Daylighting Optimization Study: Rock Creek High School Commons Skylight Optimization

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Rock Creek High School Commons Skylight Optimization

**ABSTRACT**

This research investigates the effect of varying skylight shapes on the daylight distribution inside Rock Creek High School Commons. The study focuses on optimizing the natural lighting conditions within the space by exploring the potential of different skylight shapes. The research involves analyzing the light distribution, energy efficiency, and aesthetic qualities of the skylight. The study is expected to provide insights into the design of efficient and sustainable daylighting solutions for educational environments.

**Methodology**

The research methodology involves the following steps:

1. **Simulation Setup**: Setting up the simulation environment to model the skylight and the surrounding space.
2. **Skylight Shape Exploration**: Investigating various skylight shapes to understand their impact on daylight distribution.
3. **Lighting Analysis**: Conducting a detailed analysis of the light distribution inside the Commons area.
4. **Energy Efficiency Evaluation**: Assessing the energy efficiency of the skylight shapes.
5. **Aesthetic Quality Assessment**: Evaluating the aesthetic qualities of the skylight shapes.

**Research Objectives**

The primary research objectives include:

- Investigating the effect of skylight shape on daylight distribution.
- Analyzing the energy efficiency of different skylight shapes.
- Evaluating the aesthetic qualities of the skylight shapes.

**Results**

The research findings reveal that certain skylight shapes significantly improve the daylight distribution inside the Commons area. The results also indicate that certain shapes are more energy-efficient and aesthetically appealing. The study recommends the adoption of specific skylight shapes to enhance the daylighting conditions in educational environments.

**Conclusion**

The research findings provide valuable insights into the design of efficient and sustainable daylighting solutions for educational environments. The study highlights the importance of considering various factors, such as light distribution, energy efficiency, and aesthetic qualities, in the design of skylights. The results can be applied to enhance the daylighting conditions in educational spaces, contributing to a more comfortable and healthy learning environment.