

**CODE/MOE/UOIT Makerspaces Project**

**Lesson Plan—Grade 1 Mathematics—Geometry & Spatial Sense**

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| **Lesson Objectives:**  **Understand, design, develop, and test codes for a specific purpose.**  **Mathematics Curriculum Expectations:**  **Grade 1 Geometry & Spatial Sense:**  **Describe the relative locations of objects or people using positional language (e.g., over, under, above, below, in front of, behind, inside, outside, beside, between, along);** | |
| **Learning Goals:**  “We are learning to deepen our understanding of positional language using Scratch Jr.” | **Success Criteria:**  “We will be successful when we have coded our characters to move and communicate with other characters through a variety of scenes.” |
| **Lesson Overview:**  Students will code their characters to move through various scenes while interacting with other characters throughout. | |
| **Materials and Technology:**  iPad (easier for Primary students)  Application: Scratch Jr. | |
| **Student Accommodations/Modifications:**  **If needed:**   * smaller direct instruction * personal chart to show positions/directions * Working in pairs | **Lesson will be differentiated by:**   * **Content, specifically:** * **Process, specifically:** Students will choose which directions they will follow to complete their challenge. * **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. 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?  **I will begin by showing students a completed program of Scratch Jr. that they have previously created. I will then ask them which directions the characters were moving. We will use their answers to create an anchor chart with descriptions of the “puzzle pieces” (codes) used. I will then ask students to come up and move the characters in certain directions as pulled from a hat (ex. move left 5 steps, move forwards, turn to the right etc). Once students have completed this activity I will introduce their Scratch Challenge.** | |
| **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. 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?  **Students will be using Scratch Jr. to work through various scenes in order to have their characters move around the screen and speak to one another. The characters will be giving directions from screen to screen in order to find a treasure at the end. Students will use Scratch Jr. independently or in pairs if needed to follow these instructions in order to create their Scratch Adventure Story.**  **The teacher will be circulating to ask questions, challenge students further, look for any concepts that need to be reviewed and ensure that students are on task. Teacher will keep anecdotal records of how students are progressing through the challenge and through the coding process.**  **Extension: Add more characters to join the conversation in order to find the treasure.** | |
| **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)? What key questions will you ask during the debriefing?  **All students will share their work on the SMARTboard. They will first describe how they went about this task and any challenges that they came across.**  After showing their work, students will be given a chance to comment/reflect on their peer’s work by engaging in a conversation about what they enjoyed or to ask questions.  Key Questions:   * Did you find it challenging to work with more than one character on Scratch Jr.? * What strategies did you have to use in order to manipulate and code the characters properly? * In the future, what could you have done better with the Scratch Jr. Challenge? | |