**Department of Elementary Education Lesson Plan Format**

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| Candidate | | Date  11/20/19 | | Grade Level  Kindergarten  1st | Subject Area(s) & Topic(s)  Science and Engineering  (STEAM PBL 3 Day Lesson) | |
| ☐ Single-day lesson  ☑ Multi-day lesson (3 days) | | ☐ Whole-class lesson  ☐ Small-group lesson | | Name of Instructional Model  ☐ Explicit/Direct Instruction  ☐ Inquiry, Problem-Based Lesson, or Project-Based Lesson  ☐ Other\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| **Student Learning Profile** | | | | | | |
| English Language Development levels of students in the class or group (*please check all that apply)* | | | | | | Student(s) present with: |
| ☐ Emerging  ☐ Expanding **OR**  ☐ Bridging | ☐ ELD 1 (Beginning)  ☐ ELD 2 (Early Intermediate)  ☐ ELD 3 (Intermediate)  ☐ ELD 4 (Early Advanced)  ☐ ELD 5 (Advanced) | | ☐ IFEP (Initially Fluent English Proficient)  ☐ RFEP (Redesignated Fluent English Proficient)  ☐ English only | | | ☐ IEP  ☐ 504 plan |

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| **Before Teaching the Lesson** | | | | |
| **Standard(s)** | | Common Core/Content Standard(s):  NGSS.Students who demonstrate understanding can:  K–2-ETS1-1.​Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.  K–2-ETS1-2.​Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.  K–2-ETS1-3.​Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs. | | ELD Standard(s):  ELD.1.PI.1 Exchanging information and ideas with others through oral collaborative conversations on a range of social and academic topics. |
| **Prerequisite Knowledge** | | Students should know what a bridge is.  How to copy-cat teacher  How to follow directions  Can follow directions. | | |
| **Objectives** | | Lesson Objective(s)/Goal(s):  Students will:  (Day 1) A. Successfully identify and define a bridge and their use.  (Day 2) B. Accurately discern between different types of bridges.  (Day 3) C. Design and create a functioning bridge of their own. | | Language Objective(s):  The students will improve verbal production of English by participating in a whole group discussion, as well as small group discussions. They will also improve ability to comprehend English by listening during the lesson and instruction. |
| **Vocabulary and Academic Language** | | | New Vocabulary: bridge, arch  Academic Language: define, assemble, identify, label, draft, example, model | |
| **Materials, including technology and visual aids** | | | Visual Aids, pictures, paper, tape, markers, pennies, pencils, erasers, National Geographic “The Impossible Bridge” video <https://youtu.be/-yLZYETYlmM> | |
| **Classroom Management Strategies, including room arrangements and student grouping plan** | | | Formation of Groups: Students will be randomly given a picture that is numbered. That number will indicate the role of the student.  Role Assignments: Beginning with the Checker all roles are assigned to the right (clockwise)  -Materials Manager/ Encourager: Students assigned the number 1- This student will get and clean up all materials for their group. They are also in charge of positively supporting their group members.  -Checker/Timekeeper: Students assigned the number 2- This student will watch the clock, keep track of time, and make sure the group is on task.  -Data Recorder: Students assigned the number 3- This student will keep track of the group’s ideas and take notes.  -Observer/Reporter: Students assigned the number 4- This student will see how their group is doing throughout the lesson and share their groups information with the class.  -Other- Traveler/Spy: Students assigned the number 5- This student will check in to see what the other groups are doing throughout the lesson. | |
| **Supports, accommodations, and/or modifications for specific students or groups** | | | In order to support students who are English language learners or have a learning disability, this lesson will consist of lots of visuals. Students will also be grouped up and able to work collaboratively together. | |
| **Teaching the Lesson/Sequence of Lesson Procedures** | | | | |
| **Lesson Procedures/ Steps** | **Teaching Steps and Student Involvement/Activity**   |  |  | | --- | --- | | State what student teacher is teaching/doing  *Remember to embed differentiation strategies* | State what students are learning/doing  *Remember to embed differentiation strategies* | | * Introduce bridges - what they are, how are they made, etc. * Discussions about bridges * Introduce different types of bridges * Decided which one “works best” or one you like * Design a model for design * Create a model bridge * Test model bridge type * Overview students as they work with their partners to design bridges | * Identify what a bridge is. * Identify different types of bridges * Discuss about bridges * Make a decision about what bridge you like * Design model of bridge * Create bridge model * Test bridge model * Observe other students’ bridge models |   **Introduction:  *BIG IDEA:*** *Bridges* ***Why is?*** *Why do bridges exist? What do they do* ***Where?*** *Where do we find the need for bridges?* ***Let's investigate. . .*** *We can research this quandary and develop our own answers.* ***Let's be engineers, scientists . . .*** *How does a bridge hold itself up? How does it do its job?* ***TASKS:***  Day 1  *Introduce Bridges*  lesson about bridges and why we need them  Day 2  *Discuss and Design Bridges*  Then talk about different types of bridges - which do you like?  Day 3  *Build Bridges*  Make a bridge out of paper and test it out  **JUSTIFICATION:** These lesson plans incorporate the NGSS along with the 5E framework. This will encourage students to actively participate and develop a deeper understanding of concept. Students are able to create bridges and share and discuss their designs.  **Engage:** This phase of the 5 E's starts the process. At this point Make connections between past and present learning experiences. Ask students what a bridge is. Have the students share with their partner how a bridge is made. Have students who believe they are bridge experts raise their hand. Form a human graph based on expertise and have the experts “teach” the other students in their group what they know about bridges.  **Body: Introduce/Teach New Concepts/Explain:** This phase of the 5 E's helps students explain the concepts they have been exploring. They have opportunities to verbalize their conceptual understanding or to demonstrate new skills or behaviors. Show students the National Geographic video called “The Impossible Bridge.” Use this as an explanation of the bridge building (engineering) process, and how bridges can be built in many different environments. Introduce different kinds of bridges (Golden Gate, Brooklyn, draw bridges, etc.), and ask the students to share with their group which group they think is “best” or which one they like the most.  **Explore:** This phase of the 5 E's provides students with a common base of experiences. They identify and develop concepts, processes, and skills. During this phase, students actively explore their environment and manipulate materials. Assign the group roles and have the students come to a consensus on the bridge that they would like to make. Have the materials managers pick up the given materials before designs are drawn. Once the group has come up with a design, the data recorder will take their design to the head engineer (the teacher) and get it approved. The students will then work together to use the given materials to make their design come to life. After the groups are done with their bridges, have each group test their bridges in front of the class.  **Independent Activity:** After each group is done, have each student individually reflect on their test run of their group’s bridge. They must answer questions such as “Did the bridge work? Why/why not? What would you change about the bridge?”  **Task:**  **Elaborate:** This phase of the 5 E's extends students' conceptual understanding and allows them to practice skills and behaviors. Through new experiences, the learners develop deeper and broader understanding of major concepts, obtain more information about areas of interest, and refine their skills. The students will share with the whole class their thoughts on their own bridges. Ask the students how their bridges compared to the bridges we saw in the video and in the pictures. Have the students make the connections needed to show that they had gone through the engineering process, just as the engineers in the video did.  **TOTAL TIME:**  **Launch event-One:** Class or DAY=Periods of \_\_minutes; | | | |
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| **Assessment Plan** | **Evaluate:** This phase of the 5 E's encourages learners to assess their understanding and abilities. The students will now rate their partners using the following self-reflection rubric.  Rubric: | | | |
| **Review/**  **Closing** | Review:  - Discuss how well your groups worked | | | |
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