



LIGHTING

for Energy Savings

LIGHTING



- ✿ About 30% of our school's electrical usage comes from lighting
- ✿ Using the the most efficient type of lightbulbs & fixtures can help reduce our energy bills
- ✿ Making sure lights are turned OFF when rooms aren't in use can help greatly reduce our energy usage

LIGHT MEASUREMENTS

Wattage - amount of electricity consumed by bulb

Lumens - amount of light a bulb produces

Efficacy - lumens produced per watt

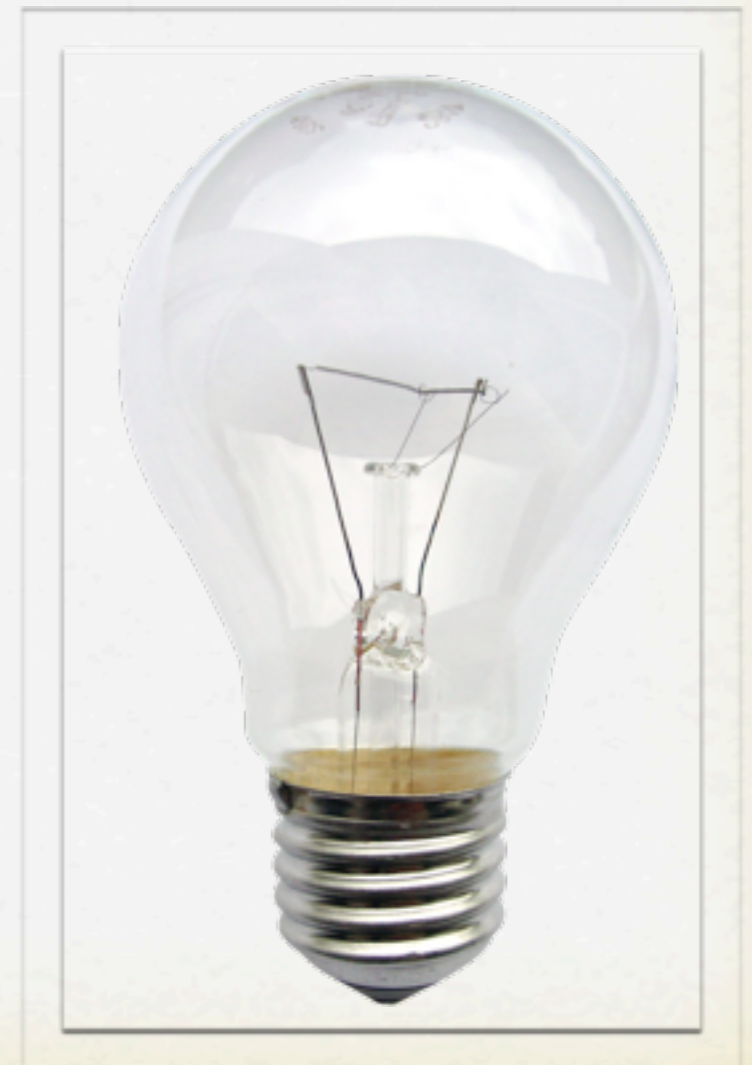
Footcandles - amount of light
reaching the subject



TYPES OF LIGHTBULBS

Incandescent Lightbulb

- traditional bulb for home use
- invented by the scientist Thomas Edison in 1878
- electricity is passed through a wire filament that glows brightly
- not the most efficient



TYPES OF LIGHTBULBS

CFL - Compact Fluorescent

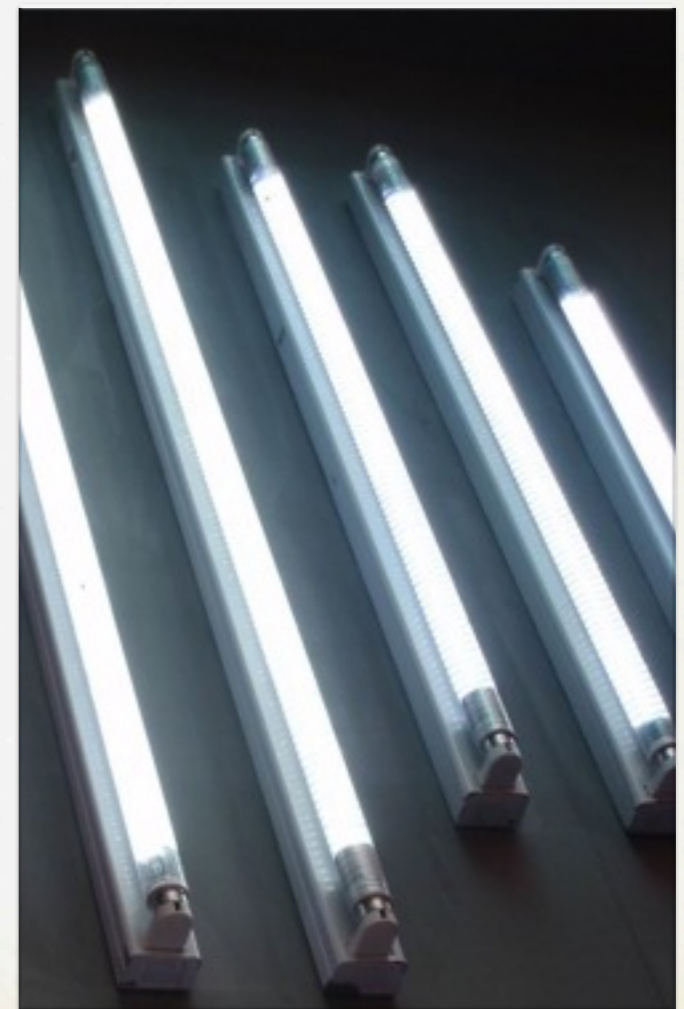
- new bulb for home use
- invented by General Electric in 1976, gained popularity in the 1990s
- electricity passes through a vapor that causes phosphorus to glow
- uses 1/3 of the energy of an incandescent and lasts 20 times longer



