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| **Lesson 2: Make a Switch Goal:** Students will understand the need for a switch, design and construct a switch, and add it to a circuit | | | | |
| **Objective:** | **Below (1)** | **Approaching (2)** | **Proficient (3)** | **Advanced (4)** |
| A. Identify and record examples of switches in the everyday environment | No examples found | One or two examples found, but no explanation of how it operates and/or what it controls | Multiple examples, with explanations of how each one operates and what it controls | (3) + recognition that there are also switches that are hidden |
| B. Describe the need for a switch in a circuit | No description | Description is not clear | Student explains that a switch provides a reliable way to turn a circuit on or off, and thereby prevents the battery from going dead | (3) + recognition that switches are part of a larger category of control devices, which includes valves, faucets, etc. |
| C. Make a switch | Cannot make a switch | Makes a simple pushbutton, using existing materials, such as LED wire and coin battery | Uses additional materials, such as paper fasteners, to construct one type of switch | Designs and makes more than one type of switch |
| D. Design, test and troubleshoot a circuit that incorporates a switch | Switch is not part of a circuit | Switch sometimes controls the circuit, but not reliably, or discharges battery when closed | Able to troubleshoot, in order to make switch control circuit | Helps other students troubleshoot their circuits and/or adds more than one switch to circuit |
| E. Writing and drawing for communication and reflection | No writing or drawing | Some writing or drawing, but not both, showing minimal understanding | Both writing and drawing show how a switch can control a circuit | (3) + accurate description in terms of open & closed circuits, conductors & insulators and/or different types of switches; and/or drawings showing switch in both positions |