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

**School Board: Rainy River District School Board**

**Grade(s): 4**

**Subject(s): Science/Art**

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| **BIG IDEAS:** Other forms of energy can be transformed into electrical energy  **Lesson Objective: To create holiday cards that light up using paper circuits.**  **Curriculum Expectations:**  **OVERALL:**  investigate the characteristics of static and current electricity, and construct simple circuits.  **SPECIFIC:**  **2.1** follow established safety procedures for working with electricity  **2.4** design, build, and test a device that produces electricity  **3.5** identify ways in which electrical energy is transformed into other forms of energy  **3.6** explain the functions of the components of a simple electrical circuit | |
| **Learning Goals:**  “We are learning to…”  -Create simple circuits. | **Success Criteria:**  “We will be successful when…”  -Our circuits are complete and light up. |
| **Lesson Overview:**  **Students will design a holiday card that uses copper tape, a battery, and LED lights.** | |
| **Materials and Technology:**  -Paper  -Markers  -Pencil Crayons  -Copper tape  -Scissors  -Batteries  -Lights | |
| **Student Accommodations/Modifications:**  **Some students may require extra support.** | **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.**  -Prior to this culminating task, students will have learned about simple circuits and will have used the Makey Makey.  **What key questions will you ask?**  -What needs to happen in order to get your lights to illuminate?  -How can this knowledge be used to describe the function of electricity in everyday life?  **How will you gather diagnostic or formative data about the students’ current levels of understanding?**  Observation, conferencing, and rubric.  **How will students be grouped? How will materials be distributed?**  This task will be done independently. | |
| **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.**  -Building circuits  -Designing their personal cards  **What misconceptions or difficulties do you think they might experience?**  -Students need to be precise in the creation of their circuits.  -Tape must be continuous and needs to be folded for corners.  **How will they demonstrate their understanding of the concept?**  -Describing how their cards works.  **How will you gather your assessment data (e.g., checklist, anecdotal records)?**  -Checklist, rubrics, and successful circuits.  **What extension activities will you provide?**  Students can create cards for any occasion. Students could build games or dioramas to practise building circuits. | |
| **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)?**  Students can take pictures and videos of their cards and post onto Seesaw, can also bring their cards home for family.  **What key questions will you ask during the debriefing?**  -What makes a circuit work?  -What changes can you make if your circuit is not working? | |