

**Flynn / Grissom Middle School STEM  
Science, Technology, Engineering, and Mathematics  
Annabelle's\* Challenge Design Brief (2012)  
Design and Build a Mechanical Hand**

**Due Date:**

**Context:**

Students will understand and appreciate the challenges of creating a mechanical device that will mimic the functions of a natural hand.

**Requirements:**

- 1). Students may work independently or as a manufacturing team.
- 2). **Each student is responsible for presenting their own mechanical hand!**  
(40 students = 40 hands)
- 3). **Your own two hands will operate your Mechanical Hand – from the forearm area only!**
- 4). Hands will not be made from some kit or prefabricated components.
- 5). Hand must be a minimum of normal size.
- 6). Hand will be evaluated from the resting “High 5” position.
- 7). Teacher Supplied: straws, string, paint stirrer stick, hot glue, masking tape, manila folder, craft sticks.

**Evaluation:**

Points are earned for each component or movement present as outlined below:

<b>Description:</b>	<b>Points available</b>	<b>Points Earned</b>
<b>4</b> moving fingers with <b>3</b> moving joints each. Each joint will move a minimum of 45 degrees	<b>3</b> points per joint that moves 45° and returns. <b>36</b> points maximum	
Prehensile thumb with <b>2</b> moving joints. Each joint will move a minimum of 45 degrees.	<b>3</b> points per joint that moves 45° and returns. <b>6</b> points maximum	
Thumb moves in two planes	<b>5</b> points ( <b>2.5</b> pts per plane of motion)	
Give the following hand signals and return to a flat position:	<i>Thumbs up</i> ( <b>5</b> pts)	
	<i>Peace</i> ( <b>5</b> pts)	
	<i>Hang Loose</i> ( <b>5</b> pts)	
<b>Grip</b> a water bottle (120 grams) and lift it. Return to a flat position. (no adhesives)	<b>8</b> points	
<b>Total possible points = 70</b> (possible 140%)		