



Bits4Bots™

Lesson 1: Creating a Night Light

Objective: Introduce students to the concept of a night light and the use of an on/off switch.

Project:

1. **Introduction (15 mins):**

- Discuss the purpose of a night light and why it's important.
- Introduce the components: LEDs, resistor, switch, and battery.

2. **Assembly (30 mins):**

- Guide students to build a night light circuit using BitStix and wood craft sticks.
- Incorporate the on/off switch to control the light.

3. **Discussion (15 mins):**

- Explore the importance of conserving energy by turning off lights when not needed.
- Reflect on how the switch controls the circuit activity.

Lesson 2: Designing a Truck with Working Lights

Objective: Encourage creative thinking while learning about circuitry in a practical context.

Project:

1. **Introduction (15 mins):**

- Discuss the role of lights in vehicles for visibility and communication.
- Explain how parallel circuits work with multiple LEDs.

2. **Design & Assembly (45 mins):**

- Guide students to design a wooden truck model with spaces for BitStix.
- Assemble the circuit, connecting headlights and taillights to demonstrate parallel circuits.

3. **Presentation & Discussion (20 mins):**

- Have students present their trucks and explain the circuitry.
- Discuss the importance of signaling lights in real vehicles.

Lesson 3: Crafting an LED Firefly Insect

Objective: Merge biology and electronics by creating an LED firefly insect model.



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Project:

1. Introduction (15 mins):

- Discuss bioluminescence in fireflies and their significance in nature.
- Introduce the concept of simulating firefly lights using LEDs.

2. Crafting & Circuit Assembly (45 mins):

- Guide students to create a wood craft stick insect model.
- Incorporate BitStix to simulate firefly lights.

3. Explanation & Connection (20 mins):

- Have students explain how the circuit imitates firefly bioluminescence.
- Discuss the role of light in nature and its applications.

Lesson 4: Designing a House with Illumination

Objective: Explore architectural creativity and learn about electronic circuits.

Project:

1. Introduction (15 mins):

- Discuss the purpose of windows in a house for light and ventilation.
- Introduce the concepts of natural light and power generated light.

2. Design & Circuit Planning (30 mins):

- Guide students to design a wooden house model with lighting.
- Plan a design to illuminate using BitStix.

3. Building & Circuit Implementation (45 mins):

- Have students construct their house models and integrate the circuits.
- Explain the difference between natural light and power generated light.
- Explain the importance of energy conservation.

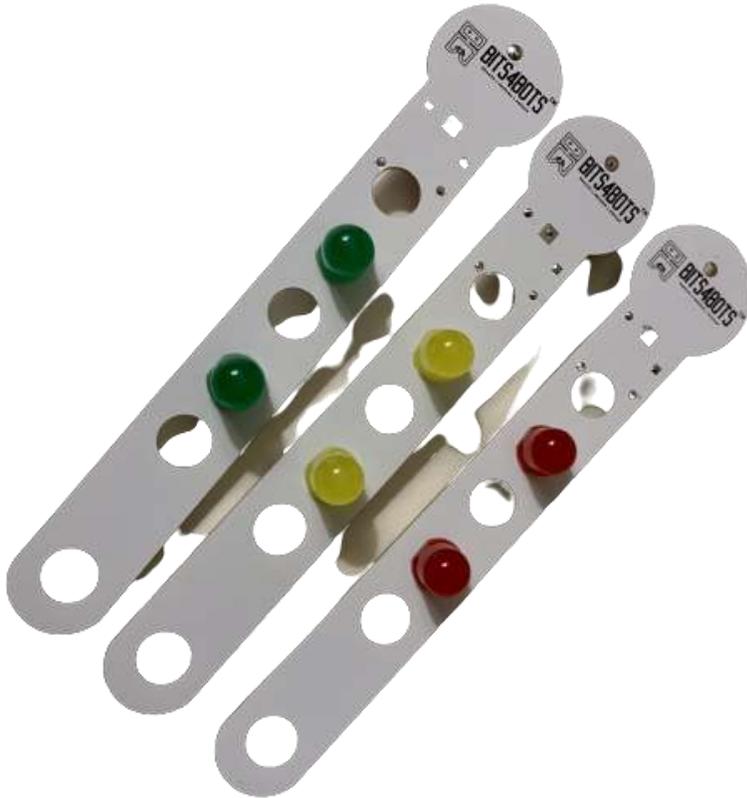
4. Presentation & Discussion (20 mins):

- Students present their illuminated house models and explain the lighting position choices.
- Discuss real-world applications of electronics in homes using circuits.



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These structured lessons and project ideas using BitStix and wood craft sticks aim to make learning electronics enjoyable, creative, and relatable to young students. They encourage hands-on exploration while integrating STEM concepts into artistic and practical projects.



BitStix styles may vary.