

**CODE/MOE/UOIT Makerspaces Project**

**Lesson Plan: Grade 6 Science: Flight**

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| **Lesson Objectives:**  To explore the big ideas in flight and use this understanding to design and build flying devices with a focus on research, experimentation, designing and construction. |
| **Science and Technology Overall Curriculum Expectations:**  2. investigate ways in which flying devices make use of properties of air;  **3.** explain ways in which properties of air can be applied to the principles of flight and flying devices.  **Science and Technology Specific Curriculum Expectations:**  **Understanding Structures and Mechanisms-Flight-Grade 6**  2.1: follow established safety procedures for using tools and materials and operating flying devices  2.2: use scientific inquiry/ experimentation skills to investigate the properties of air  2.4: Use technological problem-solving skills to design, build, and test a flying device  3.1: identify the properties of air that make flight possible  3.3: identify and describe the four forces of flight-lift, weight, drag and thrust. |
| **Learning Goal:** We are learning how the four forces of flight (lift, weight, drag and thrust) affect the movement of flying objects, and how to use them while creating a flying device. |
| **Success Criteria:**  **Flying device:** It can cover a distance and stay in the air.  I have shown creativity in my plan and design.  I have used tools and materials safely and appropriately.  **Presentation:** I/We can present our findings in written form, oral presentation, video/ Green Screen.  I/We have clearly explained our flying device and why we chose this design.  I/We have explained how the four forces of flight affect/ help the device fly.  I/We have explained challenges with our design and recommendations for future  designs. |
| **Lesson Overview:**   * Introduce flight through an examination of birds/ wind shape * Research different types of flying devices * Teach forces of flight * Introduce project, learning goal, success criteria * Provide time to explore materials, design, build |
| **Materials and Technology:**   * Reference to websites-NASA, Canadian Space Agency * Familiarity with using Green Screen * Collect a variety of materials for construction   **Student Accommodations / Modifications:**   1. Opportunities for students to present their projects in different ways including individually to the teacher. 2. Work to be done at school to ensure the work is that of the student. |

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| **Minds-On:**   * Examine/ watch video of birds in flight * Bernouli’s Principle: air pressure around a wing creating lift ( flightwebquest. Blogspot.ca) * Build two different paper airplanes-predict which will fly the farthest, then test * Opportunities to provide descriptive feedback/peer/self-assessment |
| **Action:**   * Design and building, testing phase * Teacher will ask probing questions, assist students in using their inquiry skills * Provide opportunities for a gallery walk for students to see other works in progress * Encourage the use of key concepts/ vocabulary- lift, thrust…. * Final products may be assessed using a rubric or checklist |
| **Consolidation:**   * Begin or end work periods with discussions around what is working, what problems or questions they have * Student presentations with time for questioning/ feedback |