Cuneo LED Transmission Project

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Introduction:

Cuneo Hall, right next to the Mundelein center, is A naturally ventilated facility. This means that the windows have to be opened and closed to ensure that the building maintains an ideal temperature at all time. We needed to find a way to transmit the information of the state of the windows from the LED transmitter to the office of Dr. Streeter

Abstract:

We needed to find a way to send the color of the light, red or green, from the LED transmitter located on one side of the floor, to Dr. Streeter's office located on the other side.

Methods:

The use of a surveillance camera connected to an internet source can be used to transmit these signals. By installing the surveillance camera into the study area where the LED is located, Dr Streeter would just have to access the livestream of the surveillance camera on his phone or computer and see what information the LED is showing.

Preliminary Research:

We established a 2k factorial with our four measurable requirements as our factors. In total, we had 19 different runs. We therefore had to take nineteen screenshots of the live stream of the camera that would each correspond to a run.

Pilot Study:

We spent around an hour at different times over 3 days to get the different measurements. For our trials, we set the camera up in the correct position, and then took a picture. We then asked a group of 15 people to rate each picture from worst to best, with 18 being the best and 0 being the worst, and then calculated the mean of the rankings.

Continued Experimentation:

The leading factor was the position of the camera. The students in the study area also contributed to the visibility.

Our best run was when the number of students in the area was equal to zero and the position of the camera was on the left corner.

Predicted Outcomes:

This is a significant model because the p-value is .0044 which is less than .05, and the Lack of Fit p-value is . 6480, which is greater than .05. In addition, the Normal Plot of Residuals has points plotted above and below the line, making it a significant model. The solution we recommend is the set up of the surveillance camera on the left corner of the study area.

Conclusion:

We determined that the surveillance camera would be a good solution. The feed from the camera can be seen from anywhere on a phone or a computer. It also leaves the light uncovered if someone needs to see it and does not have access to the camera feed. The biggest issue we have with the surveillance camera is students in the area blocking the camera.