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

**School Board: Limestone District School Board**

**Grade(s): Kindergarten**

**Subject(s): Science**

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| **BIG IDEAS:**  **All aspects of our environment are interconnected.**  **Introduction to pollinators and to the use of a BeeBot robot.**  **Curriculum Expectations:**  **OVERALL:**  **OE29 - demonstrate an understanding of the natural world and the need to care for and respect the environment**  **SPECIFIC:**  **29.2 - Describe what would happen if something in the local environment changed (i.e. loss of pollinators)**  **29.3 - Identify ways in which they can care for and show respect for the environment**  **29.4 - Participate in environmentally friendly experiences in the classroom and the schoolyard** | |
| **Learning Goals:**  “We are learning to…”   * Use our coding skills by working together with our friends * Take care of the environment | **Success Criteria:**  “We will be successful when…”   * We work nicely with others * We can make the Beebot move to the flowers * We can explain how we did it |
| **Lesson Overview:**   1. Discuss prior knowledge of pollination. 2. Generate questions about pollinators (What kind of animals are pollinators? Why do we need pollinators?) 3. Students will use the Beebots and grids to code a program that allows the bot to travel to and from flowers and a hive. 4. Students will return to the carpet to discuss extension questions (What might happen without pollinators? What can we do to help?) | |
| **Materials and Technology:**  Beebots  Beebot grids (15 cm x 15 cm grids drawn on chart paper and laminated)  Dry Erase markers | |
| **Student Accommodations/Modifications:**  Students can work in groups | **Lesson will be differentiated by:**   * **Content, specifically:** * **Process, specifically:** * **Product, specifically:** * **Environment, specifically:** |
| **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.**  After getting some answers from questions about prior knowledge, we will watch a short video (~3 minutes) about bees, pollination, and how it affects our food.  Why Do We Need Bees? https://www.youtube.com/watch?v=6CxCTyxRFh0  **What key questions will you ask?**  Why do we need pollinators?  How do they pollinate flowers?  Why do flowers need pollinators?  What happens if no pollination occurs?  How do pollinators help keep the flower community healthy?  **How will you gather diagnostic or formative data about the students’ current levels of understanding?**  Observation and anecdotal record of responses and discussions  **How will students be grouped? How will materials be distributed?**  Beebot stations will be set up already. Students should be able to pick groupings based on who they know they work well with. | |
| **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.**  In small groups, students will each be provided with a BeeBot and a coding mat. Flowers and a hive have already been drawn on the mat. Students will need to code their BeeBot to leave the hive, visit each flower and then return to the hive at the end.  **What misconceptions or difficulties do you think they might experience?**  Students may have difficulties using the bots if they have not had the opportunity to code with them before.  **How will they demonstrate their understanding of the concept?**  Students will demonstrate their understanding of the concept when they can successfully code the bot to the flowers, and can discuss the importance and implications of pollination.  **How will you gather your assessment data (e.g., checklist, anecdotal records)?**  Assessment data will be collected through observation and anecdotal record.  **What extension activities will you provide?**  Possible extension activities include: A nature walk to look for flowers and pollinators, making planters for flowers, planting flowers in a classroom/school garden. | |
| **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 the opportunity to share their strategies  **What key questions will you ask during the debriefing?**  What did you notice?  What was the hardest part?  Did you try anything special to help you solve the problem? | |