How the rocks are formed - testing the properties of selected rock types

1 Overall aims:

- Explaining the process of formation of rocks and minerals
- Testing and comparing rock properties such as hardness, weight, structure etc.
- Getting to know the selected names of rocks

2 Vocabulary - keywords

rocks, minerals, sedimentary, isomorphic and igneous rocks

3 Sustainable abilities developed

- System thinking
- Anticipatory competency
- Integrated problem solving

4 Pillars of sustainability included

- ecological
- economical
- socio-cultural

5 STEAM domains

S, T, E, A

6 Teaching methodologies/activity outline

Introduction

Conversation on the ways of using rocks by man and the origin of rocks based on the film "An object at rest" (cartoon film, without language layer): **https://www.youtube.com/watch?v=NBVClgfyciA**

Questions:

- Why does man need rocks - for what?
- Do rocks age?
- What happened to the rock that was the protagonist of this movie?
- Where do the rocks come from? How are they formed? Children's formulate hypothesis

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Main part:

1. Attempts to sort the rocks collected by the teacher: What groups can they be divided into? How are they different from each other? And in what way are they similar? Identification of 3 types of rocks: sedimentary, igneous and metamorphic.
2. Investigating the properties of different types of rocks. An attempt to answer the question: What is a rock made off? Children in small teams (3-4 people) look at the rocks under a magnifying glass, examine with their senses, try to smash the rocks with a hammer, searching for the answer to the questions: How do the rocks feel like when touched? What texture (structure), color, hardness they have? Which are the hardest, and which are the most fragile, the easiest to break? Ask the children to consider if there are rocks that share common features.
3. Finding out together what makes sedimentary, igneous and metamorphic rocks different from each other?
4. Research game: What weighs more? Children choose 1 rock and try to compare its weight with the objects shown in the pictures. Annex 2.
5. Research game: What weighs the same? Children choose 1 rock for themselves and try to find items of the same weight in the classroom or in the kindergarten garden. Observations are recorded on the work sheet - Annex 3.

Summary

Creative drawing story - teacher's choice:

- What if one day all the rocks on Earth started talking? Draw the story
- Story of a stone who wanted to be a bird….
- How the sand turned into rock… a story of a grain of sand

7 Expected learning outcomes

The child will be able to:

- use a pan scale,
- show the differences between sedimentary, igneous and metamorphic rocks
- indicate ways of using rocks by man
- use the knowledge of rocks in a creative narratives

8 Assessment

The child is able to identify examples of rocks and minerals in the household
The child can explain in his own words how rocks are formed

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9	**Equipment and materials to be used in learning unit (tools, ingredients etc)** ● 3 types of rocks (isomorphic, volcanic and sedimentary) - sets for each group of children prepared so that they can be destroyed during the classes. Each set should contain: granite, limestone, gypsum, metamorphic slate, coal, salt crystal. ● tools: balance scales, hammers, magnifiers and / or microscope
10	**Kind of setting - lab, kitchen, outdoor etc.** classroom, preschool garden,
11	**References - source:** 1. Educational movie for children: https://www.youtube.com/watch?v=NBVCIgfyciA 2. What is the rock made of - materials for teachers: https://www.youtube.com/watch?v=og0rMIrNVEY 3. https://wklasie.uniwersytetdzieci.pl/scenariusz/z-czego-sklada-sie-skala/zobacz 4. Types of rocks: https://wklasie.uniwersytetdzieci.pl/pokaz/203

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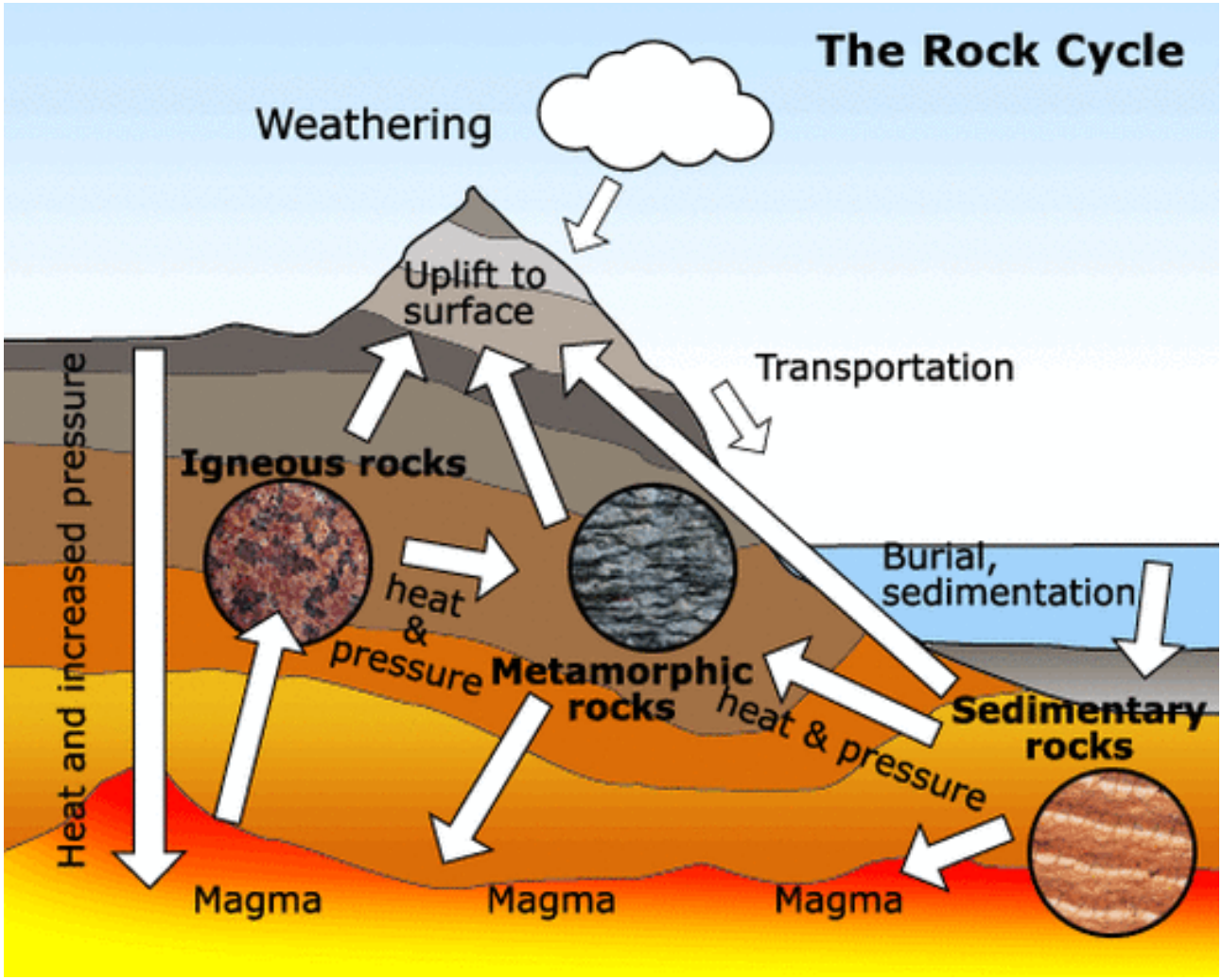
Annex 1.



Storyboard
http://kmapes.weebly.com/ap-notes---rock-cycle-and-formation.html

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Annex 2.

What weights more?
Children should choose 1 rock from the available set and compare its weight with different object using a scale

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Annex 3.

What weighs more?

Note: children choose any one rock from the set and compare its weight with other items using a scale

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What weighs the same? Find items in the room that weigh the same as the stone of your choice

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