Pulse Width Modulation (PWM) Speed-Session in Five Minutes

Objective: Students will quickly learn what PWM is and observe how changing the duty cycle can affect an electronic signal.Introduction (30 seconds):

* Introduce PWM as a method that electronic devices use to simulate variable power levels by switching on and off rapidly.

Lesson Development (3 minutes):

1. Have students access the PWM animation on their devices.
2. Explain 'duty cycle' as the percentage of time the signal is on during one cycle.
3. Instruct students to first turn the duty cycle down to the minimum and observe the waveform on the animation. Discuss the implication of almost no signal being active (e.g., light off or motor stopped).
4. Next, ask students to turn the duty cycle up to the maximum and observe the changes. Discuss the implication of the signal being active almost all the time (e.g., light at full brightness or motor at full speed).

Activity (1 minute):

* Challenge students to quickly experiment by setting the duty cycle to a very low value and then to a very high value, noting the differences in the waveform and relating it to how it would affect an LED's brightness or a motor's speed.

Conclusion (30 seconds):

* Summarize that by adjusting the duty cycle, we control how much power is delivered to a device, which in turn affects its operation.

This condensed lesson plan is designed to fit a strict five-minute window, providing students with a hands-on, immediate understanding of PWM basics.