

THE CHALLENGE  
2020

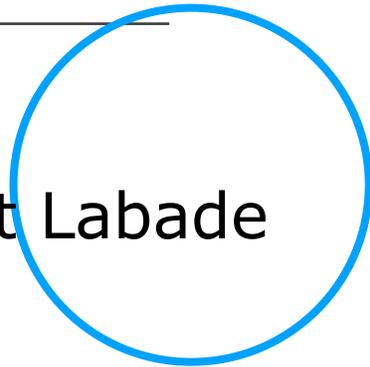
# A Pandemic-Proof Cafeteria

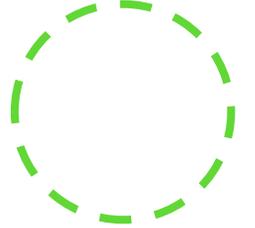
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Team Name: Brownstein

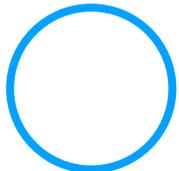
Team Number: 16

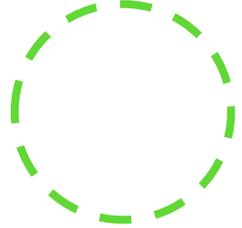
- Saketh Pabolu, Anuj Kamasamudram, Aditya Krishna, Siddhant Labade





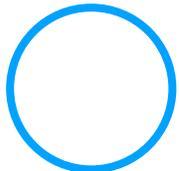
# DEFINE THE PROBLEM

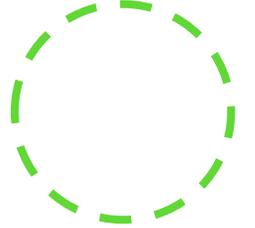
- What about COVID-19 is causing a *new normal*?
    - The problems that COVID-19 is primarily causing is because of its ability to spread from person to person in close contact with one another (within about 6 feet), through respiratory droplets produced when someone coughs, sneezes or talks. As Bill Gates commented, “It will take a lot of good communication so that people understand what the risks are and feel comfortable going back to work or school.” Some even believe that it is not possible to find a cure for the novel virus and live in a *unforeseeable future*.
  - What effect is COVID-19 having on public spaces, specifically schools?
    - Pandemic has made it much harder for groups of people to come together in public spaces. Educational necessities like schools and colleges have been shut down for the remainder of the 2019-20 school year, and instead, the classes were moved to online schooling, making it harder for students to focus on their school work.
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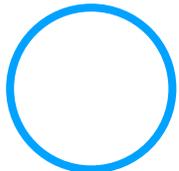
# DISCUSS THE LOCATION

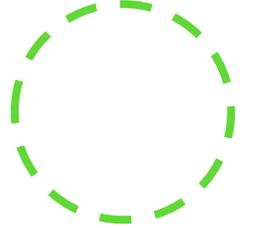
Location: **Cafeteria**

- Who uses the space?
    - Every student, school faculty members and meal personnel
  - How does interaction occur in this space?
    - Students come in physical contact with each other while standing in line
    - They come in contact when communicating with each other
    - School staff and students both come in contact with the surfaces used to exchange food and money
    - Students come in contact with the tables and seats to hangout and eat
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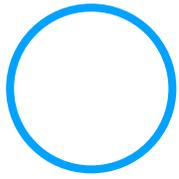


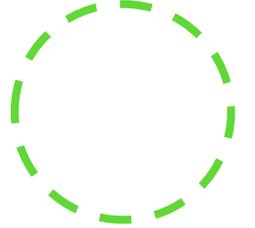
# DISCUSS THE LOCATION (cont.)

- How big is the space?
    - $\frac{1}{4}$  to  $\frac{1}{5}$  of the total school capacity. (it's different per high school but this is an average)
  - Identify a challenge in that space related to social distancing
    - Students and Faculty are required heavy interaction to exchange food and money.
  - What features of the space need to be maintained to keep it functional?
    - Areas such as the food court and seating arrangements are required to keep the cafeteria functional.
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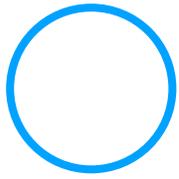


