

Why is the ice melting?

- simple experiments with ice

1	Overall aims: <ul style="list-style-type: none"> • Enriching children's knowledge of the properties of ice; • Developing critical thinking, observation, hypothesis and inference skills while performing experiments; • Developing communication skills; • Developing the awareness of dangers and risks of icing sidewalks and streets
2	Vocabulary - keywords Ice, freezing, melting, experiment
3	Sustainable abilities developed <ul style="list-style-type: none"> • Critical thinking competence • Cooperation competence
4	Pillars of sustainability included <ul style="list-style-type: none"> • socio-cultural • economical
5	STEAM domains S, T, M



6

Teaching methodologies/activity outline

Introduction

Problem question:

How is ice formed?

The teacher, together with the children, pour water into the ice molds. It is important that the molds are of different shapes. Then the molds are put into the freezer.

Note to the teacher:

If you want to continue the class immediately, you can prepare the ice in advance, remembering about the different shapes of the molds.

After a few hours, the teacher takes the ice cube trays out of the freezer compartment and puts a few cubes into a bowl. Then he passes the bowl to the children, who pass it from hand to hand while looking for answers to the following questions:

- What does ice look like? (what is its shape)?
- What color is ice?
- How does ice feel and taste?
- Does the ice smell?
- What happens to ice when we pass it from hand to hand?

Experiment 1

Children put one ice cube in several bowls. Then they place the bowls in different places (indoors and outdoors). On a sunny day, you can put one ice cube in the sun and the other in the shade.

Question:

Which ice cubes will melt faster and which will melt slower?

Children try to predict the results of the experiment. You can prepare a worksheet in which the children write down their assumptions/ hypothesis

Then the children observe what happens to the ice. They pay attention to places where ice melts faster and slower. They check their assumptions, talk and formulate conclusions.

Conclusion: the heat causes the ice to melt.

(Note: This experiment can be modified. If you don't want to wait any longer for the effects of heat melting ice, you can put two ice cubes, one in a glass of cold water and the other in a glass of boiling water. Then you will notice the ice cubes melting faster.)

Heat is not the only factor that can cause ice to melt. Another experiment will help the child understand what else may be causing this effect.



Experiment 2

The teacher puts small amounts of salt, sugar and pepper into the bowls. Children observe and examine: how they smell, what they look like (you can give the children a magnifying glass), how do they taste (carefully with pepper), how do they differ from each other?

Children put one ice cube in every bowl. Then they sprinkle a teaspoon of salt on one cube, a teaspoon of sugar on the second, and a third teaspoon of pepper. One cube is left clean, nothing is sprinkled on it - it is a control cube.

Question:

Which ice cube will melt first? Watch what happens.

Children try to predict the results of the experiment. They may write down their assumptions/ hypothesis.

Then the children observe what happened to the ice. They pay attention to the cubes that dissolved first. They check their assumptions, talk and formulate conclusions.

Conclusion: heat is not the only factor that causes ice to melt. Salt is a spice that also makes it melt faster. In contrast, pepper can sometimes make ice melt more slowly.

Summary

Questions we can ask children after these experiments:

- How can we prevent people from falling on icy sidewalks in winter?
- How to make icy roads safe for cars?
- What else (apart from salt) can we sprinkle on pavements and streets to make it safe in winter?
- Why do freshwater lakes freeze faster than salt water reservoirs?

7

Expected learning outcomes

The child will be able to:

- name the properties of ice;
- conduct simple experiments with ice;
- explain in his own words why the ice is melting;
- indicate what needs to be done to protect sidewalks and streets from ice in winter

8

Assessment

The Feeling Thermometer: Which experiment did you enjoy the most?

Questions:

Why did you choose this experiment? Can you do this experiment again?



9	Equipment and materials to be used in learning unit (tools, ingredients etc) Ice molds, ice, water, freezer, bowls, spoons, worksheets (for recording the experiment observations), salt, sugar, pepper
10	Kind of setting - lab, kitchen, outdoor etc. preschool garden or playground, classroom
11	References - source: https://www.youtube.com/watch?v=zatcpQt6nmA https://christian-parent.com/why-do-ice-cubes-melt-science-for-preschoolers/ https://www.youtube.com/watch?v=Renyj0UEa1I

