tools they will need to build their prototype
- Questions or concerns they have with their design

Steps Five & Six

Prototype Your Solution

Review the Engineering Design Process diagram. Now that students have selected a solution, it's time to build a model of their solution, called a "prototype." Due to the nature of this year's problem students will likely be building a proposal for a virtual product. They should focus on bringing their ideas to life by storyboarding, writing content, and modeling the processes that users will use while interacting with their products.

Test and Evaluate Your Prototype

How can you test your prototype? How can your prototype be improved?

Students will describe how they would test their prototypes and what type of data they would be generating from their tests. Students will give feedback on other student's designs.

Discuss why it is important to be testing and improving the design. What if the design works the first time? Use a common item as an example. Why are there new versions of smartphones, computers, light bulbs or cars, even though the first models may have worked?

Step Seven & Eight

Iterate to Improve Your Prototype

An explanation of the current design, reasoning for design decisions made, evaluation of its success, and plans for future iterations of their project will be compiled into a presentation for step eight.

Communicate Your Solution

How will you tell your community about your solution? Students will plan, write and produce a presentation to communicate their solution. Students will participate in peer feedback.

-

Presentations Should:

1. State the problem/need that is being addressed
2. Describe and show their solution
3. Describe how their solution meets the need
4. State what worked (students can compare their solution to what's being done today, if anything)
5. What ideas didn't work?
6. Concrete ideas for improvement

STEM Activities

Abbreviated versions of all of these activities will be included in students kits. To view them follow this link [Student Printouts]

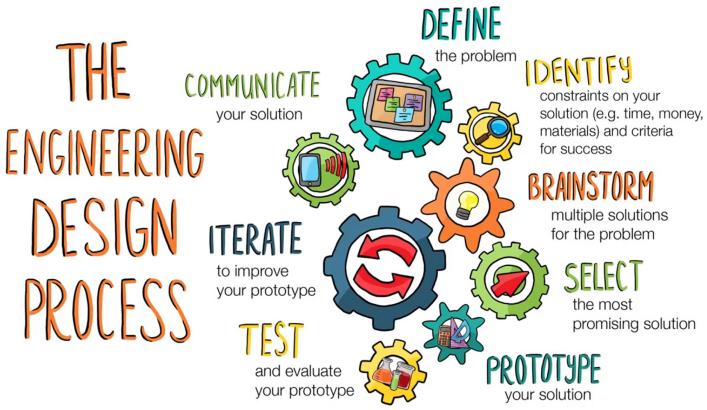
Orange Tower Challenge (Activity 1)

This activity can be used for many different purposes. The most obvious is to illustrate teamwork, planning, cooperation, and to introduce the engineering design process. This is a great activity to help teams bond, and illustrate a partial design process.

Time Required: 45 minutes

Materials Needed:

20 Straws
20 Pipe cleaners
2 feet duct tape
1 pair scissors
1 mandarin orange
2 sheets of paper
Tape measure



Procedure:

Leader Activity Introduction: (5 Minutes)
(Steps 1 and 2 in the design process are given to the students already completed)

a) Define the problem

   i) Instruct each student to locate and open the Activity 1 kit found in their supply box
   ii) Students should work together as a group to build the tallest free-standing structure that they can. This structure must support a mandarin orange near the top. (they will be competing against other small groups)

b) Identify criteria and constraints

   i) Students may only use the materials in their Activity 1 kit
   ii) The tower must be “free-standing” meaning it is not leaning against or supported by any object or person
   iii) The tower must support the orange which must be located near the top of the tower

Engineering Challenge:
Students should not jump in immediately and start building a prototype. Since we already completed steps 1 and 2 for them, students should start with brainstorming and continue throughout the cycle.

a) Brainstorm & Select (steps 3 and 4) (Approximately 5-10 minutes)

   i) Instruct students to work together to brainstorm ideas. They may choose to initially brainstorm individually and then share out with each other, but encourage them to work together to come up with as many ideas as possible. Encourage them to use their journals to sketch out ideas and write down thoughts.
   ii) Students should then select the most promising solution (they may select more than one if desired)

b) Prototype, Test, & Iterate (steps 5-7) (Approximately 20-30 minutes)

   i) After students have made a plan they can begin building their towers. Each student should build their own version with their own materials. The prototyping, testing, evaluation, and iteration stages will likely happen in quick succession multiple times as they work. Point this out so they realize that they are actually completing these stages.

