MODULE 10: INTELLIGENT TRANSPORTATION SYSTEMS: SMART WORK ZONES

LESSON 2: INTRODUCTION TO LILYPAD

Connected vehicle (CV) safety applications are designed to increase awareness of what is happening in the environment as people drive, walk, or bike within our transportation system. In this lesson, students will be introduced to the LilyPad ProtoSnap Development Board and its components. Students will examine and understand Arduino coding language and use the Arduino language to experiment with controlling the various components of the LilyPad ProtoSnap board.

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Lesson 2: Introduction to LilyPad

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Grade Level: Adaptable to Grades 6-12	**Lesson in this Module: 2 of 4**
Time Required: 90 - 180 minutes	**Lesson Dependency:** This builds on lesson 1 and the materials listed in that lesson
Keywords: transportation engineering, intelligent transportation systems, LilyPad Arduino, LilyPad ProtoSnap Board, LED lights, light sensor, vibe motor	

Materials List (From Lesson 1 of this Module)

LilyPad Arduino ProtoSnap Development Board, Highway Safety Attire (helmet, vest, pants, gloves), Mini USB cable, Felt, Fabric Marker, Needle Threader, Seam Ripper, Velcro

Pre-Requisite Knowledge

Must Complete Lesson 1

Lesson 2 Activities

In this lesson, students will be introduced to the LilyPad ProtoSnap Development Board and its components. Students will examine and understand Arduino coding language and use the Arduino language to experiment with controlling the various components of the LilyPad ProtoSnap board.

- **Activity 1: Understanding LilyPad Arduino**

****Please see the student LilyPad Arduino Handout.**

Teacher Directions: *The student handout walks students through the process of using LilyPad ProtoSnap Development boards. Students will open coding sketches and use these sketches to identify basic codes and their uses in programing the light sensor, LED*

lights, vibe motor, button, and buzzer. In order for students to code their "Smart Suit," they will need to identify the basic codes needed for the individual LilyPad Arduino components. The student handout has three separate tasks. Depending on the coding level of the students, teachers can choose to lead these activities or have the activities be self-paced.

- **Activity 2: Wrap-Up**

Teacher Directions: ***After students have completed the LilyPad Arduino Handout, students should have at least one program sketch that they have written****. Allow students time to show what their program can do and give them time to explain how the code was written. This will encourage understanding of the Arduino language.*