

Didactic Scenario

1. Title

Journey to Mars

2. Keywords

design,space,solar system,astronaut,astronaut outfit,spaceship

3. Basic Information

STEAM Subject: Technology

Typical interaction time with the instructional scenario in teaching hours for in-school work: 2 hours

General description of the scenario:

<u>Phases</u>	<u>Stage</u>	<u>Time</u>
Warm-up activity, introduction to the topic	preparation stage	10'
Explanation of work ahead and what is expected of them	preparation stage	35'
Presentation of the instructional-educational content	implementation stage	30'

Age group: 6-11 years

Estimated difficulty level:

Very Easy	Easy	Moderate	Challenging	Very Challenging
			X	

Teaching resources

Material: paper, coloured pencils, eraser, scissors, ICT

School infrastructure: Internet access, video projector or projection screen, tablets or smartphones

Additional material from external sources/online tools:

Movie "Space Trek", different textile pieces

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

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4. Educational Problem

Innovative solutions against problems that may arise during space travel

You are in a team that will solve the problems that may arise during the journey on a journey to space. Teacher divides the class into 4 or 5 groups according to the number of students and distributes problem scenarios such as Designing a Spaceship, Designing an Astronaut Suit, Travelling to Mars, Designing a Solar System as 1 task for each group. It is expected to create solution scenarios as a team for the problem scenarios. It is expected that each team will propose solutions to the problem situations and will experience the design and simulation of these solutions. The problems scenarios are;

1. Spaceship Design: Although many different spaceship designs have been developed, the biggest problem of spaceships is the heating problems during take-off and landing. For this problem, design your own spaceship and explain the features of this ship.
2. Designing Astronaut Outfit: Today, technology takes its place in our clothes as in many areas. At this point, design your own astronaut suit and explain which problems that suit can offer solutions to in space.
3. Journey to Mars: The most important part of the Mars mission in space travel is the landing phase. At this point, how do you determine a safe way for the spaceship to land on Mars. Provide your design for this and test your design by putting an egg into the design you have realised from the 1st floor of your school and testing whether the egg remains stable when you throw it.

4. Solar System Design: One of the most important issues when travelling in space is navigation. At this point, design your solar system to find out which planet is where and to be able to move between planets.

5. Learning Objective (-s)

1. Students will learn more about solar system;
2. Students will learn more about the spaceship parts and how they work;
3. Students will learn about different types of textile;
4. Students will experience cooperation and collaboration in group works;
5. Students creative thinking and imagination will improve.

6. Phases of the Scenario

Phase 1

Title: Warm-up activity, introduction to the topic

Indoor	Outdoor	Mixed
		X

Phase duration in minutes: 10'

Detailed description of the scenario phase:

Teacher asks some question about the movie 'Space Trek' to create curiosity and attract their attention to the lesson. Students watch a short part in the movie and then talk about their imaginary space journey.

Activity sheets: N/A

Phase 2

Title: Explanation of work ahead and what is expected of them

Indoor	Outdoor	Mixed
X		

Phase duration in minutes: 35'

Detailed description of the scenario phase:

- To prepare their work according to the 4 problem situations above;
- Characteristics of spaceships.
- Problems experienced by spaceships.
- Characteristics of astronaut suits. Benefits of astronaut suits and their digitalisation
- Examination of the landing systems of aircraft or other aircraft within the field of Mars landing activity.
- In order not to get lost in the journey that is to be carried out in space, it is necessary to create the necessary navigation system and to examine the characteristics of their planets and to get information on these topics.

Activity sheets: N/A

Phase 3

Title: Presentation of the instructional-educational content

Indoor	Outdoor	Mixed
X		

Phase duration in minutes: 30'

Detailed description of the scenario phase:

Teachers are advised to follow these steps:

- Divide the students in the class into 4 or 5 different groups
- Read the scenario to each group and distribute the subjects,
- Have the groups research the topics and present their designs and ideas using problem solving steps.
- Evaluate the ideas with the relevant teachers and other groups and guide the students. If necessary, intervene and organise notifications or additional trainings on missing topics.

Activity sheets: N/A

7. Evaluation Methodology

Expectations from students are evaluated on the basis of each branch. The reasons for the changes in the Mars travel area, making designs that can adapt to sustainable living conditions, establishing proportions in the field of art and mathematics in the designs made, whether they establish problem solving steps in their reports, the applicability of simulations or designs will be scaled.

Student Feedback

Each group will present their design and give answers to the questions. Each group will do peer evaluation and self evaluation and get feedbacks to improve their design or product.

Teacher Feedback

The teacher will appreciate the quality and correctness of the students' answers, will offer suggestions and recommendations for future classes.

8. Additional Resources for the teacher

N/A