Communicate Your Solution: (5 Minutes) (Leader Led)

a) Were you successful?
b) Why or why not?
c) Which design worked best?
d) Measure tower height to post on Google Classroom along with a picture

Sources:

The Centre for Teaching & Learning
Straw Tower Building Straw Towers to the Moon - Activity - TeachEngineering
STEMbook Activity Page: Tower Challenge: APPROVED

Bacteria Project (Activity 2)

This activity is intended to be a fun "bonus project" to facilitate discussions on public health. The spread of disease is on everyone's minds right now so why not dig in and learn a bit more!

Problem: How does bacteria grow? Can bacteria be visible? What areas have the most and least bacteria?

Background: Germs are EVERYWHERE!!! This is something that you most likely have heard. Quite often illnesses and diseases can be caused by the spreading of some sort of microorganism (living things that are too small to see). These different microorganisms could vary from some sort of virus, fungi, or bacteria. Bacteria in particular are single celled microorganisms. These little invaders love warm environments with lots of nutrients. The human body can make a particularly good home!

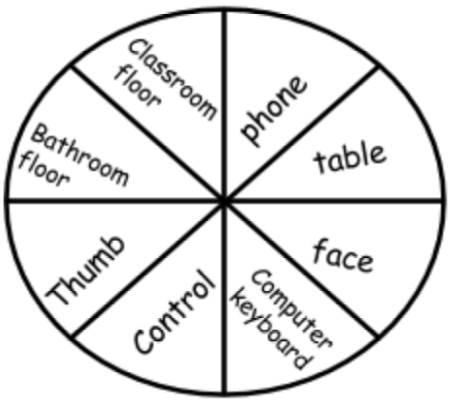
In the Activity 2 kit you will find a petri dish prepared with nutrient agar. This a seaweed derivative with beef nutrients added specially designed to be a great place for bacteria to grow. You will also find a sterile cotton swab that has been sealed up to prevent contamination. Your task is to identify locations most likely to harbor large amounts of bacteria, collect that bacteria, and watch it grow.

Materials:

Petri dish with agar
Cotton swabs
Plastic bag
Tape (same roll used in Activity 1)
Marker
1 pair of gloves

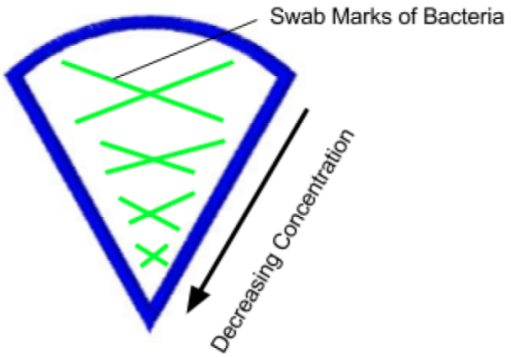
Procedure:

1. Take out agar plate. **The plate cover should not be removed until instructed to do so.**
2. On the top of your plate, label each section with the area where you intend to introduce bacteria from.
3. An example of a plate is to the right. Make sure that one section of your plate is a "control" section where no bacteria will be plated (the areas to take bacteria from to the right are only suggestions. You should test the areas that you and your group members hypothesize in your third hypothesis on the first page.
4. Use a cotton swab and wipe it along a surface that your group has chosen to test thoroughly. You may want to slightly moisten the tip of the swab with a tiny bit of water prior to swabbing in order to pick up the most bacteria**Note: The next few steps(6-8) should be done quickly in order to ensure the least amount of contamination**
5. Lift the lid off of one of your petri dishes. (Do not set down on the countertop. You will replace as soon as you are done introducing the bacteria)



Example Petri Dish

6. Using the cotton swab that you swiped your surface with, swipe the appropriate section of the dish without breaking the agar (gently).



