

Effect of Artificial Light on Standardized Testing Scores

Rationale:

Standardized testing is a requirement in public schools. Finding out if there is any way to increase student test scores without students studying countless hours is beneficial for both students and the school. Research shows that natural light significantly increases student's test scores¹⁻². Unfortunately, most school buildings do not allow sufficient amounts of natural light into classrooms. As a result schools use artificial lighting. Philips, a technology company, has a product called Schoolvision that controls light levels in classrooms³. One of the light settings, 'Focus', can significantly increase test results⁴. If it can be determined that schools can adjust light levels to improve test scores, without using specialized products, schools and students throughout the nations will benefit. Therefore an experiment should be conducted on the effect of artificial light on a student's standardized testing scores. The purpose of the experiment proposed is to test how varied amounts of light in a testing location would affect a student's test score. Our hypothesis is that more artificial light will have a positive correlation with a student's test scores because brighter lights increase student's concentration⁵.

Methodology:

To conduct the experiment, one hundred students will be participating; they must all have similar scores on previous standardized tests. The control group will consist of fifty students in the same grade who will take the standardized test in a room at three hundred lux, the standard amount of light in a classroom⁶. The experimental group will consist of fifty additional students who will take the standardized test in a room, at the same school, with nine hundred lux. To

obtain nine hundred lux light, we will replace the standard classroom light bulbs with light bulbs of higher lumen. Each person will be given a number from one to one hundred, with the control group subjects being one to fifty and the experimental group subjects being fifty one to one hundred. Before testing, students will fill out a questionnaire asking how many hours they slept and how tired they felt on the scale from zero to ten, with zero being not tired and ten being extremely tired. The standardized test will be administered to both the control and experimental groups at the same time on the same date. The amount of light in the testing locations will be monitored to ensure consistency. In addition, both classrooms should be at seventy two degrees Fahrenheit, to help increase test scores⁷. After testing, students will fill out a questionnaire asking how tired they felt. Students who report sleeping less than six hours or feeling more tired than eight on the tiredness scale in the beginning of the test will have their results ruled out. The average score of the standardized test will then be calculated. The test scores between the experimental and control group will be compared by creating a scatter plot. At the conclusion of this experiment, the findings will be shared with school administrators.

Next Steps:

Based on the results of the experiment, future experiments with more students should be conducted to further validate the results.

Other experiments could involve analysing the effect of hours of sleep or time of day on standardized test scores. It is important to gather data on whether the number of hours of sleep that students are getting impacts their scores.

In addition, a student's circadian rhythm might affect test scores. Having students take tests at different times of day would be an experiment worth conducting.

Bibliography:

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