Draft Procedure:

**Goals:**
Primarily -
- Identify which lighting color people prefer, if they have a preference.
- Identify which lighting level people are comfortable with, if they have a preference.

Secondarily -
- Identify whether people notice the lighting has changed at all.
- Ensure that differences are controlled for by time of day.

**Experimental Groups:**
- Perform survey 2-weeks post installation in ALL trial classrooms

**GROUP ONE CLASSROOMS:**
- Perform additional survey BEFORE installation for class time 1.
- Perform survey AFTER installation ONLY for class time 2.

**GROUP TWO CLASSROOMS:**
- Perform additional survey AFTER installation ONLY for class time 1.
- Perform additional survey BEFORE installation for class time 2.

**POSSIBLE EXPERIMENTAL CATEGORIES:**
Each classroom group will have four/five types of classrooms, outfitted with one of the following four/five lamps:
- 1600 lumens / 4000 K (#46958-5) 10W
- 1600 lumens / 5000 K (#46959-3) 10W
- 2100 lumens / 4000 K (#46962-7) 14W
- 2100 lumens / 5000 K (#46963-5) 14W
- 2100 lumens / 4000 K (Home-Depot) 17W**

The following are similar to Home Depot Tubes:
- 2100 lumens / 4000 K (#45656-6) 17W
- 2100 lumens / 5000 K (#45657-4) 17W
- Home Depot Tubes

This amounts to 10 total pilot classrooms, in each of which survey responses will be collected at two different times of day. This amounts to 20 total experimental groups.
**Survey evaluation:**

Surveys will be scored as follows:

<table>
<thead>
<tr>
<th>Q2, 3</th>
<th>Q4</th>
<th>Q5</th>
<th>Q6, 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree: 2</td>
<td>Strongly agree: -2</td>
<td>Too dim: -2</td>
<td>Warmer / Brighter: 1</td>
</tr>
<tr>
<td>Agree: 1</td>
<td>Agree: -1</td>
<td>Dim: -1</td>
<td>No change: 0</td>
</tr>
<tr>
<td>Neutral: 0</td>
<td>Neutral: 0</td>
<td>Neutral: 0</td>
<td>Cooler / Dimmer: -1</td>
</tr>
<tr>
<td>Disagree: -1</td>
<td>Disagree: 1</td>
<td>Bright: 1</td>
<td></td>
</tr>
<tr>
<td>Strongly disagree: -2</td>
<td>Strongly disagree: 2</td>
<td>Too bright: 2</td>
<td></td>
</tr>
</tbody>
</table>

Q2-4 will characterize user satisfaction with the lighting, where a positive number indicates relative satisfaction, and a negative number indicates relative dissatisfaction. For each experimental group, an average satisfaction score will be reported with standard deviations.

Q5 will be correlated with the satisfaction score and with Q7.

The positives and negatives for Q5-7 do not have any meaning as far as user satisfaction. They are meant only to help characterize lighting quality preferences with respect to brightness and color temperature.

Other variables:
- Time of day (morning / afternoon / evening)
- Lamp illuminance (1600 / 2100)
- Lamp color (4000 / 5000)

New lights of Interest:

<table>
<thead>
<tr>
<th>Code</th>
<th>Lumens</th>
<th>Watts</th>
<th>Lifespan</th>
<th>Color</th>
<th>BeamAngle</th>
<th>15yr $</th>
</tr>
</thead>
<tbody>
<tr>
<td>46958-5</td>
<td>1600lm</td>
<td>10W</td>
<td>50k hrs</td>
<td>4000K</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>46959-3</td>
<td>1600lm</td>
<td>10W</td>
<td>50k hrs</td>
<td>5000K</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>46832-2</td>
<td>2100lm</td>
<td>14W</td>
<td>50k hrs</td>
<td>4000K</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>46833-0</td>
<td>2100lm</td>
<td>14W</td>
<td>50k hrs</td>
<td>5000K</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>46962-7</td>
<td>2100lm</td>
<td>14W</td>
<td>50k hrs</td>
<td>4000K</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>46963-5</td>
<td>2100lm</td>
<td>14W</td>
<td>50k hrs</td>
<td>5000K</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>46314-1</td>
<td>2500lm</td>
<td>16.5W</td>
<td>70k hrs</td>
<td>4000K</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>46315-8</td>
<td>2500lm</td>
<td>16.5W</td>
<td>70k hrs</td>
<td>5000K</td>
<td>160</td>
<td></td>
</tr>
</tbody>
</table>

>>> HOME DEPOT LIKE

<table>
<thead>
<tr>
<th>Code</th>
<th>Lumens</th>
<th>Watts</th>
<th>Lifespan</th>
<th>15yr $</th>
</tr>
</thead>
<tbody>
<tr>
<td>45656-6</td>
<td>2100lm</td>
<td>17W</td>
<td>36k hrs</td>
<td>240</td>
</tr>
<tr>
<td>45657-4</td>
<td>2100lm</td>
<td>17W</td>
<td>36k hrs</td>
<td>240</td>
</tr>
</tbody>
</table>
Trials Proposal Based on Initial Documentation from Philips:

**None of the following lamps are listed in the new list**

**Room 222; 24 Lamps**
- Code: 452680
- Color: 4000K
- Wattage: 16.5
- 2100 Lumens

**Room 232; 34 Lamps**
- Code: Unknown. 10-Watt.
- Color: 5000K
- Wattage: 10
- 1600 Lumens

**Hallway Floor 2; 24 Lamps**
- Code: 453605
- Color: 4000K
- Wattage: 10
- 1600 Lumens

**Room 224; 42 Lamps**
- Home Depot → Existing Smart Home Lamps
- Color: 4000K
- Wattage: 17
- 2100 Lumens

*Tentative Future: 452698, 2150 Lumens, 5000K*
Classroom number: ________

NetID: __________________

Please CIRCLE ONE response for each question.

1. I am a:
   student teacher

2. I am satisfied with the lighting quality in this classroom.
   strongly agree agree neutral disagree strongly disagree

3. I think the lights provide appropriate illumination for my work.
   strongly agree agree neutral disagree strongly disagree

4. I think the lights are glaring and I find them uncomfortable.
   strongly agree agree neutral disagree strongly disagree

5. I think the existing light level is:
   too dim dim neutral bright too bright

6. If I could modify the existing light color, I would like it to be:
   warmer no change cooler

7. If I could modify the existing light level, I would like it to be:
   brighter no change dimmer