# DISCUSS YOUR SOLUTION

- What was your creative/design process?
    - Limiting student contact, having an efficient delivery system for receiving food, and maintaining social distancing among all the people in the cafeteria.
  - What did you produce to adapt and update your chosen location?
    - A website where the students pre-order their school meal on every Saturday before noon.
    - Distributing gloves before entering and exiting the cafeteria.
    - Rearranging the seats in the cafeteria.
    - Forming five or more widespread lines for faster and efficient delivery of meals to students with dividers placed six feet apart to maintain social distancing.
    - Hosting several lunches by cutting down the time that each lunch takes.
    - Limiting the number of students in the cafeteria.
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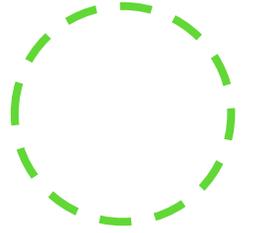


# DISCUSS YOUR SOLUTION (cont.)

- How will you implement your solution?
    - By rearranging the seating in the cafeteria, making a website to handle orders, and investing in automated hand sanitizers and glove dispensers, changing the schedule for the lunches, and changing student travel protocol
  - What types of engineers do you need to implement your solution?
    - Computer Engineer, Biomedical Engineers, Material Sciences Engineers
  - What about your solution is innovative?
    - Delivery System of the meal to thousands of students in a short amount of time makes it innovative with the constraints of COVID-19's transmission
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# DISCUSS BARRIERS TO DESIGN IMPLEMENTATION

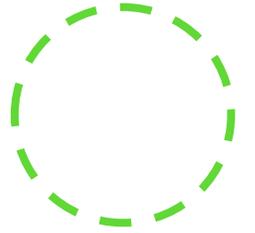


- Cost?
  - Minimal. Mostly expenses such as glove dispensers or extra hand sanitizers to help diminish the rate of spread of the virus.
- Equipment?
  - Automated hand Sanitizers, Glove Dispensers, Tinfoil, Tables, Utensils, ID scanners, and Dividers, website designing tools
- Size of space? Etc.
  - Around the size of an average Cafeteria ( $\frac{1}{4}$  to  $\frac{1}{5}$  of the total school capacity) and Classrooms (1024 square feet).





# DISCUSS HOW YOUR SOLUTION WILL CHANGE THE SPACE



- Changes for stakeholders using the space?
  - The stakeholders are the janitors, teachers, lunch staff, school faculty, and student volunteers who previously helped out with the food distribution. These members are required to adapt to the new changes such as following social distancing, retrieving meal orders from the website and students not eating in their social groups.
- Ethical considerations- positive changes and negative changes?
  - Negative changes: Minimal social groups or time to just relax with friends, some people might not get their choice of food.
  - Positive changes: Less chance of transmission, increased efficiency in distributing food.
- How will the function of the space change?
  - Cafeteria will still serve food to the kids; however, only to kids who have ordered the lunch from the website. Students are heavily advised to bring food from their house during these difficult times.





# DISCUSS WHAT YOU LEARNED AND HOW YOU WORKED AS A TEAM



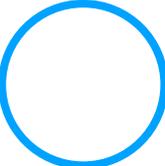
- Successes?

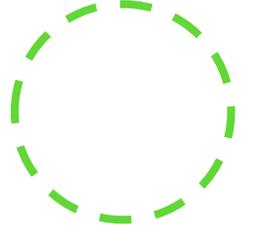
- We successfully brainstormed multiple serviceable ideas and came up with the best strategies on how to implement our top ideas.

- Failures?

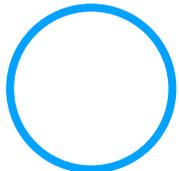
- None. We were able to work together and provide a viable solution for our high school cafeteria. We certainly had some disagreements but with enough discussion we were able to come to a final conclusion.

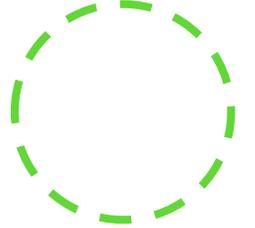
- What did you learn?

- Working together as a team and not hesitating to ask for help is much more efficient than trying to do something by yourself without any help.
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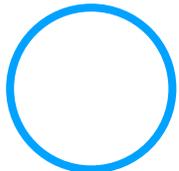


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A decorative graphic consisting of several overlapping circles and lines. A large pink circle is the central element, with a dashed orange circle to its top-left, a dashed green circle to its top-right, and a solid blue circle to its bottom-right. Small solid dots in yellow, cyan, and blue are also scattered around the pink circle.

# Thank you

We hope we can combat this coronavirus together