**Lesson Plan Sample Template – Vancouver Island University**

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| Grade | 6 | Topic  | Extreme Environments |
| Date | TBA | Allotted Time | Spread out over 4-6 Science classes. |
| Cite sources used to develop this plan:Cindy ArnetBC IRP |

1. **Rationale**: *Why is this lesson relevant at this time with these students?*

Through this activity, students will learn to investigate and research scientific topics. This will help them to develop as critical thinkers and appreciate the scientific process. They will learn to manipulate and control variables in experiments, as well as learn to deal with substances and other materials. This activity will also help students to think deeply about sustainability.

1. **Provincial Learning Outcome(s)**: *What IRP outcome(s) does this lesson develop?*

Explain obstacles unique to exploration of a specific extreme environment. (Earth and Space Science)

Assess technologies used for extreme environment exploration. (Earth and Space Science)

Describe contributions of Canadians to exploration technologies. (Earth and Space Science)

1. **Assessment**

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| Lesson OutcomeWhat will students learn? | Sources of EvidenceWhat product or action will show what students have learned? | CriteriaWhat will you look for in this evidence? |
| 1. Students will learn about different practices in sustainable survival in extreme environments. They will also learn about the chemistry and conditions of the environments.
2. Students will learn what measures must be taken in order to build

an appropriate colony.3. Students will identify uses for “space matter.”4. Students will be able to relate the activities to one another. | 1. Students will be able to identify where their colonies will be built and will be able to use scientific reasoning to back up their answers.2. Students will build models of their colonies.3. Students will follow instructions and use the “space matter’s” characteristics and experimental data to classify the matter and decide upon uses for it.4. Students will use a science journal to record their findings.  | 1. Students will choose an appropriate location for their colonies, use sound rationale for their decisions and present their findings in a prepared and organized fashion.2. Students’ models will properly represent their proposed colonies and show a reasonable amount of understanding and effort.3. Students will be able to back up their reasoning for their classification of the “space matter.” They will also provide good ideas for the use of the “space matter.”4. The science journals will be detailed, accurate and organized.  |

1. **Resources, Material and Preparation:** *What resources, materials and preparation are required?*
* Computers for research, poster paper for presentations
* Model building supplies such as Lego, Popsicle sticks, cardboard, pasta, glue, paint, etc.
* Different safe minerals or solutions for the “space matter.”

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| 1. **Lesson Development**
 | Pacing |
| * **Introduction:** *How will you introduce this lesson in a manner that engages students and activates their thinking?*

The setting for the project will be established. The teacher will read/describe the goal of the Goldilocks Exploration Corporation, and visual aids can be utilized. Past projects can be used as examples if applicable.Students will be divided into 5 teams* **Teaching/Learning Sequence:** *What steps and activities are you going to use to help students acquire and practice the knowledge, skills* *and/or attitudes needed to m*eet *the outcome?*

**Part one:** The teams will need to decide where to put a colony on Planet X.  They must research all options and decide which area would be the best choice. Groups will need to1. Explain how they will overcome obstacles distinct to the extreme environment
2. Provide examples of technology that would assist them
3. Explain how they will overcome obstacles to space exploration. The colonists will need a way to get to Planet X.
4. Defend why their choice is better than anyone else’s.

Groups will be expected to present argument in front of the class. Students will have the opportunity to win a prize for the best presentation. This can be achieved by class votes (groups will be unable to vote for themselves).**Part Two**: Once an area is chosen, teams will be challenged to build a model of the colony.  The colonies must depict living quarters, a power station, a spaceport, food and water resources and leisure areas. **Part Three**Teams will have to analyze and classify ‘space matter’ from Planet X. Teams will need to research and understand ways to classify and understand this ‘space matter’ and will be expected to conduct experiments on it. This matter will need to be classified and organized based on its characteristics and uses. Teams will decide how they would use some of this matter in colonies based on its ability to be a useful resource. Safe substances such as water, plant life, coal and other substances will be circulated. They will be unlabeled but will come with lists of characteristics.* **Closure:** *How will you solidify the learning that has taken place and deepen the learning process?*

Each team will be given the opportunity to present their colonies, their models and their “space substances” or resources. They will do peer evaluations of their group members and the other groups’ performances. | 10 min3 min1-2 classes1-2 classes 1 class50 minutes (1 class) |

1. **Accommodations** (adaptations, extensions, other)**:** *How will you plan for students who have learning/behaviour difficulties or require enrichment?*

Groups will be scaffolded accordingly, and students with learning and behaviour difficulties will be given special tasks. They will also be put in groups that have extra members if the total number of students exceeds 25. The teacher will also be circulating and assisting the students with tasks and questions.