

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

**School Board: GECDSB**

**Grade(s): 6**

**Subject(s): Science and Technology**

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| **BIG IDEAS:**  Earth is a part of a large interrelated system.  **Curriculum Expectations:**  Demonstrate an understanding of components of the systems of which the earth is a part, and explain the phenomena that result from the movement of different bodies in space.  **SPECIFIC:**   1. Use appropriate science and technology vocabulary, including *axis*, *tilt*, *rotation*, *revolution*, *planets*, *moons*, *comets*, and *asteroids*, in oral and written communication. 2. Identify the bodies in space that emit light *(e.g., stars)* and those that reflect light *(e.g., moons and planets)* | |
| **Learning Goals:**  “We are learning to…”  Identify and build models of constellations visible in our night sky. | **Success Criteria:**  “We will be successful when…”   1. We know the definition of a constellation. 2. We use our research skills to find the constellations that are visible in our night sky during this time of the year. 3. We can explain why the visible constellations change depending on time of year. 4. We can use the materials and tools available in the Maker Space to build a model of a constellation we researched and share our learning with our classmates. |
| **Lesson Overview:**  **After reading the story, “The Darkest Dark” by Chris Hadfield, students will use the internet and print sources available in the library to research constellations visible in our night sky during this time of the year. Students will then build one of the constellations they found in their research and share their understanding about this constellation with the class.** | |
| **Materials and Technology:**  **“The Darkest Dark” by Chris Hadfield**  **“Constellations: Connect the Dots in the Sky” You Tube Video**  **“Stars” Dual-Language Arabic text by Aspen-Baxter, Linda.**  [**https://www.youtube.com/watch?v=1sZ15SUeS9w**](https://www.youtube.com/watch?v=1sZ15SUeS9w)  **iPads or laptops**  **Resource books about stars and constellations**  **Maker Space tools (e.g., scissors, rulers, pencils, glue, glue guns, wood cutters etc.)**  **Maker Space Materials (e.g., popsicle sticks, straws, beads, bottle caps, Q-Tips, string, aluminum foil)** | |
| **Student Accommodations/Modifications:**  **-Visual representation of ideas in YouTube video.**  **-“Stars” dual-language Arabic text**  **- Small-group instruction to help students navigate the research online and in books.** | **Lesson will be differentiated by:**   * **Content, specifically: NA** * **Process, specifically: Use of dual-language text, teacher assistance with research** * **Product, specifically: Choice in tools, materials and constellation** * **Environment, specifically: Different work areas available. Students can choose to work together or in pairs.** |
| **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.**  The students will be introduced to the learning through the read aloud of the text, “The Darkest Dark” by Chris Hadfield. Students will be encouraged to brainstorm questions they have about space and space exploration.  **What key questions will you ask?**   * **What do you know about space?** * **How do you know this information?** * **How did humans learn this information about space?** * **What bodies emit light from space?** * **Do you know what bodies reflect light in space?** * **What do you know about the stars?** * **What do you think humans thought about the stars before we had the technology to find out the information we know now?**   **How will you gather diagnostic or formative data about the students’ current levels of understanding?**   * **Anecdotal observations of conversations and student responses.**   **How will students be grouped? How will materials be distributed?**   * **Students can choose to work with a partner or independently. Partners will be selected by the students.** | |
| **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.**  **Students will first watch the YouTube video, “Constellations: Connect the Dots in the Sky” as a whole class. After watching the video, students will be asked to research the constellations that are visible in our night sky during this time of the year. After they have researched, they will be asked to choose one constellation and build a model to represent it. They must be able to share their research about the constellation with their classmates.**  **What misconceptions or difficulties do you think they might experience?**   * **Finding accurate and valid internet sources that provide information about the night sky in Southern Ontario.** * **Deciding upon the materials and fasteners that will best represent the constellation.**   **How will they demonstrate their understanding of the concept?**   * **Students will demonstrate their learning by building a model of their constellation and sharing their learning orally during consolidation.**   **How will you gather your assessment data (e.g., checklist, anecdotal records)?**   * **Anecdotal records of students engaging in the process of making** * **Observations of students sharing their learning during the consolidation.** * **Rubric or checklist for final product**   **What extension activities will you provide?**   * **Language Arts: Write a folk tale to share your constellation’s creation story.** * **Math: Determine the distance between the stars in your constellation. How long would it take you to travel from star to star if you drove a car, flew a space shuttle or walked?** | |
| **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)?**  **All students will have an opportunity to share their learning. Students could share in a gallery walk, independent presentations, or in a video or written text.**  **What key questions will you ask during the debriefing?**   * **Did building the constellation help strengthen your understanding of space? Why or why not?** * **What did you learn about stars that you didn’t know before today’s lesson?** * **Did this lesson make you want to learn more about space? Why or why not?** | |