

Didactic Scenario

1. Title

Heat conduction

2. Keywords

heat conduction, thermal insulation, natural numbers, prototype, art and space phenomenon

3. Basic Information

STEAM Subject: Science, Maths, Visual arts, Engineering

Typical interaction time with the instructional scenario in teaching hours for in-school work:
Science (20 min), Mathematics (20 min), Arts (20 min), Technology (20 min)

General description of the scenario:

<u>Phases</u>	<u>Stage</u>	<u>Time</u>
Warm-up activity, introduction to the topic	preparation stage	20'
Explaining the work ahead and what is expected from them	preparation stage	30'
Presentation of teaching-training content	implementation stage	30'

Age group: 10-11 years

Estimated difficulty level:

Very Easy	Easy	Moderate	Challenging	Very Challenging
			X	

Teaching resources

Material: styrofoam, adhesive, cotton, fabric, velcro, needle, thread, thick rubber, vacuum hanger, scissors

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

Additional material from external sources/online tools:

<https://www.youtube.com/watch?v=vwBZz4fYaU>

https://www.youtube.com/watch?v=3n6VmlI_qzs

<https://www.fenehli.com/6-sinif-fen-bilimleri-isi-yalitimi-konu-anlatimi/>

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

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4. Educational Problem

The student has just started school. He goes to school by school bus every morning and gets cold during these transfers between school and home. That's why he gets sick very often. As a solution to this problem, he wants to design a product that does not transmit heat or cold weather ; a lightweight and portable product that can be carried easily.

5. Learning Objective (-s)

1. Students will remember what they learned about matter and heat in general;
2. Students will draw what they know about thermal insulation and turn it into reality with the help of augmented reality;
3. Students will develop math and engineering skills. Build your own structures by manipulating objects and creating motions using technological tools when necessary.

6. Phases of the Scenario

Phase 1

Title: Warm-up activity, introduction to the topic

Indoor	Outdoor	Mixed
X		

Phase duration in minutes: 20'

Detailed description of the scenario phase:
To students; The teacher arouses interest by telling a story about a student who comes to school by bus and gets cold because of the cold air coming from the bus window in winter.

Activity sheets:
N/A

Phase 2

Title: Explanation of the following activities and expected results

Indoor	Outdoor	Mixed
X		

Phase duration in minutes: 30'

Detailed description of the scenario phase:
The teacher asks the students to design a product that will provide the best thermal insulation with the given materials. Then they will present it in the classroom.

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:
Students will design their product and present it to other students.

Activity sheets:
Students will present the material they have prepared in the classroom.

<https://www.austrotherm.com.tr/bilgi-servisi/haberler/austrotherm-eps-premiumr-isi-yalitim-levhasi-video/>
<https://www.youtube.com/watch?v=T24o3ZXmJDA>

7. Evaluation Methodology

They will use Arloopa to answer the following questions:

What is the best material that you can use in the product you designed to make good thermal insulation?

Why did you choose those materials and what were the criteria?

Students Feedback

Through this interdisciplinary activity, students will learn science concepts such as heat conduction and insulation and design their thermal insulation materials. They will be able to establish interdisciplinary relationships.

Teacher Feedback

	% final sign	10	8	5	3
Science teacher Observation	40%	whole group there are members worked actively and I helped each one other	Almost all groups there are members worked actively and I helped each one other	half group there are members worked actively and I helped each one other	There's something clear lack partnership among the group members
Math teacher Observation	20%	whole group there are members worked actively and I helped each one other	Almost all groups there are members worked actively and I helped each one other	half group there are members worked actively and I helped each one other	There's something clear lack partnership among the group members
Visual arts	20%	All tessellation posters (one each) group member) happened delivered. Optional: there is a group	more than half tessellation there are posters was delivered. Optional: there is a group they created a part	less than half tessellation there are posters was delivered.	no poster was delivered

		they created a part virtual exhibition	exhibition		
Technology Design	20%	All tessellation posters (one each) group member) happened delivered. Optional: there is a group they created a part virtual exhibition	more than half tessellation there are posters was delivered. Optional: there is a group they created a part exhibition	less than half tessellation there are posters was delivered.	no poster was delivered

8. Additional Resources for the teacher

<https://docs.google.com/presentation/d/1cBjcS5IPoAM67jJEX23OcXa9u5EQPDhw/edit#slide=id.p1>

