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**CODE/MOE/UOIT Makerspaces Project**

**Lesson Plan: Grade 6 Science:**

**Flight: Go Fly A Kite Project**

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| **IG IDEAS:**   * **Flight occurs when the characteristics of structures take advantage of certain properties of air.** * **Air has many properties that can be used for flight and for other purposes.**   **Lesson Objectives:**   * **To allow students to build open important life skills through collaboration, creativity and innovation** * **To allow students to be involved within inquiry and problem based learning** * **To allow students to encourage application of new and prior knowledge and skills to further develop their interests and engagement through learning**   **Overall Science and Technology Curriculum Expectations:**   * **Investigate ways in which flying devices make use of properties of air;** * **Explain ways in which properties of air can be applied to the principles of flight and flying devices.**   **Specific Science and Technology Curriculum Expectations:**   * 1. **- Investigate characteristics and adaptations that enable living things to fly.**   2. **- Identify the properties of air that make flight possible (e.g., air takes up space, has mass, expands, can exert a force when compressed)** | |
| **Learning Goals:**  **We are learning to use technological problem – solving skills to design, build, and test a flying device.** | **Success Criteria:**   1. **I can identify properties that make flight possible** 2. **I can identify and describe the four forces of flight – lift, weight, drag, and thrust** 3. **I can describe ways in which flying devices or living things use unbalanced forces to control their flight** 4. **I can describe ways in which the four forces of flight can be altered** |
| **Lesson Overview:**  **As you construct your kite, you must continually investigate the stability of the structure and identify the various forces acting on the kite to ensure that I can pass the fly high and for a long period of time.** | |
| **Materials and Technology:**   * String   - Paper   * Straw * Tissue paper * Tape * Glue * Wood * Garbage bag | |
| **Student Accommodations/Modifications:**   * **Supplied Materials** * **Assistance when necessary** * **Simplify task: Does not need to fly high, or for long** | **Lesson will be differentiated by:**   * **Content, specifically:** * **Process, specifically:** * **Product, specifically:** * **Environment, specifically: Outside** |
| **MINDS ON: Getting Started** | |
| Design and Planning:   * Does the design enable flight? * Can the design withstand forces that the kite will encounter? * Aesthetics * Symmetry | 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. What key questions will you ask? How will you gather diagnostic or formative data about the students’ current levels of understanding? How will students be grouped? How will materials be distributed?   * Show videos demonstrating on how to build a kite * **Then demonstrate how to build a kite** * Equal distribution of aforementioned materials such as tissue paper, glue, straw, etc… * Assigned into groups * **Take them outside to fly it**   **Assessment may be done through observation, conversations and/or rubric/checklist for the final product.** | |
| **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); | 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; |
| Describe the task(s) in which your students will be engaged. What misconceptions or difficulties do you think they might experience? How will they demonstrate their understanding of the concept? How will you gather your assessment data (e.g., checklist, anecdotal records)? What extension activities will you provide? | |
| **CONSOLIDATION: Reflecting and Connecting** | |
| During this phase, the teacher may:  • encourage students to explain a variety of learning strategies;  • ask students to defend their procedures and justify their answers; | During this phase, students may:  • share their findings;  • 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)? What key questions will you ask during the debriefing?   * Questioning the practicality of their kite involving its success or failure * What they should change? * What were other factors that the students did not think of (wind, etc…) | |