7. The diagram to the left of a petri dish section shows you how to introduce bacteria onto your plate in order to gradually decrease the concentration of the bacteria on your plate toward the center.
8. Quickly replace the lid of your petri dish so you don't contaminate your samples with bacteria from the air.
9. Repeat steps 6-8 in order to fill all the sections of your petri dish except for the control which should be empty to see if any bacterias were airborne and introduced through the opening and closing of the petri dish.
10. After you have finished adding all your bacteria, replace the tops to the appropriate petri dishes and tape shut. As an extra precaution to prevent contamination, you can place each petri dish in a zipper-lock bag. This will provide an extra layer of protection against any hazardous bacteria colonies that may develop, but will still allow you to view the contents of the petri dish.

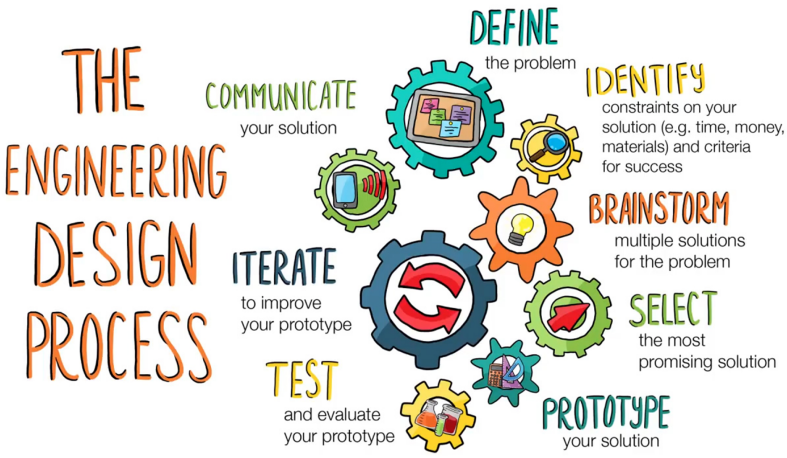
11. Leave the petri dishes in a warm, dark place stored **upside down** (agar up, see picture below) where the bacteria can develop, undisturbed, for several days. Storing them upside down prevents condensation from interfering with the growth. The ideal temperature for growing bacteria is around 98 degrees F (37 degrees C)... Similar to human body temperature!
12. Remove gloves and **wash your hands**!
13. You will check in on these daily to monitor for growth
14. Consider taking a picture each day so you can watch the change over time
15. When the experiment is over, throw the entire bag in the trash. Do not remove the petri dish from the bag at any point...and also **wash your hands** again because...bacteria.

Sources:

Activity Sheet 1-BACTERIA TAKE OVER
Growing Bacteria in Petri Dishes | Experiments

Hand Washing Challenge (Activity 3)

This activity uses "Glo Germ," a product that simulates the behavior of real germs and how they spread. Students will be using an accelerated version of the engineering design process to find the most effective way to inform children to wash germs off of hands.



Time Required: 55 minutes

Materials Needed:

Tin of Glo Germ lotion
1 Black light or ultraviolet light
Paper Towel

Procedure:

***Warn students that Glo Germ lotion may stain clothing. This activity should be completed near a sink. A towel is also included in their kit. ***

1. **Define the problem** (Step 1 in the design process is given to the students already completed)

    a. Instruct each student to locate and open the Activity 3 kit found in their supply box
    b. Scenario: You are charged with teaching elementary kids how to wash their hands. Design the best step by step method to teach them.

2. **Identify criteria and constraints:** Step 2 (Approximately 5 minutes)

    Students should work together to make a quick list of criteria for success and constraints to their methods (examples below)

    a. Constraint Example: Students may only use materials that are safe to touch, can only use household items
    b. Criteria Example: In order to be effective the method should be practical for everyday use, steps easy enough for kids to follow etc.

