peanut butter jelly time
blue a
Sixth-graders who ate lunch provided by their school were 29 percent more likely to become obese than those who brought lunch from home.

Source: American Heart Journal

- Parents busy
- Kids not interested/wouldn’t make healthy choices

What can be done?
our solution

An automated peanut butter & jelly maker geared towards kids!

- ‘CNC machine’ to dispense peanut butter and jelly onto bread
- Saves parents time and healthier for kids than school lunches
mock up: questions to answer

- **Form Factor**
  - What shape and dimensions would an automatic PB&J maker have?

- **Dispensability**
  - How could we squeeze peanut butter out of a dispenser?!

- **“Spread”-ability**
  - How could we create the perfect proportions of peanut butter and jelly on each sandwich?

- **Production Rate**
  - Manual process versus automated process
-feasibility

- Force required to dispense peanut butter
- Viscosity is concern
- Calculated force to dispense peanut butter for first dispenser ~ 2.6 pounds of force
- Iterations on Dispenser
  - Created wide slit through bottom of dispenser
  - Spreads peanut butter nicely onto bread as opposed to original design
  - Used force sensor to measure force applied to dispenser, saw a reduction in force between trials
Feasibility

- Automation of Mechanisms/Power Requirements
- Considering small DC motors for linear actuation mechanisms
  - left/right
  - forward/backward
- Could be powered by 6V battery

Rack and Pinion

Toothed Belt
questions answered

- Form Factor
  - Current design is one possible solution

- Dispensability
  - Measured Dispensing Force: 17 pounds
  - Modified existing dispensers

- “Spread”-ability
  - Wider nozzle for PB

- Rate
  - Faster than making by hand
<table>
<thead>
<tr>
<th></th>
<th>Ole Fashion Manual Way</th>
<th>Smuckers Uncrustables</th>
<th>Peanut Butter Jelly Time</th>
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</thead>
<tbody>
<tr>
<td>Automated</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Time</td>
<td>45 seconds</td>
<td>Thaw 30-60 minutes</td>
<td>35 seconds</td>
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<tr>
<td>Safe for children to make</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Nutrition Value</td>
<td>193 calories</td>
<td>210 calories</td>
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<tr>
<td></td>
<td>6 grams fat</td>
<td>9 grams fat</td>
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<tr>
<td></td>
<td>7 grams protein</td>
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<tr>
<td></td>
<td>3 grams fiber</td>
<td>2 grams fiber</td>
<td>3 grams fiber</td>
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</table>
not just a novelty

- Easy Bake Oven
  - 500,000 units sold in first year alone
  - Since invention in 1963 23 million units & 140 million mixes purchased
  - Iconic toy
  - Obsession to be grown up and measure, mix and cook
next steps

- Automate the PB & J sandwich making process via CNC or single motor linkage mechanism
- Etch and Sketch meets PB & J Maker
  - Interactive sandwich maker for kids
  - Unisex Easy Bake Oven
  - Safe, robust, and fun