TYPES OF LIGHTBULBS

Fluorescent Bulb

- long bulb for large buildings
- invented in 1901, gained popularity in the 1940s
- electricity passes through a vapor that causes phosphorus to glow
- uses 1/3 of the energy of an incandescent and lasts 20 times longer



TYPES OF LIGHTBULBS

LED - Light Emitting Diode

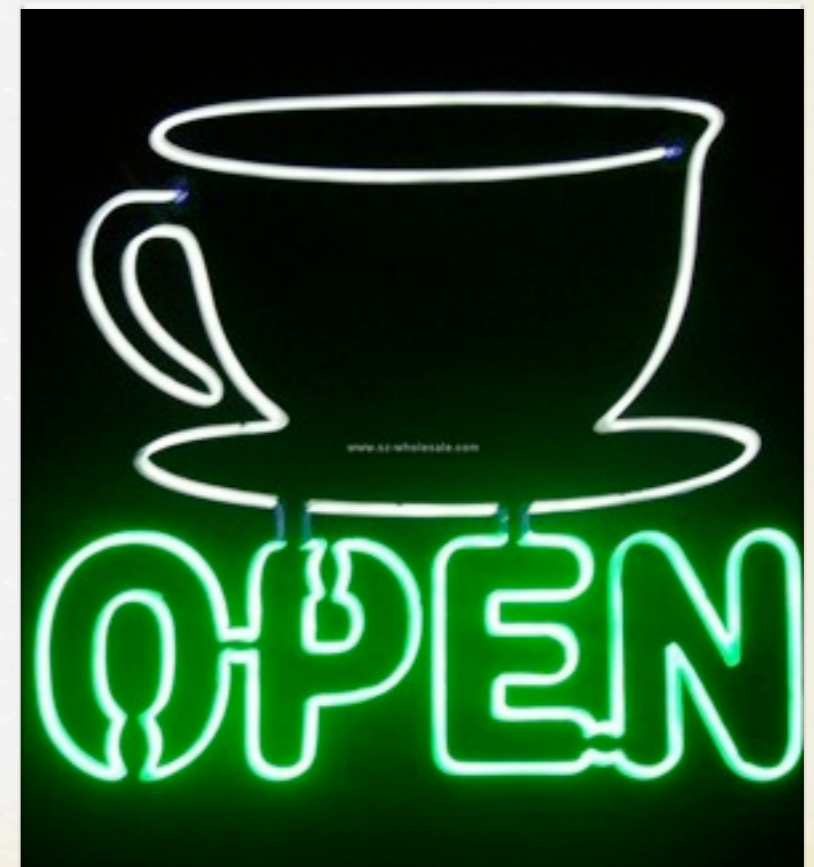
- newest type of small bright bulbs
- invented in 1962, gained popularity in the 2000s
- electricity passes thru negatively charged semiconductors, causing electrons to combine and create a unit of light (photon). (In simpler terms, a chemical chip embedded in a plastic capsule)
- most energy efficient but expensive



TYPES OF LIGHTBULBS

Specialty Bulbs

- there are many more types of lightbulbs but they are less commonly used
- yellow sodium lights are often used for streetlights
- neon lights are often used for outdoor signs
- metal halide lights or high intensity discharge (HID) are often used for stadiums



COMPARING CONSUMPTION

Lumens	Watts (electricity used)		
(light output)	Incandescent	CFL	LED
450	40	13	9
800	60	15	15
1100	75	25	n/a
1600	100	30	n/a
2600	150	52	n/a

WAYS TO SAVE

How You Can Help



- turn OFF lights when you leave a room
- remind teachers to turn off lights as well
- replace lamp lights with CFL bulbs
- do light audits to see who forgets to turn off lights
- make switch plate covers or posters reminding people to switch off lights

