

## Didactic Scenario

### 1. Title

LEGO Bridge Challenge

### 2. Keywords

Engineering, architecture, bridges, weight

### 3. Basic Information

**STEAM Subject:** Math, Engineering, Arts

**Typical interaction time with the instructional scenario in teaching hours for in-school work:**  
45 – 60 minutes

**General description of the scenario:**

<u>Phases</u>	<u>Stage</u>	<u>Time</u>
Introduction	Preparation	10 minutes
Main part	Implementation	35 minutes
Conclusions	Evaluation	5 minutes

**Age group:** 9-10 years old

**Estimated difficulty level:**

Very Easy	Easy	Moderate	Challenging	Very Challenging
			X	

**Teaching resources**

**Material:** LEGO bricks, slides, worksheets, blue color A4 format paper, pens, stones, and scales.

**School infrastructure:** Media, Computer

**Additional material from external sources/online tools:** N/A

**Differentiated Instruction for students of differing abilities and learning styles in the same class:** N/A

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#### 4. Educational Problem

Engineers are essential for their problem-solving skills and innovative contributions. They play a pivotal role in developing critical infrastructure, including bridges, roads, and energy networks. Engineers prioritize safety, ensuring the reliability of structures, products, and systems. Their work directly impacts the quality of life for individuals and communities. Overall, engineers are crucial contributors to societal progress, shaping the modern world and improving the well-being of people.

#### 5. Learning Objective (-s)

1. Different types of bridges' constructions (engineering);
2. Weight the amount that the bridge can keep (math);
3. Draw a bridge (arts);
4. Documenting their own learning process;
5. Building strong bridge construction (engineering);

#### 6. Phases of the Scenario

##### Phase 1

**Title:** Introduction

Indoor	Outdoor	Mixed
X		

**Phase duration in minutes:** 10 minutes

**Detailed description of the scenario phase:**  
 The teacher shows slides about bridges.  
 First, ask children - What is the bridge?  
 The teacher shows the types of bridges. Engineering principles of bridges. Showing the video of different bridges (don't need to show all the video - just short gaps).  
 The teacher tells the children today's task - to build the bridge in groups (3 - 4 children). The teacher says what are the rules for building the bridge;  
 Teacher shares worksheets with the groups;

**Activity sheets:** N/A

**Phase 2**

**Title:** Main part

Indoor	Outdoor	Mixed
X		

**Phase duration in minutes:** 35 minutes

**Detailed description of the scenario phase:**  
 In the worksheet children (in the groups) draw their project of the bridge (how it will look).  
 After that, children build their bridges from LEGO blocks (the teacher shares LEGO and blue paper with the groups).  
 After finishing the bridges, teams add stones to the bridge - to check how much weight can keep their bridge (better to do that with two groups at a time). The bridge can't touch the blue paper.  
 -add one by one stone on the bridge;  
 -when bridge is broken then take away one stone and then weigh all the stones, which were on the bridge;  
 - write the stones' weight results in the worksheet;

**Activity sheets:** N/A

**Phase 3**

**Title:** Conclusions - reflection

Indoor	Outdoor	Mixed
X		
<b>Phase duration in minutes:</b> 5 minutes		
<b>Detailed description of the scenario phase:</b> Children write conclusions. How did you manage to build a bridge in the team? Any problems? What can be done differently next time? What improvements to the bridge can be made to keep more weight? Reflect. In the group decide how the team did -worked overall and circle the emoji.		
<b>Activity sheets:</b> N/A		

## 7. Evaluation Methodology

Students are motivated to take an active part in the various stages of learning. Assessment components include: active participation in activities, worksheet tasks, building a bridge by rules and measure the weight of what bridge can keep it.

## 8. Additional Resources for the teacher

Attached an example of the worksheet.  
On the main part - it is better to set a time for children - how long they can build a LEGO bridge.