3. Brainstorm & Select: Steps 3 and 4 (Approximately 10 minutes)

    a. Instruct students to work together to brainstorm ideas. They may choose to initially brainstorm individually and then share out with each other, but encourage them to work together to come up with as many ideas for the best hand washing method as possible. Encourage them to use their journals to write down thoughts/procedures.
    b. Students should then select several procedures to test

4. Prototype, Test, & Iterate: Steps 5 -7 (Approximately 30 minutes)

    After students have come up with a procedure to test. Read the steps below aloud prior to sending students off to do their independent testing.

a. Each student should find a place with a sink in order to test their procedure(s)
b. Tell students to FIRST apply a small amount of lotion all over their hands and look at the level of germ cover pre-wash in a dark location by using the UV light in their kit (they only have one tin of lotion so encourage them to ration it out)
c. Next, instruct them to write down observations about the level of germ cover in their journals.
d. Students may then test the procedures they outlined above by performing them one at time, and checking for the amount of germs visible via UV light
e. In between trials, students should wash their hands to get rid of all visible germs and then reapply lotion before testing another method.

5. Communicate Your Solution: Step 8 (Approximately 5 Minutes) (Leader Led)

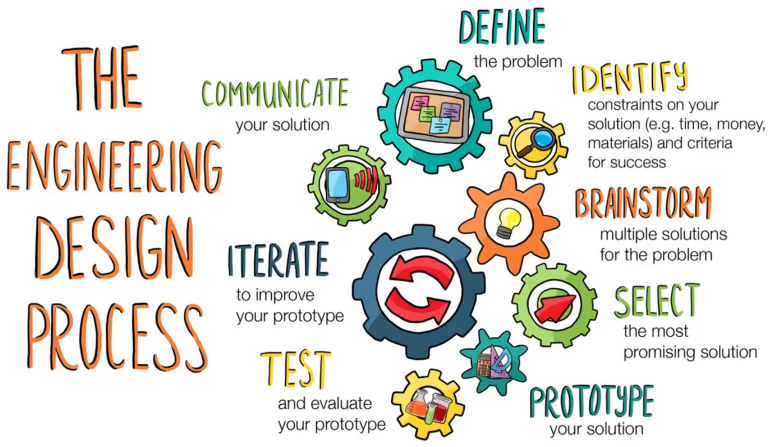
a. Share your observations with your team...
b. What procedure worked best?
c. Did your design stay within the bounds of your criteria and constraints?
d. Do you think that your method could be taught to elementary aged children to encourage effective hand washing?

Sources:

Lesson 4, Activity 1 Hand Washing Experiment

Angry Bird Challenge (Activity 4)

Students will use the engineering design process to design and build a catapult that launches an angry bird as far as they can.



Time Required: 35 minutes

Materials:

Rubber bands
Popsicle sticks (2 sizes)
1 mini-sauce container
1 pack Marshmallows
1 Binder Clip
Tape (Use duct tape used on in Activity Kit 1)
Tape measure (Use in Activity Kit 1)

Procedure:

Leader Activity Introduction: (5 minutes)
(Steps 1 and 2 in the design process are given to the students already completed)

1. Define the problem

   a. Instruct each student to locate and open the Activity 4 kit found in their supply box
   b. Students should work together as a group to design and build a catapult to launch an angry bird as far as possible

2. Identify criteria and constraints

   a. Students may only use the materials in their Activity 4 kit + tape
   b. The design should be safe for the user and anyone else nearby

Engineering Challenge:
Students should not jump in immediately and start building a prototype. Since we already completed steps 1 and 2 for them, students should start with brainstorming and continue throughout the cycle.

