



Why is the Science of Light important?

Look around your home and community for uses of light. How does the lighting in your home differ from the lighting in a shopping mall, a sports arena, or a roadway? How does the lighting differ from inside to outside, and how does it differ from day to night? How does the light in certain places make you feel? When is light important to you, when is it not?

Light is important because it is crucial to human performance. Light affects the eye and the brain in so many ways. The human eye is enormously sensitive and adjustable. The manipulation of light in our environment can:

- increase productivity – better light (intensity, angle – no glare, etc) equals happier workers equals harder work,
- affect health – some people get SAD (Season Affective Disorder, a type of depression) and are helped by SAD lights,
- be important for safety – bright light is needed for hazardous and detailed work,
- save energy – in one study, office workers were given their own lighting controls at their desk, and they used less light, thus using less energy,
- influence mood and atmosphere – in another study, a large group of people were placed in a bright room. They gathered in large groups and the volume of the conversation increased. When the same large group of people were placed in a room with dimmed lighting, they tended to gather small groups and the conversation level was much quieter.

People who work with light have to understand the science of light. They have to understand:

how it reflects and refracts,
how different wave lengths make different colors of light,
how the eye perceives light and
how people respond to light.

They have to know a bit of:

Physics
Biology
Math
Psychology

There are many occupations where knowledge of the science of light is important, such as:

MEDICINE/BIOTECHNOLOGY (how light affects the body and health),
EDUCATION (how light affects learning),
ART/PHOTOGRAPHY (how light affects form),
ARCHITECTURE/LANDSCAPING (how light affects form and function),
PERFORMING ARTS (how to light the stage),
ENGINEERING (how to light a structure, roadway, etc.),
GEOGRAPHY/METEOROLOGY/ENVIRONMENTAL SCIENCE (how light affects the earth),
ASTRONOMY (how light is used in star analysis),
PHYSICS (how light does what it does and why),
BOTANY/ZOOLOGY/BIOLOGY (how light affects plants, animals and living organisms),
TELEVISION/FILM (how to light for the camera),
URBAN DEVELOPMENT (light placement and avoidance of light pollution),
AEROSPACE/AVIATION (exterior and interior lighting in planes and spacecraft),
HISTORY/SOCIOLOGY/ARCHEOLOGY/ANTHROPOLOGY (how light has affected our daily lives, from fires to fluorescents),
PSYCHOLOGY (the psychology of light and color).