



The Case for Task Lighting

HOW INDIVIDUAL CONTROL SAVES MONEY AND YOUR EYES



High healthcare costs associated with back pain and carpal tunnel syndrome have raised awareness about the importance of ergonomics. But there's more to ergonomics than proper support for the back and wrists. Anything in the physical environment that affects the fit between a person and her work is ergonomic by nature.

A good fit includes lighting, which is as important as any other workspace tool to worker comfort. In the absence of good light, people will hunch, squint, and frown over their work, without realizing it. By reducing eyestrain and allowing people to maintain healthy posture, proper lighting can improve productivity by more than six percent.¹

What We Know

When it comes to the working environment in general, we know that control over many environmental factors, e.g., noise levels, temperature, and lighting, contributes to comfort and enhances productivity.² We know that while access to natural lighting enhances psychological well-being, natural light alone isn't enough for most office-related tasks because there's a wide variation in light intensity (i.e., foot-candles) even in spaces that have plentiful natural light. We also know that when they don't have enough light or the right kind of light, people experience eyestrain and headaches and make more mistakes.

But what's the "right" kind of light? That depends in large part on a person's age. Under the same lighting conditions, people in their twenties have eyesight that's eight times better than people in their sixties.³ It also depends on quality of eyesight, which varies widely even among people of the same age group. Finally, it depends on how tired the eyes are, since as eyes tire, their need for light increases. But people's eyes tire at different rates during the day.

Therefore

Lighting in the workplace ideally includes task lighting the person can control, as well as ambient light and natural daylight.

Design Problem

Trends in office design and the push to reduce energy use and costs are causing companies to rethink their lighting. In commercial buildings, lighting accounts for 35 percent of energy use—more than any other single end use. Because lights give off heat in addition to giving off light, lighting also contributes to the next highest category, space cooling, which accounts for 16 percent of energy use.⁴ Many systems furniture workspaces come with individually controlled task lighting built in. As companies move to a more open design, they see an opportunity to reduce costs by relying on natural lighting and ambient overhead lighting to meet workers' needs.

When deciding just how much ambient light is needed, designers take technology use into consideration, and rightly so. Computers, electronic tablets, and smart phones have their own light source and people need less ambient light when using these tools. Unfortunately, the reduced levels of luminance recommended for computer use make reading text on paper more difficult. That's particularly true for aging workers, but younger workers struggle with low light, too, when their eyes are tired.

In addition, workers increasingly expect to have control over every aspect of the environment, from bringing their own device to choosing where they'll work to controlling their lighting. Furthermore, when offered control and basic education, people will turn off the lights when they don't need them or when they leave the room. The fact that light emitting diodes (LED) lights are user controlled is one of the reasons that LEED awards points for them.⁵ The other reason is that LEDs use 75 percent less energy and last 25 times longer than incandescent bulbs.⁶

There's an upfront investment in task lighting, but when used in combination with other types of lighting, it pays off over time. According to the Energy Star Building Manual, "With good design [which includes a combination of light sources], lighting energy use in most buildings can be cut at least in half while maintaining or improving lighting quality. Such designs typically pay for themselves in energy savings alone within a few years."⁷

Design Solutions

Well-designed task lights have the on-off controls within easy reach of the individual; the individual can also control the projection of the light (to reduce glare on the monitor screen and the surface); and the heat generated isn't scalding to the touch.

Ideally, the lamp provides "control within control," i.e., not only is the on/off switch under the control of the individual, but also the amount and position of the light. When available, brightness controls should have a generous range, and continuous light level adjustment (i.e., smooth dim-to-bright settings controlled by the person) is preferable.

Herman Miller offers a variety of beautiful and functional task lights. All recently introduced lights are LED, which is rapidly becoming the standard in the United States, the U.K., Germany, and other countries. In addition, commercial interiors, new construction, and school projects that implement LED task lighting are eligible for LEED credits in the areas of Energy and Atmosphere, Material and Resources, Indoor Environmental Quality, and Innovation in Design.⁸

Offices should enable people to do work, whatever that work entails. While energy conservation and cost-savings are strong factors in lighting decisions, the fit between the individual and the work—i.e., ergonomics—remains the ultimate consideration.

© 2013 Herman Miller, Inc. Zeeland, Michigan

© Herman Miller is among the registered trademarks of Herman Miller, Inc.

Notes

- ¹ Transwestern. "Green Building's from the Tenant's Perspective." <http://wwwdev.transwestern.net/EnergyStar/Tenant%20Benefits%20of%20Green%20Bldgs%208-07%20SM.pdf> (accessed December 2012).
- ² Heerwagen, Judith. "Psychosocial Value of Space." *Whole Building Design Guide*, 20 February 2007. <http://www.wbdg.org/resources/psychspace_value.php> (accessed November 2012).
- ³ UCLA Environment, Health, and Safety. "Aging in the Workforce," *News and Notes*, Spring 2012, p. 1.
- ⁴ U.S. Environmental Protection Agency. "ENERGY STAR Building Upgrade Manual." p. 71, 2008.
- ⁵ LEED User. "Controllability of Systems—Lighting." <<http://www.leeduser.com/credit/NC-v2.2/EQc6.1>> (accessed December 2012).
- ⁶ U.S. Department of Energy. "LED Lighting." <<http://energy.gov/energysaver/articles/led-lighting>> (accessed December 2012).
- ⁷ *ENERGY STAR Building Manual 2006*, p. 4.
- ⁸ U.S. Green Building Council. "New Construction & Major Renovations." <<https://new.usgbc.org/leed/rating-systems/new-construction>> (accessed December 11, 2012).