3. Brainstorm & Select (steps 3 and 4) (approximately 5-10 minutes)

   a. Instruct students to work together to brainstorm ideas. They may choose to initially brainstorm individually and then share out with each other, but encourage them to work together to come up with as many ideas as possible. Encourage them to use their journals to sketch out ideas and write down thoughts.
   b. Students should then select the most promising solution (they may select more than one if desired)

4. Prototype, Test, & Iterate (steps 5 and 6) (approximately 15-20 minutes)

a. After students have made a plan they can begin building their catapults. Each student should build their own version with their own materials. The prototyping, testing, evaluation, and iteration stages will likely happen in quick succession multiple times as they work. Point this out so they realize that they are actually completing these stages.

Communicate Your Solution: (5 Minutes) (Leader Led)

a. Were you successful?
b. Why or why not?
c. Which design worked best?
d. Measure catapult launch length to post on Google Classroom along with a picture of catapult

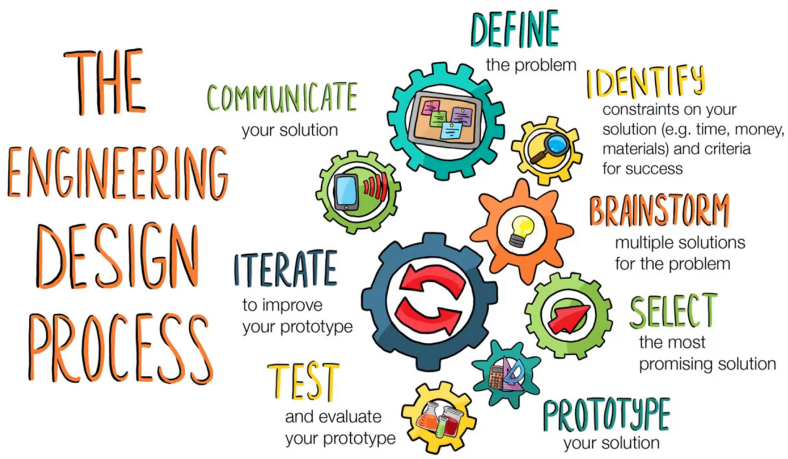
Sources:

Right on Target: Catapult Game - Activity

Let's Bounce Challenge (Activity 5)

Students will work as polymer engineers and apply the Engineering Design Process (EDP) to solve an engineering design challenge. Working in engineering teams, students will create a prototype of a new bouncy ball made from simple, low-cost materials (glue, cornstarch, borax), and develop multiple design ideas for creating a bouncy ball using different ratios of provided materials and choose one idea to create. Team members will test their prototype by dropping it from a predetermined height (60cm) and recording how high it bounced.

Time Required: 75 minutes



Materials:

1 bottle white glue
Borax (3-5 oz.)
Cornstarch (3-5 oz.)
Wax paper
4, 5-8 oz. cups
4 calibrated plastic medicine cups
3-4 Small craft sticks
2 Resealable sandwich bags
1 permanent marker
1 box, disposable gloves
Tape measure (from Activity Kit 1)

Procedure:

Leader Activity Introduction: (5 minutes)
(Steps 1 and 2 in the design process are given to the students already completed)

1. Define the problem

   a. Instruct each student to locate and open the Activity 5 Kit found in their supply box
   b. Students should work together as a group to develop a bouncy ball with optimum bounce by determining the correct ratio of materials given (cornstarch, borax, and glue).

2. Identify criteria and constraints

   a. Criteria:

      i. Bounces a minimum of 9 cm

   b. Constraints:

      i. Use no more than 40mL of materials given (can use less if desired) for the final product
      ii. Do not use the internet to look up ratio hints

Engineering Challenge:
Students should not jump in immediately and start building testing recipes. Since we already completed steps 1 and 2 for them, students should start with brainstorming and continue throughout the cycle.

