Bridge Design Lesson Plan Template

Course Name: IGNITE
Unit/Theme: Design Thinking & Engineering
Time Frame (in minutes): 55 mins
Grade Level: 2nd-3rd

CONTENT AND SKILLS
Learning Objectives: • Understand that bridges have specific structural elements • Identify the elements that are common and necessary for a bridge to function correctly • Create a model of a bridge that “crosses a river” and supports a “car”
Essential Questions: • How can we design and build structures that are both strong and sustainable?
Students I can statements . . . • I can create a model of a bridge • I can identify essential elements of a bridge • I can develop and document a plan that shows the steps I will take to complete a project.. • I can apply the design thinking process to solve a problem. • I can collaborate and synergize with partners.
How will you meet the needs of SWD and ELL/MLL students? • Work with a partner • Differentiated recording sheet • Pictures linked with vocabulary
Content Standards List all standard indicators (do not need standard statement)
• 3-5-ETS1-1 • 3-5-ETS1-2 • 3-5-ETS1-3
NYS Computer Science and Digital Fluency Standards List all standards that authentically align
• 2-3.CT.1 Create a model of an object or computational process in order to identify patterns and essential elements of the object or process.

- 2-3.CT.10 Develop and document a plan that outlines specific steps taken to complete a project.

NYS SEL BENCHMARKS
https://www.p12.nysed.gov/sss/documents/SELBenchmarks2022.pdf

- 1C.2a. Set a short term goal and begin working toward it.
- 1C.2b. Identify steps in working toward a goal.
- 2B.2b. Demonstrate ability to communicate across a variety of groups.

INSTRUCTIONAL PLAN
List the steps of the lesson, including instructions for the students including how they will construct and practice content knowledge.

Add Standard Indicators next to activity that aligns and highlight them.

- Go through Nearpod lessons “What is an engineer?” (whole group, live participation)
- Discuss the importance of bridges and look at various images of bridges, discussing the different types of bridges and their basic structures.
- Introduce the challenge to students:
  - Today, you will become a civil engineer, building a bridge with your team. You need to build a bridge to cross a "river" (a gap between two desks or chairs) and support the weight of a toy car.
- Students will work through the Engineering & Design process (and fill out the sheet) to plan, build, test, and modify their bridges. 2-3.CT.1, 2-3.CT.10
- When students have completed their model “bridge” they will participate in a gallery walk to look at the different structures, noting similar elements among the bridges. 2-3.CT.1

FUTURE READY COMPETENCIES
Check off each competency that students will interact with during this lesson.

- ☑ Collaboration
- ☑ Communication
- ☑ Critical Thinking/Problem Solving
- ☑ Creativity & Innovation

MATERIALS / RESOURCES
Add additional resources needed for this lesson such as instructional technology templates, images, videos, etc. ***Including Instructional Technology Tools***

- Lesson slides
- Engineer Design Process sheet