

## Didactic Scenario

### 1. Title

Tornado-resistant house shape

### 2. Keywords

dome house, tornado, architecture, engineering, math

### 3. Basic Information

**STEAM Subject:** Art, Engineering, Math, Science

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

**General description of the scenario:**

<u>Phases</u>	<u>Stage</u>	<u>Time</u>
Introduction	Preparation	7 minutes
Main part	Implementation	33 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:** Paper straws, paper tape, pen or pencils, hair dryer, scissors

**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

Due to the changing weather patterns caused by climate change, not all architectural structures can withstand strong tornadic winds. This results in many destroyed buildings, large financial losses and a high risk to human lives. It is therefore very important to encourage and seek ways to improve the situation by encouraging and finding ways in which architectural buildings can withstand strong tornadic winds.

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

1. Draw your dome house (arts);
2. Build the dome house model (engineering);
3. Documenting their learning process;
4. Work in the teams;

#### 6. Phases of the Scenario

##### Phase 1

**Title:** Introduction

Indoor	Outdoor	Mixed
X		

**Phase duration in minutes:** 7 minutes

**Detailed description of the scenario phase:**  
The teacher shows slides to the children.  
Talking about tornadoes and about dome-shaped buildings.  
After that, it is important to say what the task is - to build a dome house in the groups (4 children in each group).

**Activity sheets:** N/A

**Phase 2**

**Title:** Main part

Indoor	Outdoor	Mixed
X		

**Phase duration in minutes:** 33 minutes

**Detailed description of the scenario phase:**  
The teacher tells the rules of the project - dome house.  
First - cut a few straws in half and stick it with paper tape to create a pentagon shape.  
Second - on this pentagon children will stick 5cm long straws by creating triangles.  
Third - after building the first floor with triangles (using 5 cm straws), then to end the dome house project let the children choose how to finish the roof of the domed house.  
Every team gets a worksheet. In this worksheet, they write the team's name.  
Then, they draw their project ideas on the worksheet (give children just a few minutes for that task).  
After finishing building the dome house, every group counts how many triangles are in their built house and writes it on the worksheet.

**Activity sheets:** Children are doing the first task of the worksheet.

**Phase 3**

**Title:** Conclusions

Indoor	Outdoor	Mixed
X		
<b>Phase duration in minutes:</b> 5 minutes		
<b>Detailed description of the scenario phase:</b> Children are trying to blow their created dome buildings like tornado wind with a hair dryer. Checking which team built the strongest domed house. Children are writing conclusions in their worksheets (what can they do better next time, think about how was the teamwork, what can be improved, what they liked about the activity) Children as a team evaluate themselves and circle one of the emoji in their worksheet. The teacher talks with the children and asks questions: how did they do? What can be done differently next time? How did children manage to work in the groups?		
<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 dome house model and conducting an experiment.

## 8. Additional Resources for the teacher

Attached slides and an example of the worksheet.