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**CODE/MOE/UOIT Makerspaces Project--Lesson Planning Template**

**School Board: Wellington Catholic District School Board**

**Grade(s): 6**

**Subject(s): Science**

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| **BIG IDEAS:** Electrical energy can be transformed into other forms of energy. Other forms of energy can be transformed into electrical energy. Students will use their knowledge of electrical circuit to build a series circuit.  **Curriculum Expectations:**  **OVERALL:**  2. investigate the characteristics of static and current electricity, and construct simple circuits;  3. demonstrate an understanding of the principles of electrical energy and its transformation into and from other forms of energy.  **SPECIFIC:**  Electricity and electrical devices  2.2 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;  2.4 design, build, and test a device that produces electricity (e.g., a battery built from a lemon or potato; a wind turbine);  3.6 explain the functions of the components of a simple electrical circuit (e.g., a battery is the power source; a length of wire is the conductor that carries the electrical current to the load; a light bulb or motor is the load). | |
| **Learning Goals:**  “We are learning to…”  …build a simple series circuit. | **Success Criteria:**  “We will be successful when…”  …the lightbulb lights in the window of the house after building the series circuit. |
| **Lesson Overview:**  **Build a series circuit using the materials provided to light up the window in a house.** | |
| **Materials and Technology:** Handout outlining circuit, electrical tape (gold), lightbulbs, lithium coin batteries, scissors, scotch tape | |
| **Student Accommodations/Modifications:**  Depends on the needs of the class | **Lesson will be differentiated by:**   * **Content, specifically:** * **Process, specifically:** * **Product, specifically:** * **Environment, specifically:** |
| **MINDS ON: Getting Started** | |
| During this phase, the teacher may:  • activate students’ prior knowledge;  • engage students by posing thought-provoking questions;  • gather diagnostic and/or formative assessment data through observation and questioning;  • discuss and clarify the task(s). | During this phase, students may:  • participate in discussions;  • propose strategies;  • question the teacher and their classmates;  • make connections to and reflect on prior learning. |
| **Describe how you will introduce the learning activity to your students.**  Students will be taught the different parts of a series circuit by following the textbook section as a class, and then recording definitions and questions in that section.  Students will be shown what they are building by showing them an example.  **What key questions will you ask?**  What are the different parts of a circuit?  **How will you gather diagnostic or formative data about the students’ current levels of understanding?**  Diagnostic: Completing the work in the textbook.  Formative: Feedback during the building of the series circuit.  **How will students be grouped? How will materials be distributed?**  Students will work alone on this task.  Materials will be laid out so that each student gets what he or she needs. (Handout with circuit draw out, tape, lightbulb, battery. They will use their own scissors and share tape with the others. | |
| **ACTION: Working on it** | |
| During this phase, the teacher may:  • ask probing questions;  • clarify misconceptions, as needed, by redirecting students through questioning;  • answer students’ questions (but avoid providing a solution to the problem);  • observe and assess;  • encourage students to represent their thinking concretely and/or pictorially;  • encourage students to clarify ideas and to pose questions to other students. | During this phase, students may:  • represent their thinking (using numbers, pictures, words, manipulatives, actions, etc.);  • participate actively in whole group, small group, or independent settings;  • explain their thinking to the teacher and their classmates;  • explore and develop strategies and concepts. |
| **Describe the task(s) in which your students will be engaged.**  With the necessary materials, students will build a series circuit, where a lightbulb lights up.  **What misconceptions or difficulties do you think they might experience?**  Students will have to be very exact with the electrical tape or the circuit might not work. The tape must be flat and connected at every corner.  **How will they demonstrate their understanding of the concept?**  By explaining the different parts of a circuit.  **How will you gather your assessment data (e.g., checklist, anecdotal records)?**  Checklist, Rubric  **What extension activities will you provide?**  Students can come up with their own ideas about how to use a series circuit. (e.g. to light up the top of a Christmas tree)  You can start to discuss building a parallel circuit. | |
| **CONSOLIDATION: Reflecting and Connecting** | |
| During this phase, the teacher may:  • bring students back together to share and analyse strategies;  • encourage students to explain a variety of learning strategies;  • ask students to defend their procedures and justify their answers;  • clarify misunderstandings;  • relate strategies and solutions to similar types of problems in order to help students generalize concepts;  • summarize the discussion and emphasize key points or concepts. | During this phase, students may:  • share their findings;  • use a variety of concrete, pictorial, and numerical representations to demonstrate their understandings;  • justify and explain their thinking;  • reflect on their learning. |
| **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)?**  Through teacher observations and conversations.  **What key questions will you ask during the debriefing?**  What are the different parts of a series circuit?  Was it difficult to build your circuit? Why?  What strategies would you recommend to someone who was building a series circuit for the first time? | |