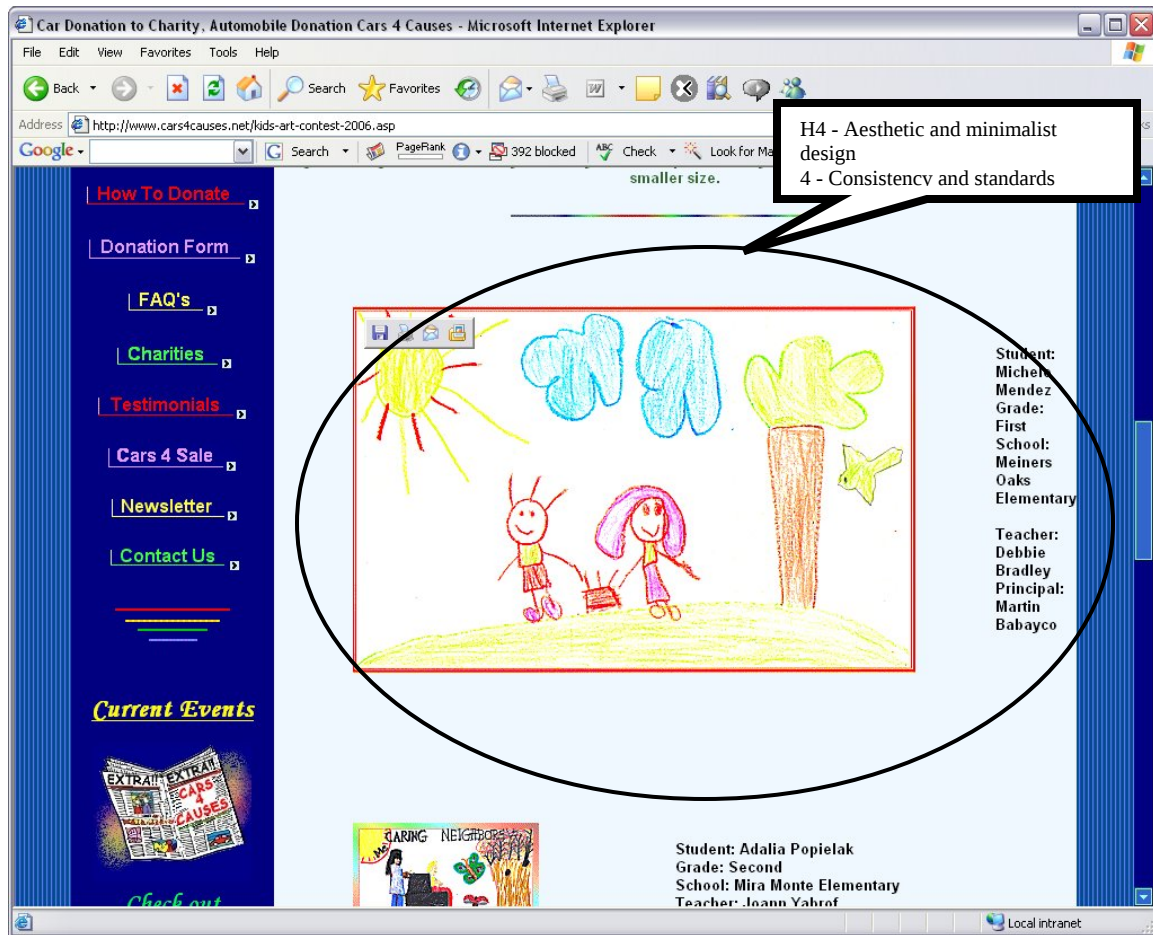




Part II: Room 202 Lighting Control Redesign

First, I tried to visualize the physical mapping of the lights in the room. Once I had a good notion of how they were arranged, I began brainstorming about how the controls would look and function. One of the biggest constraints was the fact that there are two sets of control switches in the room – one in the front of the room and one in the back. As a result, any control that maintained state physically would be confusing. This is the same problem that I have with my hallway light at home. There are traditional up/down light switches both upstairs and downstairs. So it's possible to have the light on but one of the switches will still be in the down position indicating the light is off. This causes a disruption in my mental model of light switches and lights.

As a result, I rejected any light control that would keep its physical position. That includes all traditional switches that "stick" in a position. Instead, I thought about different dials and spring-back switches that could be combined with a digital indication of the light state. That way, the digital display would give the user the feedback they needed in order to know whether their action was successful. If someone switched the lights off using the front of the room control, both digital displays on both front and back room controls would reflect that change instantaneously and confusion about the current lighting state would be avoided.

My designs started out all over the board. My first rendition used dials and a digital scale to turn on and adjust the brightness for each of the 3 sets. These dials were placed next to a drawing of the lighting locations and connected to the appropriate lighting sets via arrows. Another interface design used shapes – circles, squares and diamonds to represent the different lights and then matched these shapes with the dials. I wasn't satisfied with either of these designs because they looked really busy and confusing, especially with the checkerboard appearance of the alternating A/B lights. Plus, I was worried that the connection to the dials would take a few seconds for a user to figure out.