3. Brainstorm & Select (steps 3 and 4) (Approximately 10 minutes)

a. Instruct students to work together to brainstorm possible ratios of materials that might work. They may choose to initially brainstorm individually and then share out with each other, but encourage them to work together to come up with several ideas to test..
b. Students should then select the most promising solution (s). They may select more than one/ one per person if desired.
c. Students should use their journals to record the ratios they plan to try

4. Prototype (steps 5) (Approximately 15 minutes)

a. After students have made a plan they can begin testing their bouncy ball material ratios. Encourage students to use their materials wisely.
b. The large cups and popsicle sticks are intended for mixing materials.
c. Make sure students wear gloves when touching materials (particularly the borax). They should use wax paper to cover table surfaces when rolling materials into a ball to keep furniture clean.

5. Test and Iterate (steps 6 and 7) (Approximately 35 minutes)

a. To test their prototypes students should use their tape measures to drop their bouncy ball from a height of 60cm
b. They should then record the height of the subsequent bounce off the ground in their journals next to the ratio they used
c. When done, students can repeat the prototyping and testing phase until they are satisfied with their result, run out of materials, or run out of time.

Communicate Your Solution: (10 Minutes) (Leader Led)

a. Were you successful?
b. Why or why not?
c. Which design worked best?
d. Record highest bounce and post on Google Classroom along with a picture of catapult

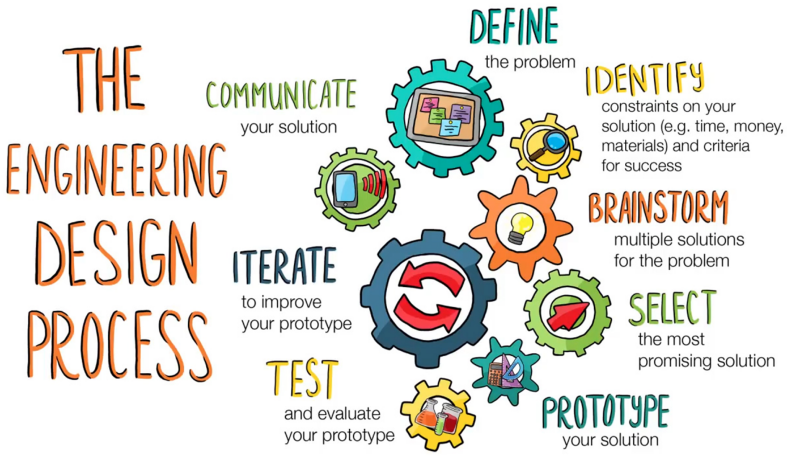
Sources:

Engineering Design Process Applied to Let's Bounce! Polymer Ball System Design

Rescue Rover Challenge (Activity 6)

"Rescue Rover" explores how rescue devices are designed to aid professionals during emergency situations. Students work in teams of "engineers" to design and build their own rescue device out of everyday items.

Time Required: 65 minutes



Materials:

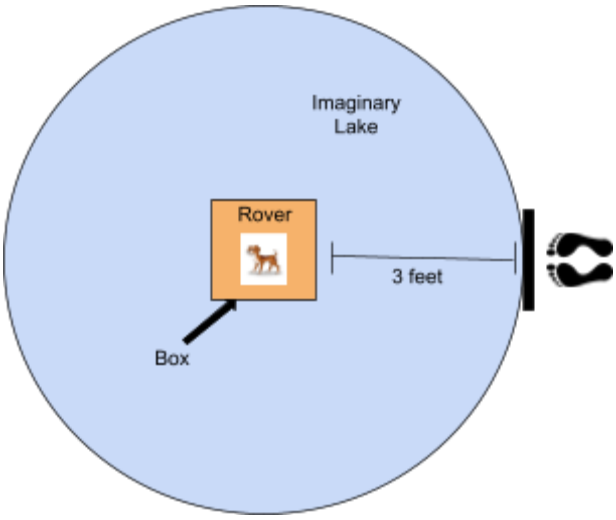
Small animal
Small box
Paperclips
Brass fasteners
Rubber bands
Clothespins
Plastic cups
Paper
Popsicle sticks
String
Tape (from Activity Kit 1)

Procedure:

Leader Activity Introduction: (5 minutes)
(Steps 1 and 2 in the design process are given to the students already completed)