ACTIVITY

Make a Switch Plate Cover



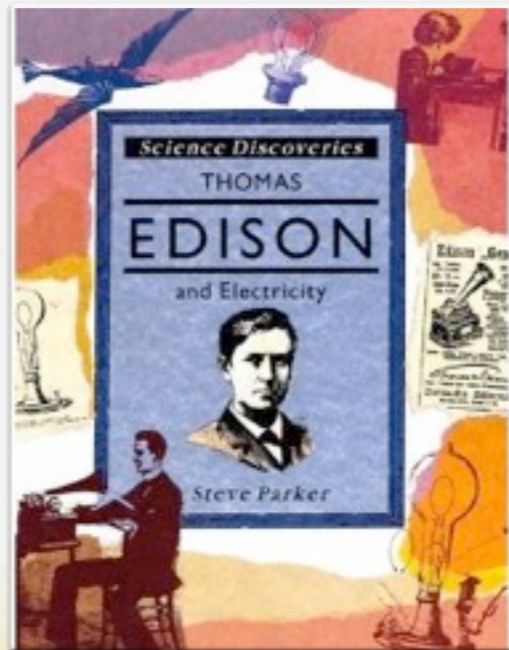
- measure the size of your switch plate
- cut a piece of cardstock or paper
- design and color to encourage lights OFF
- use tape to stick over switch in classrooms, offices and cafeterias
- take a photo and email to erichardson@eanesisd.net and we'll put it on the website

RECOMMENDED READING

Elementary School

Thomas Edison and Electricity by Steve Parker

The Magic Wand & Other Bright Experiments on Light & Color by Paul Doherty, Don Rathjen, and the Exploratorium Teacher Institute

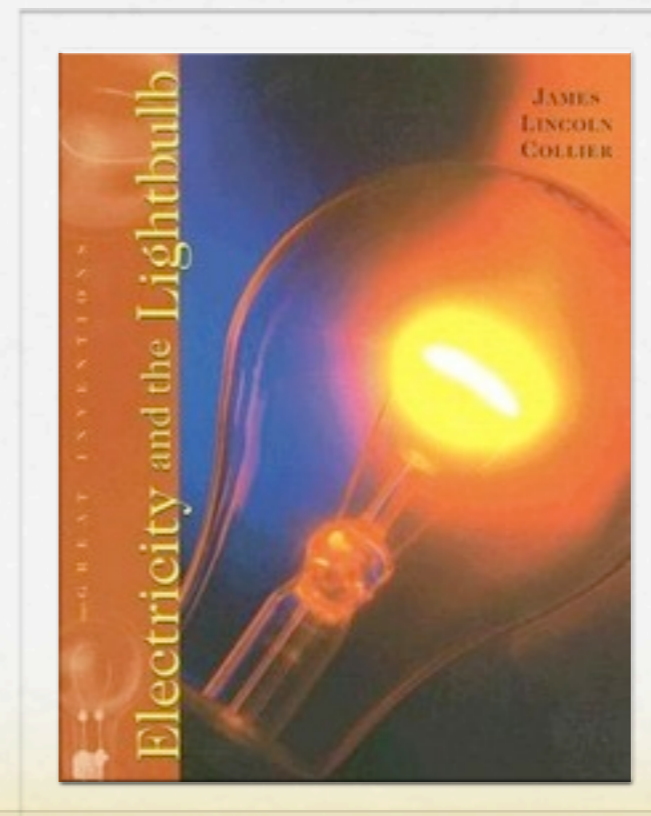
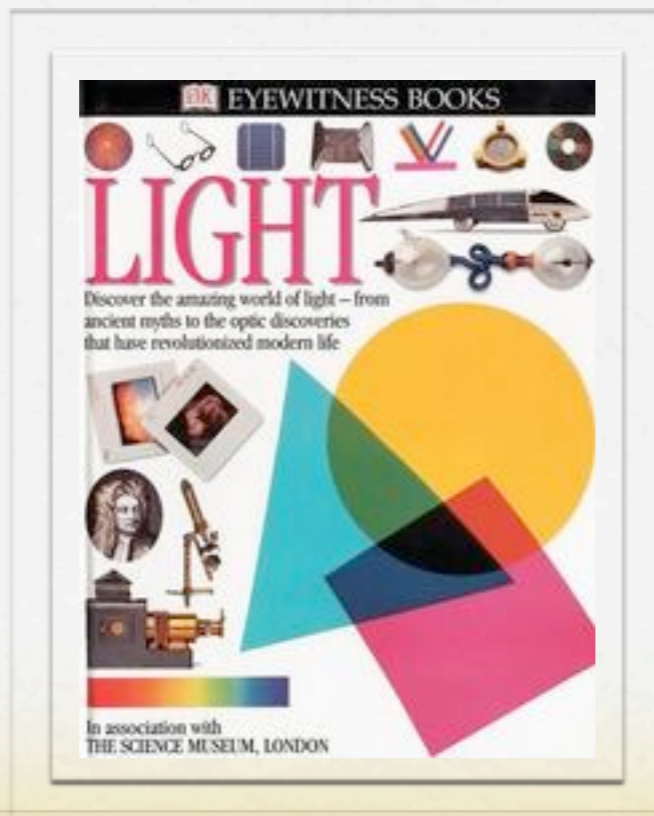


RECOMMENDED READING

Middle School

Light (Eyewitness Science) by David Burnie

Electricity & the Lightbulb by James Lincoln Collier



RECOMMENDED READING

High School

Thomas Alva Edison: Inventing the Electric Age by Gene Adair

Inventors & Discoverers: Changing Our World by National Geographic

