**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:**
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| **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? |