1. Define the problem

   a. Instruct each student to locate and open the Activity 6 kit found in their supply box
   b. Set the Scenario: Oh no! Rover is stuck in a boat! To make matters worse that boat has floated out into the middle of a lake and gotten stuck too. Your mission is to design a device using the materials provided to rescue Rover without dropping your beloved pet in the water.
   c. Students will need to set up their space to simulate this scenario as shown below



2. Identify criteria and constraints

   a. Students may only use the materials in their Activity 6 kit + tape
   b. Rover cannot be injured (i.e. pierce the animal, drop Rover in water, etc.)
   c. The boat cannot be moved or turned on its side

d. Students cannot get in the lake. (Must stay 3 feet away from the box while operating your device.)

Engineering Challenge:
Students should not jump in immediately and start building a prototype. Since we already completed steps 1 and 2 for them, students should start with brainstorming and continue throughout the cycle.

3. Brainstorm & Select (steps 3 and 4) (Approximately 10 minutes)

a. Instruct students to work together to brainstorm ideas. They may choose to initially brainstorm individually and then share out with each other, but encourage them to work together to come up with as many ideas as possible. Encourage them to use their journals to sketch out ideas and write down thoughts.
b. Students should then select the most promising solution (they may select more than one if desired)

4. Prototype, Test & Iterate (steps 5-7) (Approximately 25 minutes)

a. After students have made a plan they can begin building their rescue device. Each student should build their own version with their own materials.
b. Students may repeatedly test and iterate their designs but must reset the scenario before each trial

Communicate Your Solution: (5 Minutes) (Leader Led)

a. Were you successful?
b. Why or why not?
c. Which design worked best?
d. Post a picture on Google Classroom

Sources:

Pet Rescue
Lesson Plan Template

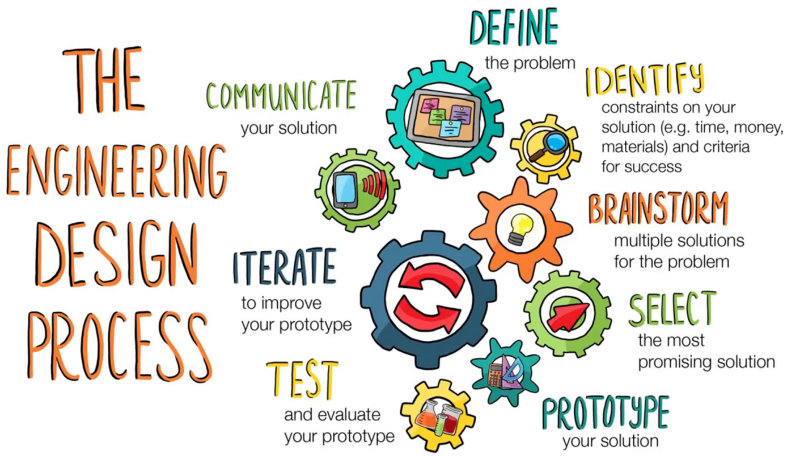
Ship-a-Chip Challenge (Activity 7)

This activity focuses on engineering package designs that meet the needs of safely shipping a product. Students work in teams of "engineers" to design a package using standard materials that will safely ship a single chip through the mail to the school address. Note: We will not be actually “shipping” the chips, instead students will put their boxes through a variety of tests to simulate the shipping process.

Time Required: 90 minutes (spread over 3 days) + 15 minute reveal

Materials:

Chips
Box (from Activity 6 Kit)
Cardboard
Paper
Tape (from Activity 1 Kit)
Cotton balls
Plastic bag
Toothpicks
Popsicle sticks
Foil



Procedure:

Leader Activity Introduction: (5 minutes)
(Steps 1 and 2 in the design process are given to the students already completed)

1. Define the problem

   a. Instruct each student to locate and open the Activity 7 kit found in their supply box
   b. Challenge: Students are to package a single Pringles chip inside of their box (used yesterday in Activity 6) so that it could, in theory, withstand being shipped by the USPS and arrive unbroken. We will not be actually “shipping” the chips, instead students will put their boxes through a variety of tests to simulate the shipping process.

