

LIGHT & HEALTH, A.E. Cakir

Berlin Ergonomic Institute for Industrial and Social Research

PURPOSE:

"...to find the most favorable concept for lighting in future office workplaces."

SCOPE:

400 Facilities 3,000 People

"One of the major causes of the problem lies in the concept of general lighting ... that does not take into consideration the individually different needs for light and is thus open to criticism from an ergonomic point of view."

"Lighting concepts which take into account individual requirements and thus combat these fundamental flaws are technically available and economically feasible today."

Lighting Quality Research

Institute for Research in Construction,
National Research Council Canada

"Achieving a consensus on lighting quality requires agreement about what constitutes a "good" or "bad" lighting installation... **There was little agreement among the experts...** for many of the spaces we inhabit the lighting has not been designed; instead, the spaces are lit by systems that happen to be available, are inexpensive, and **chosen by someone who has little knowledge of people's lighting needs.**"

Findings of a joint committee of
the Illuminating Engineering Society of
North America / International Association
of Lighting Designers
Hosted by the NRC. 1996

The primary function of Lighting is ergonomic

The only reason we spend the money on fixtures and energy for lighting is to provide optimum visual comfort for our eyes to perform a task.

The benefit lighting provides to support tasks far outweighs the benefit from reduced energy that energy efficient technologies allow.

Lighting is ERGONOMIC

Most windows in schools & office buildings have the blinds closed to reduce glare



Daylight Harvesting puts the Sun in control without regard to task

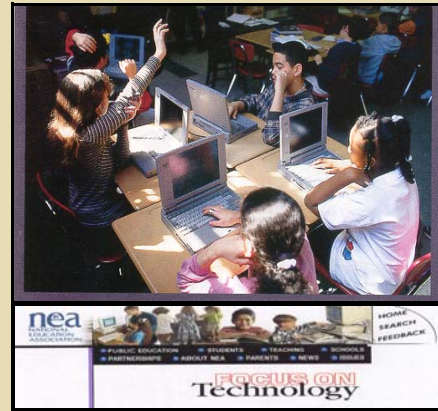
This energy savings approach gives little value to the Task Requirements of Teaching & Learning.

ON or OFF are usually the only Teacher Choices.



K-12 National Investment in Software 1998

\$ 822,000,000 (23% annual growth in spending)
 \$ 288,000,000.00 Spreadsheet, Word Process
 \$ 230,000,000.00 Instructional
 \$ 181,000,000.00 Multi-Media, Publishing
 \$ 123,000,000.00 Reference, Encyclopedia



K-12 Federal Investment in Internet

\$ 23,559,793 (Colorado & Utah alone)
 97% Teachers who use a Computer for Work
 61% Teachers who use the Internet for Instruction

Cherry Creek School District

Low Cost Multi-Zone Task Located Dimming

3 CONTROL LOCATIONS FOR TEACHER PREFERENCE

Original Specification :
 3 Lamp
 Electronic
 82 watts



Upgrade :
 Low Cost
 Task Located
 Dimming
 36 watts
 average

3 DIMMING ZONES FOR TASK PREFERENCE

56% energy savings



Feedback :

“Awesome”

“The Multi-Zone Control is VERY Supportive to Teaching”

“No more too bright or too dark”

Original Specification:

2x4 18 Cell Parabolic
 Instant Start Ballast

T8 3 Lamp
 82 Watts

Upgrade:

2x4 18 Cell Parabolic
 Program Start Dimming Ballast
 Task Located Control

T8 2 Lamp
 5 - 67 Watts



E-Technologies
 Vision Lighting Process **VLP** SM