

Artificial Light Options

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CONCEPT

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Artificial Light Options



FIGURE 1.1

Sometimes sunlight is not enough...

While natural light is a wonderful form of light, it will not work in every circumstance. High schools often start classes before the sun has risen. Evening events continue after sundown. In this section, we will look at common types of electric lights.

Types of Electric Light Bulbs:

Incandescent Bulbs

Benefits

Drawbacks

TABLE 1.1:

Cheaper to buy	Costs more over a lifetime since it uses more electricity
Best approximation of the color of natural light	Hard to get specific light colors
Available worldwide	Highest carbon emission of all light choices



FIGURE 1.2

Incandescent light bulb

TABLE 1.2: Benefits

Drawbacks

Very small and can fit in tiny spaces	Requires more lights to cover an area
Very energy efficient	Very few color options available
Longest working life-span	Most expensive option



FIGURE 1.3

Light Emitting Diode

TABLE 1.3: Benefits

Drawbacks

Uses 50-80% less energy than an incandescent light	Contains a small amount of mercury which is toxic
Each bulb produces 1/2 a ton less carbon dioxide over a life-time compared to an incandescent bulb.	Wears out much more quickly when turned on and off frequently
Some can be attached to a dimmer switch for additional lighting control.	Performs poorly in outdoor settings.



FIGURE 1.4

 Compact fluorescent light bulb

Halogen

TABLE 1.4: Benefits
Drawbacks

Small and lightweight	Bulb is extremely hot and can cause severe burns.
Contains no mercury	Touching the bulb can lead to an explosion.
Turns on instantly	Light is generally too bright for classroom use, but great in large spaces like gyms.

**FIGURE 1.5**

Halogen Light Bulb

Review Questions:

1. Create three situations where incandescent bulbs are the best option for lighting.
2. Create three situations where LED lights are the best option for lighting.
3. Create three situations where CFC bulbs are the best option for lighting.
4. Create three situations where halogen bulbs are the best option for lighting.
5. In a classroom in the school you are designing, which bulb(s) will you include in your design? Why?
6. In a large space like a gym, which bulb(s) will you use? Why?