2. Identify criteria and constraints

   a) Students may only use the materials in their Activity 7 kit + tape
   b) Students may NOT use the Pringles container

Engineering Challenge:
Students should not jump in immediately and start building a prototype. Since we already completed steps 1 and 2 for them, students should start with brainstorming and continue throughout the cycle.

3. Brainstorm & Select (steps 3 and 4) (Approximately 10 minutes)

a. Instruct students to work together to brainstorm ideas. They may choose to initially brainstorm individually and then share out with each other, but encourage them to work together to come up with as many ideas as possible. Encourage them to use their journals to sketch out ideas and write down thoughts.
b. Students should then select the most promising solution (they may select more than one if desired)

4. Prototype (Approximately 75 minutes spread over several days)

a. After students have made a plan, they can begin constructing their packages. Each student should build their own version with their own materials.

5. Test & Communicate (steps 5 and 6) (Approximately 15 minutes)

a. On Friday, during the Ship-the-Chip reveal/ virtual party students will perform the following tests on their finished packages

    i. Drop package from around 5 feet. Repeat 5 times.
    ii. Kick package at least 3 feet. Repeat 5 times.

b. After testing, students will open their boxes on camera and reveal their outcomes.

Instructions for StoryCorps

What is StoryCorps and Why participate?

StoryCorps is an independently funded 501(c)(3) nonprofit organization. StoryCorps is built on an uncompromising commitment to excellence that includes an intense focus on the collecting, sharing, and preserving of people's stories. Storycorps works with several national organizations including NPR and the American FolkLife Center at the Library of Congress to showcase and make accessible the stories submitted.

1. Make sure your parents have signed/ you have turned in your consent form to participate
1. Download App (https://storycorps.org/participate/storycorps-app/)
2. Make account
3. Accept terms of use
4. Tap + in top right to create a new interview
5. Choose
6. Choose "Prepare and Interview"
7. Click "What questions will you ask?"
8. Near the top click "Write your own questions"
9. Type your first empathy interview question in the blank (this should be "Do you consent to being recorded and having this audio uploaded to the Library of Congress for archiving?"
10. Click done and save. This should take you back to the Select Questions screen where you can see your newly entered question
11. Repeat steps 8-10 until finished entering all of your interview questions
12. You should see a purple circle with a white plus sign next to each question you have entered. Click each of these to add all of your questions to your interview list. The plus sign should change to a check make when successfully added.
13. When you have added all of your questions (you should see a purple circle in the bottom left with a number in it that will tell you how many questions you have added) click Save.
14. Click "Who will you interview?"
15. Click Save again to exit to the Edit Interview screen
16. When you are ready to record click "Record this interview" at the bottom of the screen
17. The script of what to say including your questions will be seen in the white box at the top. When you complete the introduction or finish asking a question click the gray circle with a check mark in it to continue.
18. Click the blue "Record" button at the bottom of the screen
19. To take a break hit the "Pause" button at the bottom of the screen
20. When you have asked all of your questions hit the "Done" button at the bottom of the screen and confirm that you wish to quit by clicking "yes"
21. Choose "skip this step" to skip posting a photo
22. Review your interview information and fill in the Summary and Keywords blanks.

23. Near the bottom of this page you will see a place to set “Who can listen to this interview?” Click on Edit and change this setting to Private. ***NOTE: All uploaded interviews are archived and accessible at the Library of Congress for future generations regardless of this setting.***
24. Click Save
25. Choose to either Publish Interview or to Only Save to Device (depending on your preference and interviewees privacy preferences)
26. To email your finished video to erin.buchanan@tulsacc.edu by Clicking the …
27. After you have finished interviewing include your questions and a summary of the answers you received (doesn’t have to be word for word) here StoryCorps: Interview Data