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**CODE/MOE/UOIT Makerspaces Project**

**Lesson Plan: Grade 6 Science:**

**Electricity: Sculpting Project**

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| **BIG IDEAS:**  **- Electrical energy can be transformed into and from other forms of energy.**  **Lesson Objectives:**   * **To allow students to build open important life skills through collaboration, creativity and innovation.** * **To allow students to be involved within inquiry and problem based learning** * **To allow students to encourage application of new and prior knowledge and skills to further develop their interests and engagement through learning**   **Overall Science and Technology Curriculum Expectations:**   * **Demonstrates an understanding of the principles of electrical energy and its transformation into and from other forms of energy.**   **Specific Science and Technology Curriculum Expectations:**   * 1. **- Design and build series and parallel circuits, draw labelled diagrams identifying the components used in each, and describe the role of each component in the circuit**   2. **- Use scientific inquiry/experimentation skills to investigate the characteristics of static electricity** | |
| **Learning Goals:**  We are learning to use technological problem – solving skills to construct and understand circuits using different applications of insulating and conductive dough. | **Success Criteria:**   1. **I can identify and describe parallel and series circuits** 2. **I can describe ways in which the circuit can be assembled** |
| **Lesson Overview:**  **As you construct your circuit, you must continually investigate the electrical flow coinciding with the materials to ensure that the LED turns on.** | |
| **Materials and Technology:**   * Battery * LED * Conducted dough * Insulated Dough * Conducting Wires | |
| **Student Accommodations/Modifications:**   * **Supplied Materials** * **Assistance when necessary** * **Can challenge students to try to make the LED turn on through both parallel and series circuit** | **Lesson will be differentiated by:**   * **Content, specifically:** * **Process, specifically:** * **Product, specifically: Conducting and Insulating Dough** * **Environment, specifically:** |
| **MINDS ON: Getting Started** | |
| Design and Planning:   * Does the light turn on? * Can the student identify each circuit? | During this phase, students may:  • participate in discussions;  • question the teacher and their classmates; |
| Describe how you will introduce the learning activity to your students. What key questions will you ask? How will you gather diagnostic or formative data about the students’ current levels of understanding? How will students be grouped? How will materials be distributed?   * Show videos demonstrating on how to build a circuit * **Then demonstrate how to build a parallel and series circuit** * Equal distribution of aforementioned materials such as dough, conducting wires, etc… * Assigned into groups * **Allotted time to finish the task**   **Assessment may be done through observation, conversations and/or rubric/checklist for the final product.** | |
| **ACTION: Working on it** | |
| During this phase, the teacher may:  • ask probing questions;  • answer students’ questions (but avoid providing a solution to the problem); | During this phase, students may:  • represent their thinking (using numbers, pictures, words, manipulatives, actions, etc.); |
| Describe the task(s) in which your students will be engaged. What misconceptions or difficulties do you think they might experience? How will they demonstrate their understanding of the concept? How will you gather your assessment data (e.g., checklist, anecdotal records)? What extension activities will you provide?   * Challenge students to build both a series and parallel circuit * Question why it works, and if you change something, why it will or will not continue to work | |
| **CONSOLIDATION: Reflecting and Connecting** | |
| During this phase, the teacher may:  • encourage students to explain a variety of learning strategies;  • ask students to defend their procedures and justify their answers; | During this phase, students may:  • share their findings;  • justify and explain their thinking; |
| How will you select the individual students or groups of students who are to share their work with the class (i.e., to demonstrate a variety of strategies, to show different types of representations, to illustrate a key concept)? What key questions will you ask during the debriefing?   * Questioning the practicality of their circuit involving its success or failure * What they should have changed to make the circuit better, or make it work? * What were other factors that the students did not think of (amount of dough needed, etc…) | |