I went back to the drawing board and made two important decisions. First, I decided to get rid of my checkerboard A/B depiction and just show the A and B lights as a nested set of rectangles. Although this is not truly how these lights are arranged, I decided that the user probably would not care that the A/B lights alternate. To the user, they are just two sets of lights that go around the perimeter of the ceiling. Only testing would show whether this assumption can be made but for the purpose of the design, it greatly simplified the mapping of the lights to a visual representation and therefore, I felt, improved the usability of the control.

The second significant change I made was to get rid of the dials. Instead, I decided to try something unconventional. I decided to turn the visual depiction into the actual light control. I based the idea on the new broad/flat light switches that many homes now have. But in my design, there are three tiers of switches nested in one another. Each ring of switch would have enough width to allow for a finger to comfortably press it independently of the other rings. Alternatively, the user could press all three switches at once to turn all the lights on.

Additionally, just like the broad/flat switches in homes, the physical shape of the switches would be a very shallow “V” – in other words, the center of the switches would angle inwards so that it is clear to the user that they can press the switch both up and down. These switches would not “stick” though. They would simply rock back and forth, returning to a neutral position. To further indicate to the user that these switches are meant to be pressed on the upper or lower half, I included thin strips of textured padding on each switch with an arrow indicating the direction.

Pressing and releasing the switch or switches would turn the lights on with the brightness set at the middle level. Pressing and holding the top part of the switch would brighten the lights. Pressing and holding the bottom part of the switch would dim the lights. The current brightness level would be indicated by a series of LED lights on the side of each switch. These digital lights would give immediate feedback to the user.

Lastly, I think it's important to label the control as “Ceiling lights” so that the user understands the mapping. Otherwise, it would be possible for them to interpret the mapping as being more on the floor level.

Figure 12: Broad/flat light switch "rocker" on which the design was based



Figure 13: Light Control Design - all lights are currently off
Ceiling Lights

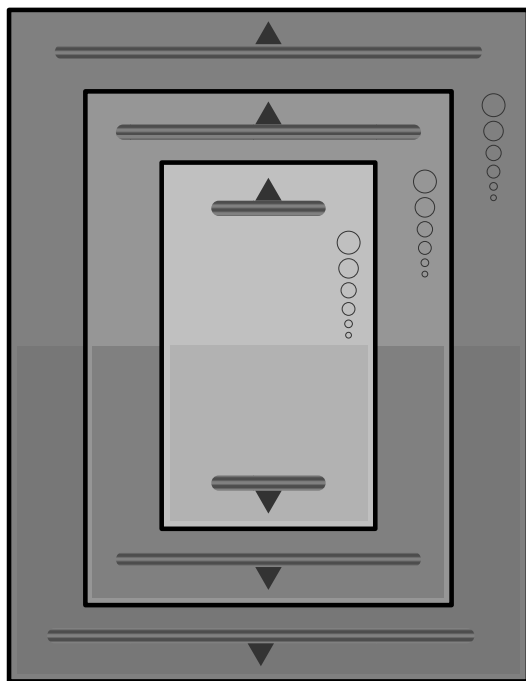


Figure 14: Light Control Design - user has pressed and released all switches, turning all lights on at mid-brightness level

Ceiling Lights

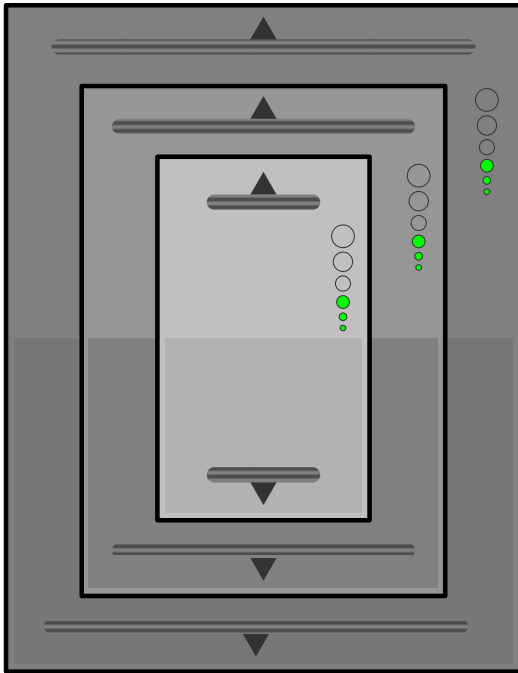


Figure 15: Light Control Design - user has pressed and held the inner ceiling lights to maximize their brightness while leaving outer lights at the default mid-brightness position

Ceiling Lights

