

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

**School Board: Grand Erie District School Board**

**Grade(s): 3**

**Subject(s): Science and Technology**

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| **BIG IDEAS:**  **Structures need to be strong and stable to be useful. In this lesson, students will build bridges to allow residents to move from one side of the city to the other side of the city.**    **Curriculum Expectations:**  **OVERALL:**  1. assess the importance of form, function, strength, and stability in structures through time  2. demonstrate an understanding of the concepts of structure, strength, and stability and the factors that affect them  **SPECIFIC:**   1. assess effects of strong and stable structures on society and the environment 2. define a structure as a supporting framework, with a definite size, shape, and purpose, that holds a load 3. identify the strength of a structure as its ability to support a load 4. explain how strength and stability enable a structure (e.g., bridge, tent) to perform a specific function 5. describe ways in which different forces can affect the shape, balance, or position of structures | |
| **Learning Goals:**  “We are learning to…”  ...use inquiry and problem solving to create a structure that will serve a purpose to allow cars to get from one side of river to the other side.  ...understand that structures must be able to hold a load and must be stable enough in case of a flooding. | **Success Criteria:**  “We will be successful when…”  ...we have built a structure that goes from one side of the river to the other side of the river.  ...our structure holds a load.  ...our structure would stand up to a natural disaster. |
| **Lesson Overview:**  This lesson is during the building of Everything is Awesome (city building). Students are to build a strong and stable bridge that will allow cars and walkers to take people from one side of our city to another side of our city. | |
| **Materials and Technology:**  K’nex  Students will have looked up a variety of bridges looking at shape and size  Paper and Markers | |
| **Student Accommodations/Modifications:**   * 1. scribes if needed   2. diagrams   3. partner work if needed | **Lesson will be differentiated by:**   * 1. This is a hands on activity so most students will be able to work on building their structure   2. Teacher will help when needed   3. Partner work will be available |
| **MINDS ON: Getting Started** | |
| During this phase, the teacher may:  • activate students’ prior knowledge;  • engage students by posing thought-provoking questions;  • discuss and clarify the task(s). | During this phase, students may:  • participate in discussions;  • make connections to and reflect on prior learning. |
| **Describe how you will introduce the learning activity to your students.**  Students have been working on building a city in classroom.  Whole class- students have put a river (Grand River) in the center of our city. During discussions students were asked how community members would get across the river. Students have determined a bridge will be needed.  **What key questions will you ask?**   1. What type of shapes will our bridge need? 2. What will make a bridge secure and stable? What materials would we use in the real world and how can we try to duplicate this material? 3. What are some things we would need to think about with natural disasters? How many bridges would we need in a city?   **How will you gather diagnostic or formative data about the students’ current levels of understanding?**  Conferencing with students during the design process  Students’ actual bridges (product)  **How will students be grouped? How will materials be distributed?**  Students are grouped in groups of 4-5 students and will design the bridge and build the bridge. | |
| **ACTION: Working on it** | |
| During this phase, the teacher may:  • ask probing questions;  • 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:  • 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.**  Using K’nex students will build bridges  **What misconceptions or difficulties do you think they might experience?**  Some students will try to use other materials that are more difficult to use as a bridge builder  **How will they demonstrate their understanding of the concept?**  Will the bridge go across the river?  Will the bridge hold a load?  Is the bridge tall enough to allow proper water flow?  **How will you gather your assessment data (e.g., checklist, anecdotal records)?**  Anecdotal records  Pictures | |
| **CONSOLIDATION: Reflecting and Connecting** | |
|  | During this phase, students may:  • share their findings;  • justify and explain their thinking;  • reflect on their learning. |
| Students will share their work and reflect on the process/strategies used/what went well/what they would do differently next time. | |